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**Universitat Autònoma
de Barcelona**

Doctoral Thesis

**Making Visible Potentially Transformative
Engagements: Preschoolers' Peer Interaction in
Autonomous and Collaborative EFL Tasks
Supported by iPads and Beebots**



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To the Preschoolers for teaching me so much,
To Roger for all words cannot express.

ABSTRACT

The rapid advance of digital technology has transformed the concept of being literate to comprise multiple literacies; communication is increasingly multimodal and often interactive and digitally supported thereby requiring newly evolved communicative competences. This has resulted in demands that schools and policies include digital technologies and their literacies as well as the development of the commonly denominated ‘21st century skills’ in their curriculums. However, very young learners’ developmental stage and needs must be taken into account for such amendments to be appropriately and effectively included and implemented.

In this sense –and seen from a perspective of being ‘on the ground’, preschools articulate their practices in social interaction and in particular through play, as these are the foundations for very young learners’ development. This includes foreign language (FL) learning, which is the focus area of this study. The use of iPads and apps in preschool classrooms for literacy practices is being actively explored in research although the use of robots has been far less extensively explored and very limited in relation to literacy practices. Moreover, from a plurilingual approach, preschoolers must be recognized as strategic and creative users of a unique repertoire of semiotic resources and that their plurilingual competence is developed through social interaction. Collaboration among peers, in this sense, provides opportunities to negotiate and co-construct meaning by allowing preschoolers to share their knowledge with others and let others influence them. Thus, to acknowledge preschoolers’ agency is to recognize and value their capacity to co-construct their own learning including FL learning practices.

Accordingly, this research analyses preschoolers’ peer interaction in autonomous and collaborative English as a Foreign Language (EFL) tasks supported by iPads and Beebots. In such context, the study aims to unveil: the *nature* of preschoolers’ *peer interaction*, language exploration *triggers* and potentially *transformative language exploration engagement*. The *nature* of preschoolers’ *peer interaction* sheds lights on what happens in preschoolers’ peer interaction and how it happens by discerning emergent similarities and patterns, across the data set analyzed,

drawing a broad picture of the nature of preschoolers' interaction. Language *exploration triggers* explore what makes preschoolers' talk and/or engage in discussions related to language by identifying the stimuli that initiate or generate language exploration. Potentially *transformative engagement* focuses on the language features, aspects or actions explored by the preschoolers which are considered potential language learning experiences, given that by engaging with them there is a potential transformation.

In this study, 23 language-related episodes selected from a corpus of 14 hours of natural occurring interaction are analyzed. A fine-grained micro-analysis of *modes* in interactions is employed. The analysis is framed by a mixed-methods approach in which Social Semiotics Multimodality, Multimodal Conversation Analysis and Multimodal Ethnomethodology are intertwined respectively, focusing on preschoolers' *meaning-making*, *action sequentiality* and the *situatedness* of the research. The findings make visible, and thus noticeably value and highlight the significance of preschoolers' energetic movement, physical contact used in communication, spontaneous play and orientation to others (participation framework) in interaction. It also highlights disagreement, agreement, repetition, co-construction, self-task organization and task-completion orientation as common triggers for language exploration. The analysis indicates the close relationship between the task's design, the learning objectives and the affordances of the digital technologies used during the task and the language-related features, aspects and actions explored by the preschoolers. The findings contribute to help identify key aspects to design sensible, adequate and effective EFL technology-enhanced practices in preschool and to value preschoolers as agentic language learners.

RESUM

El ràpid avenç de les tecnologies digitals ha transformat el concepte de literacitat integrant la multiliteracitat, degut a la influència d'una comunicació que és cada vegada més multimodal, interactiva i digital. Esdevinent una demanda a les escoles i les polítiques educatives per tal d'incloure les tecnologies digitals i la multiliteracitat, així com, el desenvolupament de les comunament denominades 'habilitats del segle 21' als currículums. A nivell preescolar aquesta inclusió ha de respectar el desenvolupament dels infants i les seves necessitats per tal de ser implementada de forma adequada i efectiva.

En aquesta línia, i vist des d'una perspectiva pràctica, els centres preescolars articulen les seves pràctiques d'aula en la interacció social i el joc donat que aquestes són les bases pel desenvolupament de l'infant incloses les pràctiques d'ensenyament i aprenentatge de llengua estrangera. En aquest sentit, la recerca de l'ús d'iPads i Apps a preescolar per l'aprenentatge de llengua és ampli, al contrari de l'ús de robots, el qual és més limitat especialment en aquesta àrea. Des d'un enfocament plurilingüe els preescolars han de ser reconeguts com a estratègics i creatius en l'ús d'un únic repertori de recursos semiòtics i la competència plurilingüe com una estratègia desenvolupada en la interacció social. En aquest context, la col·laboració entre companys proporciona oportunitats per a la negociació i la co-construcció de significat; compartint coneixement i influenciant i deixant-se influenciar per altres.

Reconèixer els preescolars com agents és reconèixer i posar en valor la seva capacitat per a co-construir el seu aprenentatge, inclòs l'aprenentatge de llengües estrangeres. En consonància, aquest estudi analitza la interacció entre preescolars en tasques (autònomes i col·laboratives) d'aprenentatge d'anglès com a llengua estrangera amb el suport d'iPads i Beebots. Per tant, l'objectiu és esclarir: la *naturalesa* de la *interacció entre preescolars*, els *desencadenants d'exploració* de llengua i l'*exploració de llengua potencialment transformadora*. Pel que fa a la *naturalesa* de la *interacció entre preescolars* es centra en mostrar el què passa i com passa en la interacció entre preescolars centrant-se en les similituds i els patrons

visibles a les dades analitzades per oferir una imatge d'aquesta naturalesa. En relació als *desencadenants d'exploració* de llengua es centra en mostrar què promou que els preescolars parlin de i/o explorin la llengua mitjançant la identificació dels estímuls que generen aquesta exploració. I finalment, quant a l'*exploració de llengua potencialment transformadora* es centra en els aspectes, elements i accions explorats pels preescolars com a experiències potencials d'aprenentatge.

En base això, s'han seleccionat 23 episodis, relacionats amb l'exploració de llengua, d'un corpus de 14 hores d'interacció natural, els quals s'han analitzat i presentat mitjançant un micro-anàlisi dels *modes* utilitzats a la interacció. Aquest anàlisi està emmarcat en un mètode mixt en el qual la semiòtica social multimodal, l'anàlisi de la conversació multimodal i la etnometodologia multimodal es complementen per mirar la *construcció de significat*, la *seqüenciació de les accions* i l'estudi com *situat* en un context específic. Així mateix, l'anàlisi fa visible i posa en valor, en la interacció dels preescolars, l'ús del moviment, l'ús del contacte físic (com a eina de comunicació), el joc espontani i les orientacions vers els altres durant la interacció. Tanmateix, el desacord, l'acord, la repetició, la co-construcció, l'organització d'un mateix a la tasca i l'orientació cap a la consecució de la tasca destaquen com a desencadenants comuns per l'exploració de llengua. També queda palès l'estreta relació entre el disseny de la tasca, els objectius d'aprenentatge i les possibilitats que ofereixen les tecnologies digitals emprades amb les exploracions de llengua, i més concretament, l'*exploració de llengua potencialment transformadora*. Aquests resultats contribueixen a identificar aspectes clau per dissenyar pràctiques sensibles, adequades i efectives en l'ensenyament i aprenentatge de l'anglès com a llengua estrangera i a valorar als preescolars com a aprenents de llengua agents.

RESUMEN

El rápido avance de la tecnología digital ha transformado el concepto de alfabetización abarcando las denominadas multiliteracias debido a una comunicación cada vez más multimodal y a menudo interactiva y digital. Esto ha resultado en una demanda a las escuelas y políticas educativas de incluir la tecnología digital, las multiliteracias y las comúnmente denominadas ‘habilidades del siglo 21’ en los currículos. Sin embargo, en educación infantil, las necesidades y etapas de desarrollo de los infantes debe tenerse en cuenta si se quieren incluir e implementar adecuadamente estas demandas.

En esta línea, y visto desde una mirada práctica, los centros preescolares articulan sus prácticas de aula en la interacción social y el juego puesto que estas son las bases para el desarrollo de los infantes incluyendo las prácticas de enseñanza y aprendizaje de lengua extranjera. En este sentido, la investigación del uso de iPads y Apps en preescolar para el aprendizaje de lengua es amplio, al contrario del uso de robots el cual es más limitado especialmente en esta área. Desde un enfoque plurilingüe los infantes han de ser reconocidos como estratégicos y creativos en el uso de un único repertorio de recursos semióticos y la competencia plurilingüe como una estrategia desarrollada en la interacción social. En este contexto, la colaboración entre compañeros proporciona oportunidades para la negociación y co-construcción de significado; compartiendo conocimiento, influenciando y dejando influenciarse por otros.

Reconocer a los infantes como agentivos es reconocer y poner en valor su capacidad para co-construir su aprendizaje, incluido el aprendizaje de lenguas extranjeras. En consonancia este estudio analiza la interacción entre preescolares en tareas (autónomas y colaborativas) de aprendizaje de inglés como lengua extranjera con el apoyo de iPads y Beebots. Por tanto, el objetivo de este estudio es arrojar luz a: *la naturaleza de la interacción entre preescolares, los desencadenantes de exploración de lengua y la exploración de lengua potencialmente transformadora*. En relación con la *naturaleza de la interacción* se centra en mostrar qué pasa y cómo en la interacción de preescolares a partir de las similitudes y los patrones

visibles en los datos analizados. En relación con *los desencadenantes de exploración* de lengua se centra en mostrar qué promueve que los infantes hablen de y exploren la lengua a través de la identificación de los estímulos que generan esta exploración. Finalmente, en cuanto a la *exploración de lengua potencialmente transformadora* se centra en los aspectos, elementos y acciones explorados por los preescolares como experiencias potenciales de aprendizaje.

Se han seleccionado 23 episodios, relacionados con la exploración de lengua, de un corpus de 14 horas de interacción natural, los cuales se han analizado y presentado mediante un micro-análisis de los *modos* utilizados en la interacción. Este análisis está enmarcado en un método mixto en el cual la semiótica social multimodal, el análisis de la conversación multimodal y la etnometodología multimodal se complementan para mirar *la construcción de significado, la secuenciación de las acciones* y el estudio como *situado* en un contexto específico. Así mismo, el análisis hace visible y pone en valor, en la interacción de los preescolares, el uso del movimiento, el uso del contacto físico (como herramienta de comunicación), el juego espontáneo y la orientación hacia los demás durante la interacción. De la misma manera, el desacuerdo, el acuerdo, la repetición, la co-construcción, la organización de uno mismo en la tarea y la orientación hacia la consecución de la tarea destacan como *desencadenantes comunes de exploración de lengua*.

El análisis indica la estrecha relación entre el diseño de la tarea, los objetivos de aprendizaje y las posibilidades que ofrecen las tecnologías digitales empleadas en la *exploración de lengua potencialmente transformadora*. Estos resultados contribuyen a identificar aspectos claves para diseñar prácticas sensibles, adecuadas y efectivas en la enseñanza y el aprendizaje de inglés como lengua extranjera y a valorar a los preescolares como aprendices de lengua agentivos.

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ACKNOWLEDGEMENTS

A dissertation thesis is like going to an art museum. To get access you need to pay an entry not only monetary but also with personal, and sometimes huge, sacrifices. During your visit, you can be accompanied by people close to you that walk with you, in silence, along the way. Each one experiences the journey differently but if a break is needed, if something is worth celebrating or you just get too exhausted they are right next to you to talk, to sit next to you or just cheer you up.

During your visit, you get a guided tour with a leader that guides you through the most important aspects of each piece of art, teaching you how to observe, analyze and make your own conclusions. The guide (or guides) talks softly and wisely and you keep on wondering how can a person know so much and be so kind and willing to help you. The guide gives you breaks for you to explore on your own and asks your opinions on the pieces of art, showing real interest on what you have to say. They always seem to be so much taller than you that it seems impossible to reach their height.

Although your guide is always near, they encourage you to listen to other guides. Those guides welcome you as if you were from their group and listen to your ideas and always give you pieces of information that help you complete the puzzle. And, of course, in art museums there are always gift shops in which you can stop and buy souvenirs which you will later proudly put in your home to remind you of some of the great things you saw during your journey in the museum.

The visit is long and exhausting and although you are so well accompanied you always feel somehow alone. After all, the experience of observing, analyzing and making your own conclusions of the pieces of art is individual although generated in the social.

When the visit finishes and you see the 'exit' sign you look back and you don't recognize the person that began the journey, you don't regret the multiple sacrifices or the exhaustion, you feel so thankful for the journey, the company, the guides that it

even makes you feel a bit nostalgic. But the 'exit' sign is so bright that you just want to cross the line...This has been my journey, and I just want to thank each and everyone that at some point joined me during the visit to the art museum.

First, to Roger because you walking in silence next to me is sometimes the only thing that kept me walking when I was so exhausted to continue. And thank you for sharing the entry fees.

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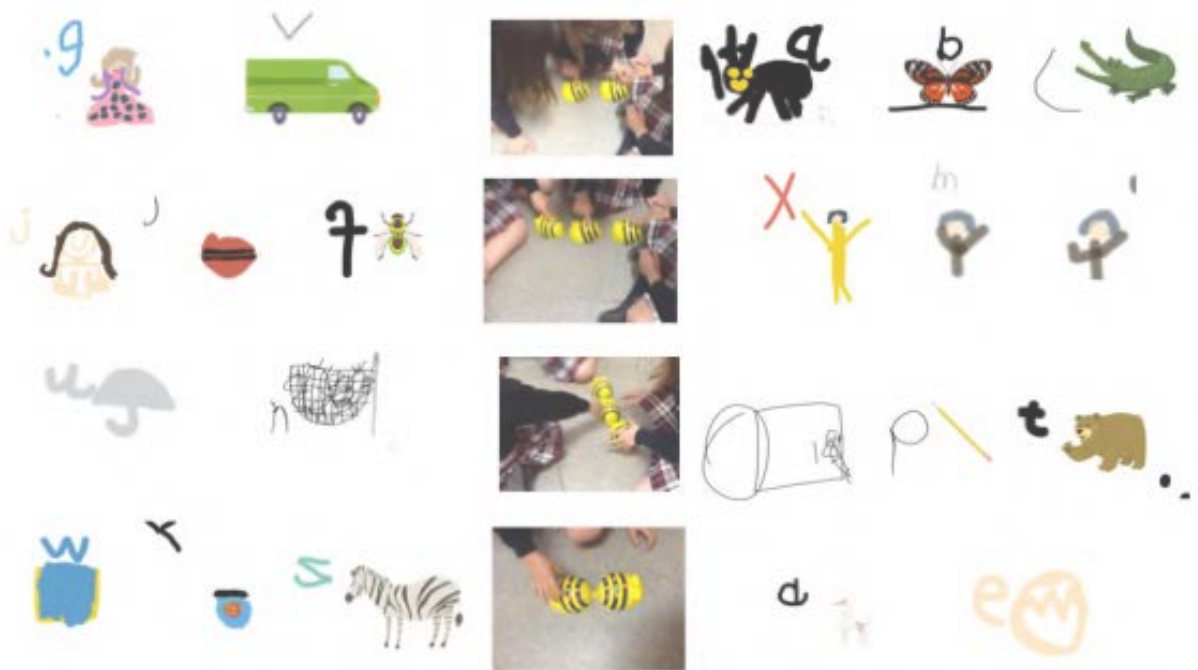
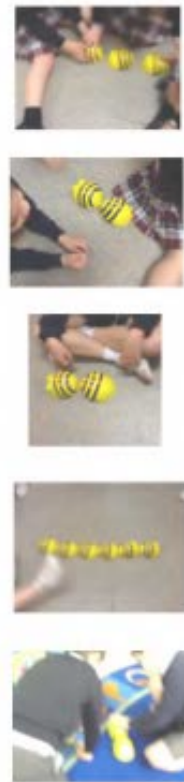
To Dr. Emilee Moore, who shared the guide role with Melinda for a short time and who helped me to enter 'multiliteracies'. To Dr. Dolors Masats for saying things clearly and telling me when I was writing too much or when I was ready for the last push and, for trusting me to be her co-editor. To Dr. Bezemer, for helping me to observe my data from a social semiotics perspective. To Dr. Rebecca Clift for advising me to rethink preschoolers' participation framework and to the Yerun mobility award that allowed me to share a week with her group. To Dr. Kristiina Kumpulainen for sharing her passion for preschoolers' agency and to the COST stay that allowed me to visit her and the team. To Dr. Kate Cowan for always answering my e-mails and sharing with me great opportunities for the area of our research. And in remembrance, I am grateful to Dr. Gunther Kress, who gave me great advice on how to manage the amount of data I had. To all of you, thank you.

And of course, to all the alive works of art that I had the pleasure to work with for my research project. To all the preschoolers that allowed me to make visible how agentic, energetic and capable they are. To their parents that not only granted me permission but that often asked me about how my journey was going, thank you for all. I will always hold you dearly in my heart. Thank you Scoobies! I wish I had the words to tell you how much you mean to me. To Mr. Prata and Miss Montse for

allowing and supporting my research in their delicate exhibition room. And to Miss Holly for her support which cannot be measured.

To the many opportunities I was given to participate in conferences or to present papers which I have as souvenir at home and remind me of the little steps I made.

And to the journey itself that has allowed me to learn from all the wonderful people around me and from my own practice. To conclude, it is honestly my wish to be able to contribute, even if just a tiny step, towards recognizing and valuing preschoolers' interaction in EFL autonomous and collaborative tasks.



(refer to annex 4, 5 and 6)

OVERVIEW AND STRUCTURE OF THE DISSERTATION

This dissertation is interested in preschoolers' peer interaction in autonomous and collaborative English as a Foreign Language (EFL) tasks supported by iPads and Beebots and in making visible language exploration triggers and potentially transformative engagements. A set of 23 language-related episodes of naturally occurring preschoolers' interaction are analyzed and discussed to shed light on: the nature of preschoolers' peer interaction; language exploration triggers; and potentially transformative engagements. The structure of this thesis is explained in the following paragraphs.

In chapter 1 the theoretical framework is presented. The theoretical background for the research is compiled of three frames. First, foreign language and literacy learning in the Early Years as a frame to understand how preschoolers acquire languages from a sociocultural and socioconstructivist approach. Secondly, agency serves as a frame to conceptualize the capacity preschoolers have to act or not to act in social interaction; this understanding allows the study to recognize and acknowledge preschoolers' agency on language learning. And, thirdly digital technology in the Early Years provides a framework which includes the acknowledgement of the rapid permeation of technological presence in preschoolers' lives and the need to promote their inclusion from a sensible and well-planned implementation.

In chapter 2 the research framework is presented. This chapter outlines the underlying epistemologies that have influenced the overall research approach. First, two key approaches that provide background for this study, the Sociocultural theory and Socioconstructivism are presented as frames for understanding learning as co-constructed in social interaction. This overview is followed by the presentation of the four analytical frames that comprise the mixed methods employed in this study, including a preface on multimodal analysis. The first, Multimodal Conversation Analysis, serves as a frame to focus on the sequence of social action to analyze interaction. Next, Multimodal Ethnomethodology is introduced as a method that recognizes the situatedness and context of the study and, finally Social Semiotics Multimodality, which is a method that focuses on preschoolers' meaning-making, is

introduced. And lastly, Participation Framework is explained, which serves to understand preschoolers' orientation to others' during interaction.

In chapter 3 the research analytical methods and methodology are presented. These are the instruments that serve for the compilation, management and analysis of the data; all which 'fit' into the epistemological frames described in the previous chapter. First, the research aims are outlined followed by the detailed description of the study and data compilation cycles. The fine-grained data analysis process is described in detail as well as transductions which was used for the data presentation method. The definitions of language-related episodes and language exploration triggers are defined. The considerations of transferability are as well delineated.

Chapter 4 is a key element of this thesis as it presents the analysis and discussion of the 23 language-related selected episodes. Each episode includes a transduction of the action that was captured in audiovisual format, the analysis, the discussion and the synopsis. In chapter 5 a final discussion is presented in which the episodes are discussed as a cohort. The findings, which are organized in a macro, meso and micro level, in relation to the three aims of the research, are discussed in depth. Thus, the nature of preschoolers' peer interaction, language exploration triggers and potentially transformative engagements that are visible in the episodes are comprehensively delineated.

The final conclusions of the research are presented in chapter 6. First the general conclusions are drawn, followed by the presentation of the contributions of the study and the reflections. Then recommendations for practical applications and suggestions for future research are outlined. To conclude the thesis, and as a recognition to the participant preschoolers, an epilogue is included. The epilogue connects the findings and the suggestions drawn from the findings with an interview made to the now young learners four years after the data collection. This is followed by the references section and the annex which include the participation consent form, the transcription key, the transduction template used for the analysis and finally the complete recompilation of the illustrations of the two groups' books of sounds.

CHAPTER 1 – THEORETICAL FRAMEWORK

In this section we will see the three key frames that provide the theoretical background for this study: foreign language and literacy learning, agency, and digital technology; all three are considered within the boundaries of early years development.

For this research, foreign language learning and literacy are framed from a sociocultural and socioconstructivism theory (to be discussed in detail in chapter 2) thus, the language and literacy learning process is understood as being embedded in preschoolers' social practices. This provides a key rationale as to why this research looks in depth at talk-in-interaction (Heritage, 1997). Collaboration, is also an essential feature of the overarching framework, given that the project design is based on collaboration as a space for preschoolers to negotiate and co-construct knowledge in a task-oriented stance (Dooly & Masats, 2020).

Along similar lines of the importance of interaction, another key pillar of this study is the conceptualization of agency as “the socioculturally mediated capacity to act (or not to act)” (Ahearn, 2001 p.118). This is especially relevant given that this research acknowledges and highlights preschoolers' agency in language learning as a response to a frequent downplaying of young children's sovereignty in learning processes. As Smith (2014) points out, there is growing recognition that children's knowledge and social competencies have been grossly underestimated and given the age range of the participants in this study, it is important to bear in mind that children, from a very young age, are knowledgeable and capable of self-determination.

Finally, the third, and more pragmatic stanchion of the framework is digital technology. Specifically, technology in the early years is discussed and engaged with as an inevitable feature of young learners' lives, especially considering the rapid permeation of digital technology in Early Childhood Education. The framework broaches the concerns that have arisen given to such rapid penetration, the presence and role of digital technology in the classrooms and more specifically the

use of iPads and Beebots in Early Childhood Education as powerful tools that allow preschoolers to develop multiple skills and which, with a sensible design, promote language learning. All three pillars of the overarching theoretical frame are synthesized and discussed in detail in the following sections.

1.1 FOREIGN LANGUAGE AND LITERACY LEARNING IN THE EARLY YEARS

Social interaction is the engine that moves language learning at very young ages. This interaction is first and foremost through verbal and non-verbal communication with others.

Signs and words serve children first and foremost as a means of social contact with other people. The cognitive and communicative functions of language then become the basis of a new and superior form of activity (...) (Vygotsky, 1978, pp. 28-29).

Preschools try to articulate their practices around social interaction and play; both of which serve as foundations for first language development, which occurs through its use in a social context and with others. It is the premise of this research that learning a foreign language in preschools should be treated no differently. Ideally, foreign language should be taught through a communicative approach in which the language is being learnt to *communicate* in an authentic as possible context (Dooly & Masats, 2011, 2020). Adopting a communicative approach to language teaching “is possible with all learners- from very young, early beginner language learners to more advanced language users [but it must] engage the learners in exciting new ways to experiment, play and explore the target language” (Dooly & Masats, 2020, p.140).

However, a communicative approach to FL for very young learners should not focus only on spoken language use. Oral and written communication is part of the Early Years curriculum. *Traditionally* the ability to read and write has been regarded as literacy (Sandvik, Smørðal & Østerud, 2012) and being able to read and write has usually been regarded as being literate. These predominance of these overarching concepts of literacy being mostly related to (text) reading and writing emerged in a meta-review focused on new technologies and literacy in a 0-to-8 age target

(Lankshear & Knobel, 2003) and was also discussed and highlighted in compendiums dedicated to new literacies, learning and classroom practices (Beschoner & Hutchison, 2013; Lankshear & Knobel, 2011). However, with the rapid advance of technology in our everyday lives, the concept of being literate has transformed to comprise multiple literacies, resulting in demands that schools and policies include digital technologies and multiple literacies in the curriculums. This call for transformation was envisioned as early as 1994 by the New London Group, a group of ten scholars and practitioners, of which Lankshear and Knobel formed part of and which first reflected on the influence digital technology was exerting on the society. These authors highlighted that digital technology and globalization inevitably affected education, and proposed a “pedagogy of multiliteracies”. Their proposal began to make more visible and to draw attention to the fact that communication is done through multiple modes including interactive and digital aspects, and that classroom practices should contemplate them because they are part of the society that pupils are being prepared for (Cope & Kalantzis, 2009; Lankshear & Knobel, 2011; The New London Group, 1996). This call for reflection continues among current educational researchers.

(...) today’s children are brought up in a ‘wired’ society and soon grow into skillful and eager users of technology. (...) the development of 21st century skills is only possible when technologies are habitually and sensibly used in the classrooms, not merely as ‘fun gimmicks’ that replicate teacher-fronted learning tasks. Today’s teachers’ challenge is to teach new skills, not simply teach old skills better (...). By interrogating the embeddness of technologies in our lives, and especially its integration in classroom practices, we soon come to recognize that learning must be situated and rooted in the learner’s participation in all social practices, including their everyday use of technological resources. (Dooly & Masats, 2020, p.126)

The use of these technological resources for educational purposes must include a deeper understanding of how we use these tools for meaning-making. As Sandvik and colleagues (2012) argue, in today’s society one cannot understand meaning-making, and reading and writing, separated from images, sounds and numbers which are intertwined (often interactively) adopting a multimodal characteristic that requires

human communication to adapt (Sandvik, Smørddal & Østerud, 2012). Hence, there is a responsibility to promote learning to read and write in digital and non-digital supports as well as multimodal and interactive texts.

The literacy skills that preschoolers need to acquire to become competent readers and writers include: *phonological awareness*; *print understanding* (including multimodal features); *alphabet knowledge*; and *emergent writing*. All of these are the skills regarded as the foundation for literacy abilities because of the impact they have in later reading and writing proficiency (Neumann, 2018). However, in this study we adapt and add to this list two of the “roots of literacy” defined by Goodman (1986), as essential to the meaning-making process: *oral language use for written language understanding* and; *metacognitive and metalinguistic skills of written and oral language* (pp. 5-6). We also include two skills that cover the digital competence (Beschoner & Hutchison, 2013): *interactivity understanding* and; *multimodal meaning-making*. Hence, we have compiled a list of the skills a preschooler needs to develop through her early years to become a competent literate. This list will be used to identify the skills promoted by the task design.

Moreover, given the multilingual context¹ of the subjects of this study, learning a foreign language and becoming literate in that language in the early years, language switching and mixing is also considered to be a natural display of the child’s competence and fluency in multiple languages and is regarded as part of the learning process. Vallejo and Dooly (2020) argue that contrary to common perceptions, this process of switching between languages by learners of a foreign language is a necessary part of the learning process as “Diglossic perspectives have also contributed to a negative perception of hybrid language, perceived as interferences and as indicators of bi/plurilingual speakers’ lack of competence” (p.5). This argument is made in reference to the claim to overcome the one-language focus perspective. In their review of the most relevant papers in the area of plurilingualism and translanguaging that focus on the implications to language learning and teaching, Vallejo and Dooly (2020) argue that the most recent research values

¹ According to the Common European Framework of Reference for Languages (CEFR) a multilingual context is a context in which two or more languages are present

positively preschoolers' language play and code switching. In this language play, errors are accepted and understood as a natural process of the language acquisition and there is no necessity to correct all the mistakes, instead the focus should be on promoting communication (Dooly & Vallejo, 2019). Subsequently the use of a variety of languages by the subjects in this study is considered a natural and valuable part of the interaction that promotes the learning process.

Summary: In this section we have seen the relevance of social interaction and play in preschoolers language learning including FL learning. It has also been argued that the inclusion of digital technology in society has widened the concept of literacy, therefore requiring schools to promote 21st century skills. Accordingly, there is a need to promote meaning-making in multimodal, interactive and digital contexts. Consequently, a set of skills that preschoolers should develop in this context is included. This includes the recognition of multilingual contexts and preschoolers' plurilingual competence.

1.1.1 Plurilingualism

In this research we adopt a plurilingual approach to understand FL learning. From a plurilingual stance individuals are recognized as having a single integrated set of semiotic resources or a sole repertoire of semiotic resources. This stance rejects the notion of the individual having different and separate sets of semiotic resources, each for each language, stored in the mind. This position was introduced by Gumperz and Hymes (1972) and further developed by Gumperz (1982) through the proposition of the term 'repertoire' which denominates all the linguistic, pragmatic and semantic resources, in any language, that each individual has available to act in social interaction. This stance has been further developed by the notion of embodied communication (Goodwin, 2000) which recognizes interaction as multimodal (gaze, gesture, body posture, movement, position in space...) (Goodwin, 2003; Mondada, 2010). Thus, in this research plurilingualism stands for the recognition of preschoolers as *creative* and *strategic*² users of their unique repertoire of semiotic

² In plurilingualism the terms most commonly used are 'code-switching' to refer to changing and selecting a given language according to the situation and 'code-mixing' to refer to mixing languages in the same

resources, which includes the use of resources in different modes and different 'named' languages in social interaction.

This position allows this research to be regarded as taking place in a multilingual context in which there is presence of the two official languages, Catalan and Spanish, and the FL, English (the three languages recognized as the school's languages of instruction). Furthermore this position allows us to regard preschoolers' practices as plurilingual given that they communicate using their full repertoire of semiotic resources, which may include other languages apart from the official languages used in the school. Consequently, this research considers that

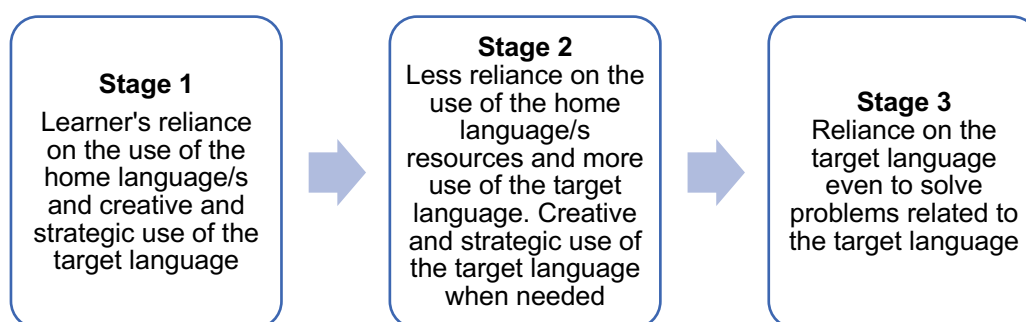
plurilingual competence is not the sum of competences in different languages or varieties, but rather a new and original ability which contains stabilized elements of linguistic varieties and forms of communication, as well as new forms, coined *ad hoc* by the participants in precise instances of interaction and to achieve practical purposes (Llompert & Nussbaum, 2018, p.25)

The plurilingual competence takes place as a manifestation in social interaction (Llompert & Nussbaum, 2018). Thus, talk-in-interaction (refer to chapter 3) is, as in this research, usually the actions where plurilingualism is studied in research (Llompert & Nussbaum, 2018; Masats, Nussbaum, & Unamuno, 2007).

In relation to FL learning and plurilingualism various studies have evidenced that learners in language learning contexts use their full repertoire of semiotic resources to accomplish tasks (García, 2009; Swain & Lapkin, 2001) and thus as part of their learning process. Masats, Nussbaum and Unamuno (2007), in a study on FL learning and students' use and mobilization of semiotic repertoires, assert that language learners mobilize their repertoires during language learning tasks by drawing on the resources they most frequently use (so resources in their home language/s) to gradually incorporate and use the resources they are acquiring (that is, resources in the FL). These researchers state that through this process of engagement with FL

utterance (Auer, 1999). In this research there are instances of code-switching and code-mixing (refer to final discussion). It has been found that referring to creative and strategic use not only recognizes all the strategies that preschoolers use but that it avoids 'naming' strategies that might be confused given that preschoolers' (home) language/s is still developing and errors are part of their competence and it is not completely accessible to know if it is code-switching or code-mixing.

tasks in ‘strong’³ social practices the learners will be able to *move* from a bi/multilingual interaction to a monolingual interaction in the target language as the resources are mobilized through these social practices. They suggest that code-switching and code-mixing is not evidence of a lack of competence but evidence of how learners adjust and use their repertoires according to the context. They conclude that language learners become able to take part in monolingual events in the target language through various stages. In this research, we have adapted Masats and colleagues’ findings (2007) of the three stages that an (older) language learner undergoes to suit preschoolers’ characteristics. These stages show how preschoolers ‘mobilize’ the use of their full semiotic repertoire, from a higher reliance on the resources in the home language, to a greater reliance on the resources in the target language.



Summary: In this section we have seen that the plurilingual approach conceives the individual as having a *unique* repertoire of semiotic resources, and thus the use of bi/multilingual communication as a creative and strategic use of the resources and not as a lack of competence in one or other language. It has also been presented that through communicative tasks in the target language the learners are expected to, through use in social interaction, develop competence in the target language and gradually rely less on their home language/s resources and more in the target language resources.

³ Mondada & Pekarek-Doehler (2004) distinguish between weak and strong versions of the interaction approach. The weak approach regards interaction as secondary and the ‘strong’ as the basis for language learning given that it regards social interaction as the practice through which learners co-construct and use their language competences

1.1.2 Collaboration and Language learning

In this research collaboration and language learning is closely related. The task is designed as a collaborative project as “(c)ollaborative learning requires working together toward a common goal” (Dooly, 2008 p.21). ‘Working together’ is designed, in this research, to be accomplished through talk and interaction with others and with digital technology. Through collaboration the child has the opportunity to share her understanding (Dooly, 2018a), compare it to those of others (Kruger, 1993), let others influence her understanding; try to influence others with her perspective or add her perspectives to a new construction (Rojas-Drummond, Barrera-Olmedo, Hernández-Cruz, & Vélez-Espinosa, 2020). Negotiation and renegotiation are relevant and transformative for the preschooler, whether if it is through conflict or agreement as through such the preschooler can explore language and transform her opinions or language knowledge. Young children have been found to change and modify their opinions after negotiating with others as seen in a study in which forty-eight 8-year-olds were recorded in a socio-moral *discussion* to analyze their opinions before and after a dialogue with a close person (mother or friend) in which the transformation of their opinions was observed (Kruger, 1993).

It has also been observed that during collaboration in digitally supported environments, as occurs in this research, the communication between preschoolers tends to create a collaborative atmosphere and energetic and dynamic background chatter (Beschorner & Hutchison, 2013). The communication is often based on: constructive comments (Oakley, Wildy, & Berman, 2018) in which children work together asking for help to solve problems or testing ideas to solve them (Beschorner & Hutchison, 2013), laughing and playing together (Burnett, Merchant, Simpson, & Walsh, 2017); sharing information and providing explanations; joining in discussions and explorations and expressing joy and frustration and even having disagreements (Sandvik et al., 2012); taking turns and celebrating other’s success (Marsh, Plowman, Yamada-Rice, Bishop & Scott, 2016) and; enhancing the interaction with teachers (Beschorner & Hutchison, 2013). All these features point at collaboration as suitable for language learning as it promotes rich interaction spaces.

In a collaborative language learning task supported by digital technology (iPads) Oakley and colleagues (2018) found that preschoolers were found “to be highly collaborative with each other when undertaking the activities and keen to share their stories with others, as well as making constructive comments to each other” (Oakley, et al., 2018 p.18). Furthermore, such tasks are regarded as efficient for promoting reading and the creation of multimodal texts (Flewitt, Messer & Kucirkova 2015). Thus a language learning task supported by digital technology seemingly promotes collaboration by intrinsically triggering interaction with other preschoolers, digital technology and multimodal texts. Furthermore, groups are always diverse, as each child has her own interests, and this diversity can contribute positively to the learning process (Dooly 2008) given that each child, with its own semiotic resources, participates and adds complexity and richness to the interaction which in turn becomes a potential transformative engagement. It is not surprising that collaborative and cooperative designs are being integrated in the teaching and learning of FL and highlighted as positive as research shows that collaborative learning can help close the loop between the communicative approach theory and language learning processes in the classroom (Dooly & Masats, 2011).

Summary: In this section it has been presented that collaboration is a social practice in which preschoolers can learn languages given that through these processes they have to negotiate and co-construct meaning with others by working together to accomplish a common goal. Collaboration in digitally supported tasks has also been presented as positive contexts for interaction and language exploration. Thus, this practice has been presented as adequate for preschoolers FL learning.

1.2 AGENCY

Agency has been explored from different perspectives such as psychology, philosophy and sociology although in general terms it is viewed as the capacity to act with an intention (Mashford-Scott & Church, 2011). The term is best understood if compared to the opposite view which is to “act by stimuli and in the immediate situation” (p.32) as suggested by Gillespie (2012) in his effort to advance and conceptualize the theory of human agency development from a psychological perspective. In this study we understand agency as “the socioculturally mediated

capacity to act (or not to act)” (Ahearn, 2001, p.112). Agency is constructed, negotiated and renegotiated in social interaction. This has been corroborated for children in different studies as well. Consider, for instance, the study by Kumpulainen, Lipponen, Hilppö, and Mikkola (2014) which employed a “children as co-researchers” approach, and aimed to unveil how agency manifests in children’s social interaction; Mäkitalo’s (2016) critical reflection on the notion of children’s agency; or the case study of a child focused on the dialectical relationship between agency and structure (Siry, Wilmes, & Haus, 2016).

Agency is framed by context structures, also known as rules and resources, or as Sewell refers, “schemas” (Sewell, 1992, 1999). These schemas are unique in every situation but, to a certain extent, transferrable and transmutable. As Sewell (1992) states in his theorization of “structure” in relation to duality, agency and transformation:

To be an agent means to be capable of exerting some degree of control over the social relations in which one is enmeshed, which in turn implies the ability to transform those social relations to some degree. As I see it, agents are empowered to act with and against others by structures: they have knowledge of the schemas that inform social life and have access to some measure of human and nonhuman resources. Agency arises from the actor’s knowledge of schemas, which means the ability to apply them to new contexts (...)
Agency is implied by the existence of structures. (Sewell, 1992 p.20)

Hence, agency can be regarded as the capacity of choice, action and influence that the child possesses and that develops and empowers her with a sense of agency (unless taken away) (Mentha, Church, & Page, 2015). The possibility and capability to enact agency are at the core of what being agentic is. In this sense, agency comprises the ability to enact one’s own actions with others or against others, aiming to persuade and influence others (Sewell, 1992) or oneself and to let others influence or persuade oneself. Agency can be further related to opportunities, skills and the will to act (Rajala, Martin, & Kumpulainen, 2016) in order to affect one’s or other’s life. This final argument is proposed by the authors’ introduction to a special peer-reviewed issue on agency and learning in educational settings.

Likewise, agency has to be understood as framed in a social and cultural context and thus related to autonomy and power structures. This is especially relevant to a study that looks at young language learners. Inevitably, the agency of young children is more restrained by adult parameters than when considering agency for adult-aged individuals. This has been demonstrated and discussed in a study that observed student agency and teacher control contradiction during classroom interaction through an analysis of 18 students (8-to-9 years old) and the teacher in which students displayed opposition during dialogic teaching (Rajala, Kumpulainen, Rainio, Hilppö, & Lipponen, 2016). Moreover, agency is seen as key in identity development as children situate themselves in relation to others and compare agency as being with or against them (Nsamenang, 2008). For Bandura (2001), the essence of the concept lies in individuals being agents of their own experiences and not just mere receivers of experiences. This includes, the capacity to agree and disagree, to accept and dissent and the right to do both (Nsamenang, 2008). Inevitably for younger learners, there are seemingly more barriers to these capacities as social norms in the classroom curtail their opportunities for disagreement or dissent in many domains.

However, there is also the view that the child is not normally agentic; instead she needs to be educated to be “aware of their natural authority and power” (Schapiro, 1999, p.736). This author argues that, from a philosophical perspective, “the condition of the childhood is one in which the agent is not yet in a position to speak in her own voice because there is no voice which counts as hers” (Op. Cit., p.729). Schapiro asserts that children should be nurtured, disciplined and educated to make them ‘free’ to decide and acknowledge they have power over themselves. Nevertheless, not all educational theorists agree. There are numerous authors who maintain, as we do in this research, that the concept of agency should include a view of the child as a capable co-constructor of her own learning (Ahn, 2011; Arthur, Beecher, Death, Docket, & Farmer; Hilppö, Lipponen, Kumpulainen, & Rainio, 2016; Mashford-Scott & Church, 2011; Schunk, 2008), although, as will be pointed in the next section, classrooms do frame preschoolers’ agency. In this line, others have argued that it is necessary to acknowledge children’s rights to participate and express their opinions in society and have *agency* in their lives (Niemi, Kumpulainen & Lipponen, 2016; Rajala, et al., 2016); which is particularly important to eventual

outcomes as it recognizes that children grow into adults and that the childhood they experience shapes the adult they eventually become. As a matter of fact, there is an argument in favor of recognizing children as “being and becoming”, far from the only-becoming-an-adult view, which recognizes children’s agency in the present (being) and in the future (becoming) (Uprichard, 2008).

Agency is not only related to the capacity the child possesses of being agentic but to the social and cultural context. In this sense, agency is defined differently by different cultures (Nsamenang, 2008). This is demonstrated in Nsamenang’s critique on the understanding or misunderstanding of children’s agency in Africa in a triangulated study that included a survey of parents in relation to children’s practices; a week-long observation of children in urban settings and an observation in a rural setting. To talk about agency it is necessary to take into account gender, education, social-economical position, ethnicity and religion; all of which create different structures and provide different resources and thus possibilities for the enactment of agency (Sewell, 1992).

Moreover, it is argued that agency is different from person to person even if they share the same socio-cultural context although *the capacity to be agentic* is as intrinsic to the human beings as it is breathing (Sewell, 1992). This point is relevant, as it acknowledges that the structures of the contexts the child participates in shape her agency, including preschools. Thus, such contexts, as well as the power structures, need to be accounted for (Rajala, et al., 2016) because they can diminish or increase the child’s agency (Sewell, 1992).

Summary: in this section we have looked at agency as the capacity to act or not to act; this capacity is co-constructed and negotiated in social interaction. Agency has been presented as situated and thus as framed by the context. For preschoolers, as in this research, the context is the school and the classroom social order as well as the task’s instructions. In this sense, acknowledging preschooler’s agency is acknowledging their capacity to co-construct their own learning; within the socio-cultural restraints of their classroom. In the following section the influence of

acknowledging agency in the classroom, where this research takes place, is further developed.

1.2.1 Agency in the Early Childhood classroom

The abovementioned studies mainly looked at children's agency outside of the classroom. We now look at explicit research within the parameters of formal schooling. Firstly, we find that there is ample research that touts the positive effects of promoting agency in young learners. There is research in Early Childhood that provides evidence of the positive impact of promoting agency in preschools. For example, a study with 3-to-5-year-olds in which, through a Conversation Analysis method, children's agency promoted by teachers during peer conflicts' resolution was observed and analyzed found that redirecting the responsibility to the children to solve their own disputes is key to promoting agency (Mashford-Scott & Church, 2011). It has been found that if agency is promoted children learn to negotiate, compromise, succeed, fail and be resilient (Macfarlane & Cartmel, 2008) and become more active participants (Kumpulainen & Lipponen, 2010), leading to the creation of a new structure for the classroom and that classroom interaction integrates more negotiation. It also ensures that the young feel capable of using these opportunities to participate (Kumpulainen & Lipponen, 2010).

However, we must bear in mind that agency does not take place in a vacuum. Agency happens within a structure and such structure will shape its affordances. Preschoolers are agentic but such agency is framed by the classroom social order. As Carlsen and colleagues (2016) observed in teacher's interaction with preschoolers, during maths tasks in a preschool classroom, preschools are no different and children are rarely free to do what they desire, there are social conventions and such are channeled by culture, people and artefacts (Carlsen, Erfjord, Hundeland, & Monaghan, 2016). In this sense, the structures that articulate a classroom and that shape the agentic affordances are the curriculum, tasks, teacher's expectations (Siry et al., 2016) spaces, school rules, time distribution, space design, resources, availability of resources (for children), language rules, social conventions, among others. Agency is thus context-tied and not universal and

does not happen in a similar fashion across the same structure every day (Hilppö, et al., 2016).

At the same time, it is important to highlight that agency is not only top-down, even when talking about young children's agency. Agency can transform structures, thus agency and structure is not a fixed relation but a dynamic and lively one (Siry et al., 2016). This can be seen in a large study with children aged 4-to-6 and their teachers in which the impact of the use of the iPad in literacy, numeracy and general skills was evaluated (Clarke & Abbott, 2016). In such study it was found that children transform the structure of classrooms when they enact their agency and thus widen or transform the affordances of said agency (Clarke & Abbott, 2016).

It is important to recognize that in preschools the interaction between child-adult or children-adult is not the only interaction that is relevant and that promotes development but that peer interaction is also relevant. Johnson (2017) found that peer interaction was essential in preschoolers' orchestration of their learning; the observation of preschoolers' interaction with inattentive peers during a reading activity foregrounded how paramount this interaction was. Hence, a sensible classroom creates spaces for children to negotiate, interact and play among themselves, away from a restrictive view of the adult as the only and major mediator. Preschoolers also have to be given the option to demonstrate their agency by being silent or by showing disagreement; actions which should not be regarded as negative attitudes but as the enactment of agency (Mentha et al., 2015). As argued by Kumpulainen and Lipponen (2010), it is through positioning during interaction that the child develops and transforms as "Children do not merely react and repeat given practices, but intentionally transform and refine their social and material world as they confront particular challenges" (Emirbayer & Misher, 1998 cited by Kumpulainen & Lipponen, 2010 p.54)

Just as the aforementioned studies demonstrate (Kumpulainen & Lipponen, 2010; Mashford-Scott & Church, 2011), it is important to highlight the role of conflict in the development of the sense of agency. Conflict situations promote children's agency (Mashford-Scott & Church, 2011). Children often disagree with peers when they

attempt to achieve goals or solve problems and such situations promote their effort to restructure understanding. As a result of such co-construction the child advances in her development (Kruger, 1993). In the Early Years, children mostly disagree and express disagreement in relation to: the *actions or non action of others*; the *possession or possessive use of something by others*; *opinions* and; *agreement or disagreement with or related to rules* (Mashford-Scott & Church, 2011). Inevitably these interactions construct the structure of the classroom. Hence, conflicts provide opportunities and spaces for preschoolers to develop socially, cognitively and morally through the resolution of social conflicts with peers (Mashford-Scott & Church, 2011).

Summary: In this section we have seen the positive impact that promoting children's agency can have on their development, not only in their learning but also in their capability to negotiate their own circumstances and to feel empowered to do so. We have highlighted the reciprocal effect agency and context have; agency is not top-down and through agency the context can be transformed. Agency between children should be fostered and recognition of different facets of agency, including silence, negation or conflictive stances should not be condemned as these all form a part of the gradual development of the child's social, psychological, moral and cognitive development.

1.3 DIGITAL TECHNOLOGY IN EARLY CHILDHOOD

1.3.1 Permeation of digital technology in Early Childhood.

The appearance of portable touchscreens, such as tablets and smartphones, has accelerated very young children's interaction with digital technology (Plowman, Stevenson, Stephen, & McPake, 2012). This was observed in a research project carried out in 2012 in the United Kingdom, with fourteen 3-year-olds and their families, in which the technology used at home and its effects was studied in order to understand the role of technology in preschoolers' everyday life. Likewise, various studies have compiled data of the use of digital technology by very young children and concluded the great increase of internet use and digital tablets use of preschoolers and under twelve year-olds; (Common Sense Media, 2013; Findahl, 2013; Ofcom, 2017; Pérez-Rodríguez, Ramírez-García, & García-Ruiz, 2015). As

seen in a research project with preschoolers under five, aiming to assess the implications for early childhood pedagogy based on the use of digital technology at the home, "children under five are heavy users of a number of digital technologies at home" (Palaiologou, 2016 p.5).

A study carried out in Jordan found that tablets and digital technology are used by preschoolers at homes primarily as a playing tool and not necessarily as an educational resource (Oliemat, Ihmeideh, & Alkhawaldeh, 2018). As Palaiologou (2016) argues, preschoolers are "digitally fluent users" (p.5), although, there are differences in the access and usage marked by the cultural and socio-economic context of the child as well as the age. These differences were also found in a longitudinal study in Australia with children 0-to-8 in which literacy development and access to digital technology were analyzed in relation to parental mediation to such access. It was found that language acquisition is influenced by parents' characteristics, context and mediation role (Bittman, Rutherford, Brown, & Unsworth, 2011).

Children often use digital technology, such as tablets or screens, to enhance their playtime by using such devices in the background or by using them with non-digital toys in imaginary worlds (Marsh, et al., 2016) In this line, an UNESCO analytical survey to recognize the potential of ICT⁴ in preschool concluded, more than ten years ago, that "new digital technologies have entered every aspect of our reality, including families and lives of young people. They have already affected preschool children's play and learning as well" (Kalas, 2010 p.16).

1.3.2 Concerns around the use of technology at early stages

There are concerns about the use of digital technology by very young children. As Stephen and Plowman (2014) present in their critical perspective on the nature of preschooler's digital play, the main anxieties are related to three general areas, health and wellbeing; cognition and development, and social and cultural relations. These fears are fed by assumptions regarding the use of digital devices as a

⁴ Information and communication technology (ICT)

replacement for adult care; addiction to such devices, including the passive and isolated use of them and; internet access and use safety (Stephen & Plowman, 2014). However it has also been argued that not all digital technology should be considered equal and that digital education should focus on the criteria for best usage (Fred Rogers Center, 2012). In this sense, Sadler (2017), in his discussion about the evolution of Virtual Worlds (VW) for language learning, presents two VWs, *Club Penguin* and *Woogy World*, suitable for children over 6-year-old that include a set of sensible and protective measures, including carer takers' supervision to ensure young children's participation in a safe environment. This demonstrates how scenarios that seem, at first glance, unsuitable for early ages are adapting their designs to include, under supervision, the participation of young children and how these can be appropriated to support language learning. Many reports seem to conclude that digital penetration in children's lives is inevitable. "It is not necessary any more to prove that ICT matters in early childhood education" (Kalas, 2010 p.16). It is now a question of better understanding how to have an equitable, effective and safe use of digital technology.

Digital competence is not only knowing about apps or tools, it is, as well, how the device is used as a resource and the relationship that takes place during the interaction (Rowell, Saudelli, Scott, & Bishop, 2013). The use of iPads and tablets should not be regarded only as a promotor of solitary engagement or solo-play; this is a limited view of the opportunities for development. Consider a comparative study of five preschoolers' dyads in a collaborative drawing task in which they used both paper and iPad support. The study makes visible how digital devices, understood as a tool or resource in the home or classroom, might add to collaborative and creative activities (Sakr, 2018). It is argued, as well, that the use of digital technologies can benefit the cognitive as well as social and cultural development (Stephen & Plowman, 2014). The use of touchscreens, in particular, can promote valuable learning as seen in a study that described the use of the iPad in two Early Years classrooms (Beschoner & Hutchison, 2013). Flear (2014), through her observations of preschoolers' free play with tablets, asserts that virtual imaginative play seems to trigger a different kind of play that is more complex in nature, and that allows a

smooth move from play (with digital technology) to learning (about digital technology).

1.3.3 Digital technology in Early Childhood Education: An overview

As explained in the introduction, this study analyzes language teaching practices supported by iPads and Beebots. It is proposed that their presence in the classroom can trigger not only a creative use of digital technology, but also social interaction and meaning negotiation. However, it also recognized that the use of digital technology with young children is widely debated. As for the presence of digital technology a recent ESRC-funded study (based in the UK) found the access to tablets in the Early Years settings (children aged 0-to-5) to be somewhat limited (Marsh et al., 2018) while other studies have found that a more general use of digital technology by very young children in the home is more widespread (McPake, Plowman, & Stephen, 2013; Plowman, 2015, 2016).

Another ongoing debate is the inclusion of technology in Early Childhood Education. The promotion of technology in the Early Years classroom has been timid due to the characteristics of very young children and their "fragile" developmental stage. As Hatzigianni and colleagues (Hatzigianni, Gregoriadis, karagiorgou, Chatzigeorgiadou, 2018) have argued, the integration of technology has not been easy, and there have been many obstacles and barriers to overcome. Specific challenges were highlighted in their four-month study in which the use of tablets in a Greek preschool was observed. These limitations are related to the young age of the learners and their limited technology skills as well as their interests and language domain which make it difficult to find comprehensible and authentic material. Dooly and Sadler (2016) note similar challenges in their study with young learners (7-8-year-olds) in a task-based language learning project supported by digital technology and telecollaboration.

On the whole, advocates of the inclusion of technology in the Early Years agree with arguments based on taking a sensible approach that includes perspectives regarding children's development. Proponents champion a more didactic and scaffolded inclusion. In this sense, Heppell (1999) argues that the mistake has been to

understand technology as “teaching machines” which teachers need to be able to manage and not as “learning tools” that need to be carefully included in the classroom. Likewise, Siraj-Blatchford and Brock (2016) contend that technology should not be regarded as pedagogical replacements instead, they should be considered a type of support for pedagogy, as evidenced in their review of different research in the United States and the United Kingdom related to pedagogy and digital tools. Simon and Nemeth (2012) also state that technology has to be part of the classroom material, together with more manipulative materials, and not as a replacement, corroborating suggestions found in a guide for teacher’s digital decisions in the Early Years settings. In this sense, some scholars encourage teachers of Early Years to use tablets and apps in the learning setting as they can aid in promoting play and creativity as well as curriculum content (Marsh et al., 2018).

Dooly (2010) argues that the focus should be placed on understanding the inclusion of digital technology as “added value” instead of as an “additional product” in a chapter dedicated to unveil the role of the teachers in the digital era or as she refers to them the “teacher 2.0” (p.278). Teachers and educators, over the years have been called to include digital technology in their practices in a design that allows students to use the tools creatively and for authentic tasks in which problem-solving, critical thinking, collaboration and knowledge construction plays an important role (Dooly & O’Dowd, 2018). An example of this sensible inclusion was evidenced with young learners in a telecollaborative project documented by Dooly and Masats (2020). These authors found that the use of digital technology contributed to the creation of learning spaces as seen with 6-year-olds in Spain and 7-year-olds in Ontario in which the learner’s literacy and linguistic development was observed and analyzed in a telecollaborative project. Similarly, Sandvik, et al. (2012) showed that digital tools can become a resource for language learning in literacy practices in order to engage very young learners in authentic and meaningful interactions. They analyzed five preschoolers’ (5-year-old) talk during a language learning task supported by iPads and found examples of emergent literacy awareness in the young learners’ interaction. However, Stephen and Plowman (2014) argue that an appropriate design should include digital and non-digital engagements. Along these lines, Dooly (Dooly, 2018b) highlights that it is also important to regard the physical arrangement

of the space and the digital technology location because this may affect the interaction and the learning and teaching. Integrating digital technology in the classroom requires effort and consideration from the educators (Flewitt, Messer & Kucirkova, 2015). It is key to assess and take into account not only the limitations and possibilities of the digital tool but the *learners* and the *learning objectives* (Dooly, 2007).

This bolsters Manches and Plowman's argument (2017), that given the wide range of individual attitudes, skills, and competences that young children develop during a year of instruction, it is not possible to make generalized statements regarding how the use of digital technology might affect preschoolers' development. Based on their literature research related to computational thinking, STEM and digital technology in the Early Years, Manches and Plowman (2017) question whether it is possible to plot a stage by stage pattern of development with digital technology. Other studies also indicate that while bearing in mind that age-appropriate design is key in the inclusion of digital technologies it is essential to recognize that every child engages and interacts with the tool in a particular way (Marsh et al., 2018). This implies that the teaching design needs to be individualized and adapted to the groups' characteristics as well as to the social and cultural context.

Finally, it has been claimed that technology can be an effective learning tool in the Early Years, if it is empowering, hands-on, active and engaging. This corroborates the beliefs of preschoolers' teachers and parents' opinions (Sharkins, Newton, Albaiz, & Ernest, 2015). It has been argued that the use of such devices in the classroom can create opportunities to balance the inequalities of power/knowledge structures between adults and children by empowering children to adopt the role of "experts" while learning and helping. This was proposed by Flewitt, Messer and Kucirkova (2015) after observing a project that integrated the use of iPads with two preschools (one 3-to-4 and the other 4-to-5) over the course of two months.

Summary: In these sections we have seen that digital technology has rapidly permeated the lives of preschoolers and that an elevated percentage of them use them at home and for play. The concerns derived from this permeation have been

outlined as: the substitution of the caretakers, addiction and maluses especially of internet access. It has been pointed that the focus needs to be placed on *how* to design preschoolers' use of it. As for the use in the classroom the *how* is the focus as well, in which it is suggested to regard them as an "added value" (Dooly 2010). It has also been presented that digital technology can aid in promoting language learning and literacy. Thus, digital technology can be considered as empowering, effective and engaging learning tools if included in a sensible practice. We now look more specifically at studies that have focused on the specific technologies that were used in this research: iPads, their apps and robot programming devices (Beebots).

1.3.4 iPads and other tablets

With the appearance of digital touchscreens, especially the iPad, in 2010, the possibilities of these mobile devices have been explored and subsequently promoted in Early Childhood education. Since their inception, tablets have become increasingly popular in educational settings (Oliemat, et al., 2018). It has even been argued that digital mobile gadgets are the most used technology to be found nowadays in classrooms (Burnett & Merchant, 2017; Burnett et al., 2017). This pattern of incremental use of iPads and tablets for early literacy has also been observed in preschoolers' literacy practices, evidenced by a year-long ethnographic research (Daniels, 2017). In short, just as these devices have gained their space in our society, they have impacted the education sector, becoming increasingly common nowadays in the Early Years and becoming integrated in learning and teaching practices. Moreover, positive effects in language learning have been detected; for example, pre-post-tests done with 24 preschoolers (2-to-5-year-olds) that assessed the effects of the use of the iPad in the development of literacy skills in comparison to a control group of 24 preschoolers demonstrated positive gains for the group working with the tablets (Oliemat et al., 2018).

Several reasons for including tablets and iPads in Early Years education have been proffered. One is related to the tablets' physical characteristics, another is their relatively low cost in relation to other gadgets such as the computer, and yet another points to children's preference for the gadget (Shuler, 2009). Moreover, the

characteristics of the iPad such as being portable; lightweight; not very fragile and having an interactive touchscreen means it can be used in small group settings and not only for individual learning, as is often the case with computer screens or cellphones. This helps promote collaborative learning through social interaction, which is a key component sought in a pedagogical context and in content design for young learners (Oliemat et al., 2018; Shuler, Winters, & Wets, 2013).

As it has already been seen in the general overview of the integration of digital technology in educational settings, the adequate pedagogical use of tablets is essential for ensuring young learner's engagement (Couse & Chen, 2010; Oliemat et al., 2018; Wong, 2012). Taking advantage of the iPad's small size and touch-screen manipulation (which means it is a more user-friendly device), their use in the classroom adapts well to preschool settings where children are in constant movement (Tootell, Plumb, Hadfield, & Dawson, 2013). The iPads or tablets' portability is a key feature in its inclusion in the Early Years as it can be easily used inside the classroom, at a table, sitting on the carpet, or outside. This mobility of use means the teacher can engage different groupings; pairs, small groups, one-to-one and individually and in various places (Plowman, 2016; Sandvik et al., 2012).

Khoo, Merry and Nguyen (2015), in a study carried out in a preschool involving teachers, parents and children identified *educative* affordances of the iPads quite clearly. According to these authors, iPads are appropriate for the preschool classroom given their mobility; connectivity (to internet); touchscreen; zooming capability of the screen; capacity to afford multimodal elements (sound, image, text, video, recordings...); robust design; capacity to support different apps (hence, adaptable to user's needs) and available (digital) keyboard. In relation to touchability, it is argued that the iPad has a sophisticated software that allows more than one user to interact with the screen (Sandvik et al., 2012). The device also offers multimodal features: it supports sound, image, animation, video, text and tactile engagement, thereby involving learners in a multisensory experience (visual, auditory, tactile, kinaesthetic) (Neumann, 2018; Roskos, Burstein, Shang, & Gray, 2014). This is another key characteristic, and a plus for the literacy curriculum, as it allows multimodal texts, hence providing opportunities for the preschooler to engage in

broader and more complex meaning-making activities (Daniels, 2017). In relation to iPads and language learning it has been observed and evidenced that preschoolers do engage and learn literacy through the use of literacy apps (Neumann, 2018). In iPad supported practices children engage with text and image, and we argue that, if available, sound as well, so interacting with multimodal texts, and thus developing a sense of multimodal meaning-making (Beschorner & Hutchison, 2013) added to the development of other skills such as letter recognition, letter formation and phoneme recognition (Brito, 2016).

As argued before, collaboration is a key practice to promote preschoolers' meaning negotiation. In this line Sakr (2018), states that the small screen of the iPad rather than isolating the preschooler promotes an intense physical interaction between students in their search to impact the screen, which in turn supports and triggers collaboration. Thus, it is stated by different researchers that such practices, with the use of iPads or tablets, can potentially promote socialization, social skills, collaboration, creativity and/or collaborative creativity (Beschorner & Hutchison, 2013; Dooly, 2008; Falloon & Khoo, 2014a; Fessakis, Gouli & Mavroudi, 2013; Hatzigianni et al., 2018; Marsh et al., 2015; Oakley et al., 2018; Sakr, 2018; Sandvik et al., 2012; Yelland & Masters, 2007). Another study by Rowe and Miller (2017) involved the use of iPads and cameras in a multicultural and multilingual preschoolers' classroom. Based on the preschoolers' creation of e-books, that encompassed their family lives, culture and language, the authors argue it is not just the affordances of the iPad or programmable toys per se that promote collaboration but the co-construction and negotiation around the iPad's use that takes place in interaction during the practices at school.

1.3.5 Apps for preschoolers

The selection of apps for the tablet also has a major role in the success of practices and creativity (Marsh et al., 2018). The app design is key as its affordances might allow or impede the creativity of children, while writing a text or composing a drawing for example. Adequate app selection is vital as this can make a difference in the opportunities children have to discover, make choices, explore, imagine and solve problems (Van Scoter, Ellis, & Railsback, 2001). The app selection can influence how

the tablet is used. Some designs can promote creative practices if the affordances of the app allows the child to develop and create whereas others can limit the choices and the agency of the child (Marsh et al., 2018).

Looking at this topic in more detail, app designs can be distinguished as *open* or *closed* designs and each type of app configuration triggers different interactions with the iPad or tablet. Open-ended apps allow the preschooler to co-create her own content, with some restrictions, based on the choice affordances given by the app in which “users could personalize activities” (Flewitt et al., 2015 p.9) hence, allowing the child to be the author of a product. On the other hand, closed apps have set contents that allow the child to play and be creative but the route configured by the designer will always frame these activities. Such apps can be engaging for children and indeed promote educational goals such as numeracy and literacy although they present “content (that) could not be changed or extended by the user” (Flewitt et al., 2015 p.9).

Based on data from two case studies which compared the interaction of forty-one preschoolers working in small groups with open-ended and close-ended apps, Kucirkova and colleagues found that the use of open-ended apps could be used successfully to learn vocabulary and phonics if the interactions were strategically planned by the educator (Kucirkova, Messer, Critten, & Harwood, 2014; Kucirkova, Messer, Sheehy, & Fernández Panadero, 2014). For Mercer (1994) open-ended digital activities can trigger exploratory talk and discussion. It has also been found that tasks or activities planned with open-ended apps can be motivating for preschoolers because they are able to create something that is meaningful for them. It has also been argued that apps supports the development of digital and technological expertise (Flewitt, et al., 2015).

One of the most frequently used typology of open-ended apps in preschool are the creative or artistic apps which allow the child to create a multimodal art work. These apps are a means of creative and imaginative expression. If used in groups, provide opportunities for collaborative creation as suggested by Couse and Chen, (2010) with table computers and similar open-ended creative programs. Creative open-ended

apps usually allow the user to utilize a white canvas as a background to which they can add drawings (using the touch feature), images, animations, pictures, photos, recordings and music. There are different apps in the market, both free and paid, with the main difference between the two being the amount and type of choices given to the user. Lynch and Redpath (2014) have found that preschoolers are able to successfully create multimodal products with the use of such apps, based on observations from a two-year study in a preschool that implemented the use of iPads in their learning and teaching practices.

There is evidence that phonological awareness, vocabulary, reading and comprehension skills as well as language development can be promoted through the use of digital apps (Burnett & Merchant, 2017). Their use can promote concrete sensory experiences that lead to a more conceptual understanding of the app as found by Brito (2016) in a research with 15 families, based on semi-structured interviews on the use of the iPad, and, by Neumann and Neumann (2014) in a literature review on the use of the iPad by preschoolers. Additionally, it has been observed by educators that apps' use can enhance the achievement of learning goals or concentration levels on a task (Flewitt, et al., 2015).

1.3.6 Coding, programming and robots in the Early Childhood

Not only iPads and tablets are gaining their place in Early Childhood education, programming and coding are also on the list. Nonetheless, programming robots and toys are not yet as widespread in Early Childhood education settings as touchscreens. Their slow inclusion is probably related to the costs of programmable toys (Manches & Plowman, 2017), along with the relatively short life of the devices.

However, despite the costs, robots, programming and coding in the early years has evolved enormously and is slowly gaining presence in the Early Years classroom. This is evident with the appearance of more 'hands-on' gadgets now available compared to the previous programming and coding options that were limited to screen-based devices. For instance, there are different floor robots that are gaining popularity in Early Years settings. Currently, the most commonly used robots in

classrooms are Beebots; Cubetto; Bigtrack; Pixie and Dash and Dot (Manches & Plowman, 2017). These gadgets are explicitly toy-like and their design makes them appropriate for the inclusion in social contexts in which the child's play manifestly includes giving instructions to the robot (Manches & Plowman, 2017). Based on a study carried out in three different preschool classrooms in which the exposure to programming concepts and the learning outcomes was evaluated, it has been argued that with developmentally appropriate gadgets the gains, especially in technological fluency, can be significant (Bers, Flannery, Kazakoff, & Sullivan, 2014).

Still, despite the above cited studies, research remains scarce in computer programming in the Early Years (Bers et al., 2014) and even more limited regarding the integration of such activities in educational practices (Fessakis, et al., 2013). One of the most prominent research development projects for Early Years has been 'Logo' (Fessakis, et al., 2013). Logo is a programming language designed for children to be able to program based on a simplification of the programming language originally designed by Seymour Papert in 1968 to help children understand programming and develop programming skills (Papert, 1980). Yet, despite these advances in computer language programming for children, there is still no clear agreement on what computing education is or on the pedagogy to use in the Early Years (Cooper, Bookey, & Gruenbaum, 2014; Manches & Plowman, 2017).

This debate includes a more comprehensive understanding of what is computer programming. Wing (2011), head of the Computer Science Department at Carnegie Mellon University, defines computational thinking as "the thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can be effectively carried out by an information-processing agent" (p.11). On the other hand, coding is considered to be a set of "specific skills of inputting instructions using a particular language (...) whereas programming reflects the wider design and implementation process of using a code to solve particular problems" (Manches & Plowman, 2017 p. 193). Hence, for preschoolers programming and coding implies giving orders in order to solve a problem. This might sound simple but the orders have to be very specific and detailed, for instance coding how many steps and in which direction a robot should take.

Bringing computer programming to preschoolers implies allowing them to explore, in autonomous or guided practices, by means of thinking and controlling a device or robot (Fessakis, et al., 2013). Educators interested in teaching thinking skills must understand programming as a creative process in which planning, language use, sequences and hypothesis exploration and actions are the base (Nickerson, 1983). Moreover, after observing the presence (or not) of sequencing skills related to programming robots in an intensive workshop for preschoolers, Kazakoff, Sullivan and Bers (2013) argue that programming not only aids in the development of higher-order skills or computational thinking, but that it might be designed to develop social interactions as well as creative and cognitive development.

As mentioned above, now that these devices are more readily available, programming does not have to be regarded as an activity done in isolation in front of a computer or screen; it can be done in groups through collaboration and carried out in activities designed to challenge, motivate and engage students. It is essential, however, to bear in mind that coding and programming activities should not be planned for the sole purpose of learning but embedded in rich and curricular-based tasks (Marsh et al., 2015) in order to best promote creativity and play with preschoolers. For example, sequencing, putting objects or actions in order, is a main component of programming and it is a learning objective to cover in the Early Years in which preschoolers are expected to learn to sequence stories or numbers (Fessakis, et al., 2013).

Various studies have evidenced that preschoolers are able to build and program simple instructions for robots which are adequate to their age and skills (Bers et al., 2014; Cejka, Rogers, & Portsmore, 2006; Kazakoff, et al., 2013; Wyeth, 2008). These studies highlight the many benefits children can gain if they are introduced to programming in a developmentally suitable way. For instance, in the TangibleK robotics program (summer schools in which preschoolers are engaged with robots to develop computational thinking and engineering design processes, coding and programming), it was found that the activities triggered engineering thinking and computational thinking (Bers, 2010; 2008). Moreover, studies have identified that not only intrinsic computational thinking skills can be developed but, depending on the

design of the practice, the use of these gadgets invites children to engage in social interactions and negotiate meaning while playing and learning (Mont & Gonzalez-Acevedo, 2019). These authors discuss practice designs for the inclusion of Beebots in foreign language learning tasks in preschool classrooms, concluding that Robotics engages and motivates students, in accordance with Kazakoff, Sullivan and Bers' (2013) argument that it constitutes a new and exciting approach to cover learning objectives.

So, studies lead to the conclusion that programming should be included in well-designed practices in which there is an achievable challenge that coincides with the developmental age of the child and in which social interaction and group work is part of the design. Moreover, this is a strategy that heightens inclusivity (Fessakis et al., 2013). It is also relevant to bear in mind that programmable maneuverable toys, like Beebots, allow children to try "what if" scenarios (Stephen & Plowman, 2014). These scenarios can connect cognitive operations with body knowledge through the children's projection of their bodies and movements to those of the robot, allowing them to learn more abstract and mathematical relations (Papert, 1980). It is also worth highlighting that during programming preschoolers have been observed to follow either a strategy based on planning or on trial and error (Fessakis, et al., 2013) thus experimenting with step by step operations and organization.

In any case, to secure the development of computational thinking and its application not only in the computational world but as a set of skills, it has been suggested that these are dealt with from the Early Years (Manches and Plowman, 2017). Digital technologies can play a role in the development of children's identities as effective learners, promoted by the offers and different roads that can be taken while programming (Jackie Marsh et al., 2016); coding offers vast opportunities to teachers and preschoolers in this sense.

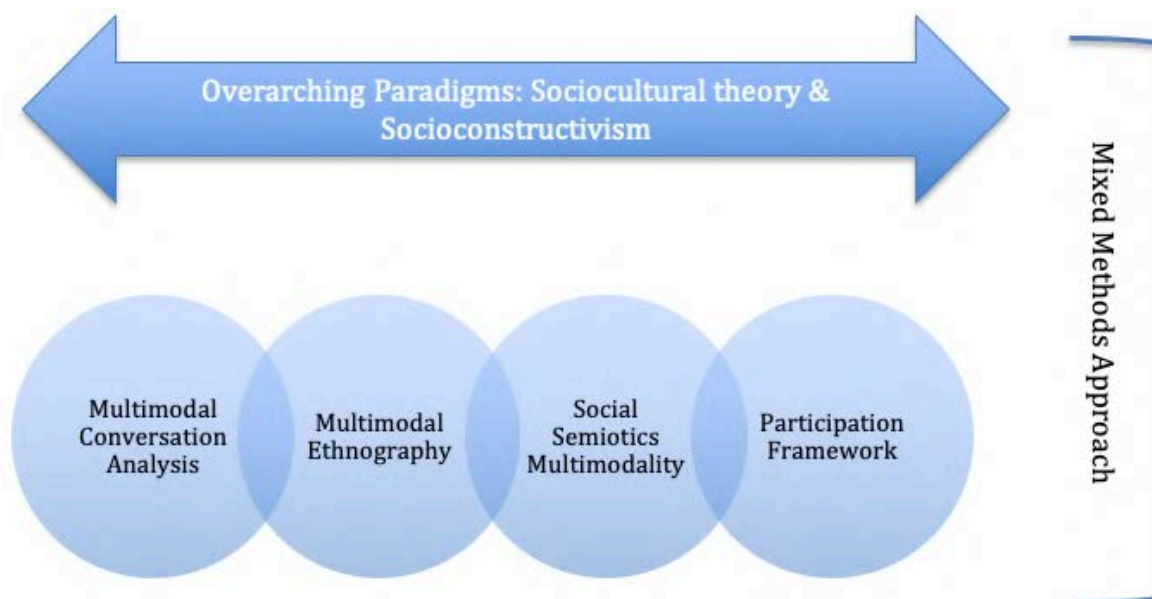
Summary: In these sections we have seen that the iPad's design: portable, lightweight, interactive, small and child-friendly has been well accepted in preschool classrooms and that it continues to gain popularity. It has also been seen that the iPads' affordances allow preschoolers to interact with multimodal texts and to engage

with literacy skills. The selection of apps, either open- or closed- ended apps has been highlighted as relevant in the design of practices. Open-ended apps have been presented as suitable for collaborative tasks and tasks in which negotiation of meaning and interaction is to be promoted. As for programmable robots, these devices are still not yet widespread in education but they are gaining popularity. The use of robots is regarded as a relevant practice for the promotion of thinking-skills and creativity and if planned in collaborative practices as relevant for meaning negotiation.

CHAPTER 2 – RESEARCH FRAMEWORK

In this section we will see the two key theoretical frames that provide the research and analysis background for this study: Sociocultural theory and Socioconstructivism. Both premises foreground the notion of learning as co-constructed between participants in social interaction and acknowledge the potential mediation of tools in learning. Learning is presented as a transformation that can be made visible through observable displays of engagement in the interaction.

Within this broader framework, the analytical approach to observing these displays of engagement is Multimodal Analysis. This perspective serves as the means and lens to unveil preschoolers' meaning negotiation and co-construction in interaction. Specifically, drawing from Multimodal Conversation Analysis, Multimodal Ethnomethodology and from Social Semiotics Multimodality, a mixed methods frame has been designed for this research. This mixed methods framework takes into consideration, from a Multimodal Conversation Analysis, the interaction as an organized sequence of social action in which each action is informed by previous actions. The use of Multimodal Ethnography allows for the acknowledgement of the situatedness of the interaction in a social and cultural context and Social Semiotics Multimodality, helps us recognize preschoolers' as agentic meaning-makers, capable of using semiotic resources, in different modes, to make meaning. Each of these pillars of the analytical frame are discussed. And lastly this chapter presents the frame that focuses on preschoolers' orientation to others in interaction: Participation Framework. It is suggested that this framework needs to be adapted to preschoolers' peer interaction in autonomous and collaborative tasks.



2.1 SOCIOCULTURAL THEORY AND SOCIO CONSTRUCTIVIST THEORY

Constructivism as an epistemological stance construes learning as “actively constructed by the learner” (Prawat & Floden, 1994 p.37). *Social* constructivism in education is largely recognized as building on the philosophical writings of Vygotsky (1962, 1978) and educational theorists such as Bandura (1977) and Bruner (1960). Its main principles lie in regarding learning not merely constructed but *co-constructed*, between interactants (both human and non-human) in social interaction. Hence, learning is understood as a socially mediated process, in which the social and cultural contexts influence learning; including the tools, objects, signs, symbols, and institutions and so forth that belong to the learning context. Thus, from a social constructivism perspective knowledge cannot be extricated from its social and cultural context and learning is regarded as a social process that takes place in and through social interaction (Ernest, 1998; Prawat & Floden, 1994; Schunk, 2012).

As Shah (2019) explains, the basic principles of the approach are: learners co-construct knowledge in authentic engagements; learners can reflect on their experiences and; social interaction is key for learning and development. “This perspective focuses on learning as sense making rather than on the acquisition of rote knowledge that exists somewhere outside the learner” (Shah, 2019, p.43).

Additionally, Brophy (2002) argues that in a socio constructivism perspective learning implies negotiation through interaction, implying that the co-construction is not always a 'seamless' process as may be implied by the prefix 'co'. Thus, negotiation plays a significant role in which the meaning-making transforms the individual.

Applying the socioconstructivist perspective to second language learning, Long (1985, 1996) argues that negotiation of meaning is key in learning a second or foreign language. For Long, 'negotiation for meaning' is the modifications that learners make while using the target language to make their meaning comprehensible to others. Expanding further on this notion of negotiation for second language learning, Seedhouse (2004) argues that meaning negotiation in a language learning task-based approach (as is presented in this research) is complex. He suggests, as can be observed from an emic and interactionist perspective, that participants' orientation to task completion is, as well, part of meaning negotiation and highlights the important role of the negotiation during the process of the task. Continuing along these lines, in this research meaning negotiation is understood as being embodied in the way in which preschoolers co-construct meaning in social interaction as part of the task process and/or as part of their communicative intention and while engaging with digital technology. This may be either oriented to task completion or communication.

In sum, there are some key concepts that stem from the abovementioned theories and which have proven useful for this research. Firstly, *learning (transformation)* is regarded as being context-cultural-historically framed. This perspective highlights the mutually co-constructed, relational factors, even if the observation is of the individual. This implies that the relationships among individuals and their cultural and social contexts provide an important basis for learning; moreover, this is reciprocal in the sense that the individual also influences his or her environment and relationships with others.

Furthermore, as Lantolf (2000) argues, a fundamental tenet of the sociocultural theory is that of *mediation*; individuals use tools and signs to mediate their relation with others and the world, for example, symbolic tools (arithmetic systems, arts...)

and physical tools (objects) mediate individuals relationship with the world and with others. The notion of mediation is highly relevant in this research as it provides an entry into the way in which the children's interaction with technological tools can be described and interpreted. Specifically, in this study, the iPads and Beebots serve as means of mediation for the children's accomplishment of a variety of given tasks.

2.1.1 Learning conceptualization

From a qualitative researcher's perspective, learning is not easily accessible (how can one pinpoint the exact moment something is learnt –or not- through observation?). From a Conversation Analysis (CA) approach, engagement may become visible through the analysis of talk-in-interaction; CA has also been applied with preschoolers to identify knowledge exchange by observing “how their interactions unfold in real-time, and how they make meaning at that time in terms of what is happening” (Bateman & Church, 2017 p.viii). Through the analysis of turns it is possible to observe preschoolers' orientation to others, to other's actions, comments and suggestions as well as their stance on other's actions, comments and suggestions. In other words, when preschoolers ask, question, challenge, agree or disagree (...) it is possible to observe language exploration and thus to identify *potentially* transformative engagements.

From a Social semiotics multimodality perspective, learning is understood as a *transformation* (Bezemer & Kress, 2016) in which learning happens in social interaction and is triggered by engagement with others, resulting in the co-construction and negotiation of meaning. This, in turn, engenders a *transformation* of the individual.

Learning happens, the way I see it, through one's own making of signs in relation to the world in which one is. (...). It is a result of semiotic action. So I can look at it in terms of meaning. You utter something, I engage with it -not all of it, but part of it. I can never engage with everything, representation is always partial. So I take something from there, I transform it for myself, and that changes my inner resources. (Kress in Andersen, Boeriis, Maagero & Tonnenssen, 2015 p. 86)

Picking up on these notions, this study pays attention to *language exploration triggers* by identifying *potentially transformative engagements* that occur during the co-construction of meaning. As an analytical entry point, the study focuses on preschoolers' *engagement* with language-related aspects (through questions, agreements, disagreements and repetitions) to identify potential transformation (learning) which is clearly related to language exploration and is thus considered as a language-related episode (LRE) (to be further explain in another section).

2.1.2 Learning conceptualization: example from this research

To illustrate the learning conceptualization in this research, a fragment of an episode has been selected (figure 2.1).

1	Gerika: La /d/ porque es la primera (The /d/ because it is the first one)
2	Curiel: /'da:l.fɪn/ /'da:l.fɪn/
3	Nuno: o /d/ /d/ /dɒk/ (or /d/ /d/ /dɒk/)
4	Nuno: /d/ /d/ /dɒk/
5	Nuno: /d/ /d/ /dɔ::k/
6	Fabian: /dɒk/ no/ /dɑ:g/ /dɑ:g//

Figure 2.1) Segment of the episode 4.19

In turns 5 and 6 language exploration is visible. During this episode Gerika is the iPad manager and she comments, in turn 1, something related to a letter sound that has to be illustrated. Nuno and Curiel engage with the comment and suggest objects to illustrate /d/. Thus, in turns 3, 4 and 5, Nuno makes his suggestion for the letter sound 'd' available to the other interactants in his group. However, he mispronounces the final sound (doc instead of dog). In these turns (4 and 5), Nuno displays his suggestion of a word beginning with the letter sound 'd' which he supports with the isolated beginning sound articulated at the beginning of his turn "/d/ /d/ do::c". In turn 6, Fabian disagrees and corrects Nuno's suggestion. In his turn Fabian shows that he has engaged with Nuno's turn; this is visible by noting his disagreement and correction. Thus, by analyzing the turns and the sequential organization of the turns it is possible to identify that Nuno first makes available a suggestion, showing his engagement and stance and that Fabian, in turn, engages with Nuno's suggestion,

assesses it (and regards it as wrong), repairs it and shares his knowledge as well. All this is possible by a) identifying the sequential organization and b) analyzing the turns (in this case disagreement and correction).

From Social semiotics multimodality perspective, the engagement seen in Fabian's assessment of Nuno's suggestion can be regarded as a transformation. This transformation comes from Fabian engaging with a suggestion. The engagement process *per se* transforms, to a certain (an unknown) extent, his inner resources. As can be seen, CA aids in identifying the engagement through the analysis of the turn sequence and Social semiotics aids in recognizing there is a potential transformation in this engagement (as learning is not accessible for us to observe). Thus, in this research, CA and its focus in turns and sequences of action, aids in making visible and analyzable the instances of preschoolers' language exploration. This language exploration, from a Social semiotics multimodality perspective, is regarded as a potential (language) transformation as the preschooler/s transforms their inner resources, to different extents, through their engagement in the interaction made visible through the application of CA.

In this section we have seen two key theoretical frames that provide the background for this study: Sociocultural theory and Socioconstructivism. These theories foreground the notion that learning is not an isolated, individual activity; it is clearly and continuously embedded in the context in which the activities take place. The interactions of the individual are not merely with other humans, but also with the potential mediation tools (as when Nuno suggests objects to illustrate in the digital book of letters; these illustrations are 'constrained' or framed by the iPad and the app's affordances). All of these elements can serve as triggers for transformation, which in the example, was language-related. Secondly, learning is regarded as the potential transformation that occurs when engaging with others; these moments of transformation become visible through preschoolers' engagement with each other's turns. In the following section Multimodal Analysis will be discussed as the means and lens to unveil preschoolers' meaning negotiation and co-construction, related to the language exploration that occurs in interaction during the task process.

2.2 MULTIMODAL ANALYSIS

2.2.1 Introduction

As Jewitt, Bezemer and O’Halloran (2016) recognize, “‘Multimodality’ is a term that is widely used in the academic world” (p.1). Despite the plethora of uses of the term, it can be generally agreed that the “object of interest [is] we make meaning in a variety of ways” (Op. Cit). These authors go on to list and explain in detail the principal research approaches that bring modality as a focus of research (see table 2.2.). This study draws from three of these branches: Social semiotics, Multimodal ethnography and Conversation Analysis (CA) (in bold in table 2.2).

Systemic Functional-Multimodal Discourse Analysis (SF-MDA)	Aims to understand the organization of meaning systems and their range of social functions.
Conversation Analysis (CA)	Aims to understand underlying social order of interactions (principally through talk).
Multimodal ethnography	Highlights cultural and social practices of a given community.
Geo-semiotics	Analytical lens is mostly on semiotic landscaping.
Multimodal (inter)action analysis	Similar to conversation analysis, is based on the ‘sequential action’ as it unfolds, moves beyond talk to include space, artefacts and their role in mediation.
Social semiotics	Places emphasis on agency of social actors and social/power relations.
Multimodal corpus analysis	Combines SF-MDA and Social semiotics “to empirically evaluate, critique and validate multimodal hypothesis and theories of meaning-making” (p. 132).
Multimodal reception analysis	Emphasis is on cognitive theories regarding perception and comprehension of multimodal messages.

Table 2.2) Summary of multimodal research approaches (based on Jewitt, Bezemer, & O’Halloran, 2016 p.131-132).

This study draws from Multimodal Conversation Analysis theory (to be further explained in a section) as it provides a useful framework to approach naturally occurring talk, and other modes, in social interaction. Given that the access to

language-related episodes is mainly through talk (how else can language exploration be tackled if not by what preschoolers say) it results clarifying to adopt the notion of sequence organization (sequential action) to recognize and understand the organization and natural orchestration of preschoolers' interaction; and the social order of their actions in interaction. It also provides the notion of 'turn' as a 'single' performed social action (in any mode) which allows, from an emic perspective (Seedhouse, 2004), to understand how the interaction is co-constructed turn by turn by the preschoolers.

This study also draws from Multimodal Ethnography (to be further explained in a section in this chapter) which is based on Social Semiotics but recognizant of cultural, social and contextual ties. Ethnography acknowledges a study as situated in a social and cultural context. Thus, adopting this perspective this study recognizes preschoolers' communication and interaction as situated and contextualized and offers a view into the complexities of the interaction not as an isolated action but as framed and influenced by the time, social and cultural context and -as argued before- as a practice that cannot be 'reproduced' (Flewitt, 2011). It also takes into account the researcher's embeddedness in the context of data compilation (as teacher and researcher).

This study also relies on Social Semiotics Multimodality (to be further explained in a section in this chapter) as the core analytical framework which has provided key concepts and helped outlined the data approach. The data is a compilation of video recordings of preschoolers' interaction during a foreign language learning task. Adopting this framework affords explicit recognition of not only the multimodality of the interaction but also provides a means for exploring in-depth how children communicate and make meaning and to trace, in this study, what will be referred to as language exploration triggers (further explained in chapter 3).

In the subsequent sections a snapshot of the main analytical theories will be offered to help situate the reader. Thus, Multimodal Conversation Analysis, Multimodal Ethnography and Social Semiotics Multimodality will be presented.

2.3 MULTIMODAL CONVERSATION ANALYSIS

Conversation Analysis (CA) is interested in naturally occurring talk; that is the focus is on talk in interaction that occurs in non-controlled practices (versus controlled situations such as labs). This reflects its origins as a branch of sociology. Goffman and Garfinkel (Garfinkel, 1967; Garfinkel & Sacks, 1970; Goffman, 1959, 1963, 1964, 1978, 1981, 1983) fathers of CA, aimed at investigating social interaction through detailed observation. At a later stage Sacks and Schegloff (Sacks, 1974, 1984, 1992; Sacks & Schegloff, 1974, Schegloff, 1987, 1988, 1992) focused on talk in social interaction. The focus of CA derived from their work on how talk is organized. This was a pivotal point in which it was first proposed that ‘naturally occurring talk’ is not chaotic (in contrast to other linguistic theories of the time) but rather that it always follows a structure with organizing underlying principles, principles that CA aims to unveil. As Markee (2000) defines it: “CA attempts to explicate in emic terms the conversational practices that speakers orient to (i.e. rules of talk (...)) by ‘unpacking’ the structure of either single cases or collections of talk-in-interaction” (p.26).

The three principles of CA are: the recognition that there is always order in interaction; order in talk is framed by the context and; the non-existence in talk-in-interaction of disorder, irrelevance or accident (Seedhouse, 2010). As Clift (2016) highlights, the main two elements are action and sequence. Action is understood as what is *done* with words, and sequence as how these actions are *organized* (Clift 2016). A detailed analysis of the order or sequence organization of talk-in-interaction offers insights into how people communicate by making visible how they make themselves understood and how they understand others. Given that this research is interested in preschoolers’ interaction and in language-related episodes (to be further explained in chapter 3), a view into how preschoolers make themselves understood and understand others offers useful information on how language is explored.

CA is data-driven in that it solely relies on what is accessible through the data. The information is obtained through attending to detail and not to interpretation or suppositions on what was understood as occurring in the data. Thus, in this research we focus solely on what is available through the compiled data, this pushes this research to concentrate on the child, and what she communicates as the only source

of data in order to unveil co-construction of meaning (this does not refer to acknowledging the social and cultural context but rather to avoid biased “interpretations” on what children say, do or communicate). As Bateman and Church (2017) argue in relation to the use of CA to unveil children’s knowledge in interaction:

Data-driven analysis, made possible through close transcription of video recorded observations, encourages analysts to pay attention to what participants attend to, enabling us to focus on what children do, rather than what we think they do, or what we think they think or feel. (p. 3)

In relation to multimodality these same principles apply to different modes. As Mondada argues (2011), meaning is not only relegated to a phrase, gesture or a gaze but to when it is performed in interaction. So Multimodal CA implies the recognition of different modes but maintains that what is relevant to unveil communication is the focus on how the action is ordered or sequenced, by the participants, in naturally occurring social interaction. Thus, in this research we analyze preschoolers’ interaction, paying close attention to all modes and to the semiotic resources preschoolers use. The order and sequentiality in the interaction are principally used to uncover how preschoolers explore language.

One of the fundamental features that are adopted in this research is, as argued before, the sequentiality of action. The CA mechanism to analyze this is ‘turn-taking’ which is how participants organize their interactions action by action. Each single complete action is regarded as a turn; to put it simply a turn is when a participant has the floor (and the floor can be shared (simultaneously) willingly or not by different participants) in social interaction. For example, a turn occurs when a preschooler suggests a word (no matter if the turn is a single word, a sentence or a very long discourse). Preschoolers’ social interaction is very dynamic and often the turns overlap and turn transitions are not always smooth but, CA considers even such apparent chaotic exchange of turns as organized. Considering turns in this light offers valuable information on how preschoolers make meaning. Therefore, this research incorporates the concept of turn in its analysis and uses it to pinpoint preschoolers’ actions in social interaction.

2.3.1 Sequential organization and turns (turn-taking)

As Markee (2000) argues, from a CA approach, talk-in-interaction is organized in sequences. The sequence used in talk-in-interaction is the means participants have to make their utterances comprehensible to others and reciprocally comprehend other's utterances (Seedhouse, 2004). In other words, when a participant makes meaning available (such as uttering a comment) this action is an invitation for others to engage or act on it and therefore becomes part of the context for others to engage. Thus, for CA, interaction is "context-shaped" as the engagement with others is shaped by what has already been made available. This turn (comment) is also 'context-renewing' as the engagement, by being made available, renews the context and changes what is happening (so modifying the context) (Heritage, 1997). So, when a participant interacts, she shapes what is expected from others and invites others to engage. Others can engage and do what is expected or not but the comprehension is based on this sequentiality. As Clift (2016) argues, this organization is how participants regulate their participation in interaction unit by unit.

Turns are the units used in interaction (as conceptualized in CA). As Seedhouse describes, turns are single social actions which can be made available in a variety of forms (word, gesture, sentence...) including non-verbal forms (Have, 1999). Turns are social and emic concepts, given that they are self-motivated actions, and not merely a linguistic concept (so cannot be delimited by linguistic norms) (Seedhouse, 2004). As Sacks (1974) argued, participants take turns to talk (turn-taking) thus by participating through turns participants coordinate and regulate their engagement in the talk (Clift, 2016). This organization is *done in the social* and by the participants. In sum for CA, interaction is co-constructed turn by turn though a sequence of actions that is organized by the participants' actions.

2.3.2 Sequential organization and turns in preschoolers' talk: example from this research

To illustrate sequential organization and turns an extract of an episode analyzed in this research is presented (figure 2.3).

1	Miguel: /kɔkɔreɪl/
2	Lluvia: /k/ /k/
3	Pier: /'kɔkɔdrɪ::/
4	Genaro: /'kɔ'kɔ'drɪ::/
5	Diana: /'kɔk.ə.drɪɪl/
6	Jan: /'kɔk.ə.drɪɪdl/

Figure 2.3) Preschoolers making available different pronunciations of 'crocodile'. Refer to episode 4.5.

The extract is an example of preschoolers engaging in an interaction in which there is exploration of the word 'crocodile'. The first that can be seen is that the preschoolers participate through speech. Each line refers to a turn, understood as a single social action of the preschooler. Although most of the preschoolers used a single word in their turn, Lluvia (turn 2) used an isolated sound /k/ repeated two times to participate "/k/ /k/". This shows that a turn can make different options available, in different forms, including just isolated sounds.

This short analysis also demonstrates that in turn 2, Lluvia engaged but her engagement was framed by Miguel's turn (turn 1). We can see how Lluvia's turn was shaped by Miguel's prior turn by noting that the isolated sounds Lluvia produces are the isolated beginning sounds of the word first made available by Miguel (in a task based on finding objects with the given letter sounds). Lluvia in making available the isolated sound highlighted the beginning sound of the word being explored thus showing signs of engagement with Miguel's previous turn.

In turns 3 to 6, the preschoolers engage in the interaction by saying the same word but with a different pronunciation. By using the conceptualization of sequentiality one can observe that each turn is influenced by the previous. In other words, this is not an example of young children's disorderly 'shouting out' of random words and sounds. The preschoolers are not just saying 'crocodile', each of their turns are influenced by the previous one, resulting in different pronunciation, while at the same time sustaining the word originally proffered by Miguel. This sequence points to an exploration of the pronunciation of the word. This demonstrates how the turn is a key unit of analysis that helps focus the analysis of the preschoolers' interaction through

looking at the sequence organization and thereby allowing us to disentangle what might seem chaotic at first but results in valuable information. In this research we use the conceptualization of turn and we follow the interaction as an organization sequence to unveil preschoolers' actions. Furthermore, concepts also used by CA are taken into account in the analysis such as 'repetition'.

2.3.3 Talk-in-interaction in tasks supported by digital technology

As argued previously, this research looks at preschoolers' talk-in-interaction in FL learning tasks supported by iPads and Beebots. Related literature has found talk-in-interaction relevant in these practices. Children as young as 5 year old are able to display thoughtful comments, task questioning; idea-sharing, and questioning skills focused on the completion of a task and not solely on a critique to the classmates as seen by Falloon and Khoo (2014) in a study of preschooler's dyads interactions with the iPad during numeracy, literacy, problem-solving and decision-making tasks in which an app recorded the screen and the talk of the preschoolers aiming to explore their talk. During talk-in-interaction preschoolers can engage in an orchestration of communicative repertoires that is created through the interaction and rapidly shared among the rest of the children, likewise, such orchestration of meaning-making offers new opportunities for participating and developing a sense of belonging (Daniels, 2017).

In relation to talk-in-interaction in practices supported by digital technology a study on how computer-supported tasks stimulated children's talk, two early studies are worth considering. The first one was interested in how talk was stimulated in computer-supported settings (Mercer, 1994) and, the second, was interested in the quality of talk of children engaged in a task and the role of the teacher to support the talk (Mercer, 1996). Mercer (1996) worked on a definition of the quality of talk types. He differentiated three different talk types, *exploratory*; *cumulative* and *disputational* talk. These types are defined as *exploratory* talk; when children engage critically but in a constructive attitude with others; *cumulative* talk; when children engage with others in a positive but not critical or constructive way and; *disputational* talk, when children disagree during decision-making (p.369). The basic differences are that while exploratory talk aids the preschoolers to achieve the task by discussing and sharing

ideas and aiming to arrive at an agreement, disputational talk is based on an individual agenda of a child or children that want to impose her idea. Cumulative talk is based on sharing and agreement but there is little critical engagement so the advances and gains in the learning are scarce (Mercer, 1994). These categorizations of talk are not used in this research although they serve to illustrate the quality of preschooler's talk. Mercer's early work supports our claim that preschoolers' talk is rich and complex and a potential source of language exploration.

In the same line and closely related to this research data, the relation to the type of apps and the quantity and quality of talk triggered by interactions around the use of such apps it was found that open-ended apps are more likely to trigger talk-in-interaction whereas close-ended apps more likely to trigger less. Hence, open-ended apps are suggested as more suitable as mediums to support talk-in-interaction (Falloon & Khoo, 2014; Kucirkova, Messer, Sheehy, et al., 2014). This research uses a book creator open-ended app in which the route to accomplish the task is marked by preschoolers' actions and not by the app designer thus the design of the study promotes natural occurring talk-in-interaction. And as Daniels (2017) states, such interactions expand preschoolers' communicative repertoires.

2.4 MULTIMODAL ETHNOGRAPHY

Multimodal ethnography combines Social semiotics and ethnography. From Social semiotics it pulls from its conceptualization of (motivated) signs, semiotic resources, modes and affordances (concepts discussed further in the Social semiotics section), all of which help conceptualize how meaning-making is articulated; whilst from Ethnography it pulls from its recognition of the situatedness of practices in a social and cultural context (Jewitt et al., 2016). Thus, it focuses on how meaning-making is articulated in a situated context. Flewitt (2011), one of the referent scholars in this approach, who studies very young learners' literacy practices supported by digital technology, argues that it is a more holistic and integrative framework in which the systematic framing of meaning-making is situated in daily practices acknowledging 'real world' contexts. It also draws from ethnography in the sense that the research explores the sociocultural phenomena from the point of view of the subjects of the study –made available through the day-to-day interactions of the student-teacher

relationship. From this position, the researcher-teacher is in ideal circumstances to interact with the study participants in their real-life environment.

Given that Social semiotics is going to be further explained, the implications of ethnomethodology in a multimodal framework are detailed here. Flewitt (2011), argues that the approach unveils “how micro-moments of multimodal meaning-making unfold in a complex network of socially-situated norms and practices” (p.297). Taking this approach allows this research to acknowledge the classroom social order and the co-regulation stance that are both enacted and co-constructed in the classroom and by doing so recognizing the effect, if any, in language exploration. Ethnomethodology places the emphasis in the natural occurring actions and their complex articulation through a comprehensive and holistic look (Dicks, Flewitt, Lancaster, & Pahl, 2011), carried out over time and *in situ*. Thus, interested in appreciating the school setting, the classroom, the working space, and the social relations, ethnography serves as a frame for better understanding which preschoolers’ actions occur. In this sense, the classroom can be understood as a ‘community’. According to Kress (2011), the role of ethnography is to focus on “what a community is and what is it about” (p.247); going on to say that in ethnography the analysis is not simply of frames but of ‘temporally integral processes’ as the researcher is part of the process in real time.

Ethnography also acknowledges the materiality in preschoolers’ school lives (Clark, 2011) by unveiling the role material has in learning contexts and as part of its communicative culture (Christensen, 2004). Thus, the rich and vast access to materials is recognized as well as its effects. In this research preschoolers’ orientation to displays, toys or the working space is rich and offers fruitful information on how it affects language exploration. In a preschool one cannot forget that “(y)oung children are engaged in everyday tasks such as meeting friends, having snacks, finding their pegs, playing on the bikes and listening to stories. It is a world of glue, toilet paper and sand” (Clark, 2010, p.12) and being aware of such materiality is needed to fully explore these preschoolers’ context (Op. Cit.). Applying a multimodal ethnographic view allows this research to acknowledge preschoolers’ orientation to

the toys, the working space and the resources in the classroom including the camera used to record the data.

2.4.1 Multimodal Ethnography: example from this research

To illustrate one of the various aspects in which multimodal ethnography is adopted by this research the materiality of the preschoolers' classroom is going to be presented in figure 2.4. In the image, it can be noted that the classroom is spacious, colorful and a vast array of materials are available. It is also visible that there are tables that afford a configuration of group seating of preschoolers rather than individual spacing. The working space, where the task project is realized, is, however, separated from the main area but part of it and easily accessible.

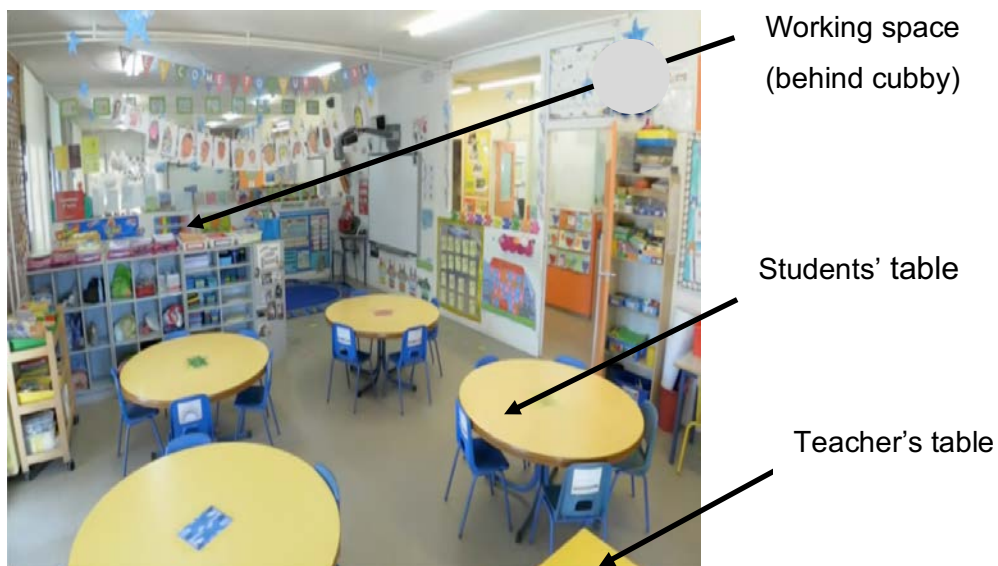


Figure 2.4): preschoolers' classroom.

In figure 2.5, the working space that preschoolers use for the task project is presented. As seen, this space is more private and has no chairs or tables in comparison to the rest of the classroom. The space is not as big but the group of 7 preschoolers fit comfortably. There are toys and a carpet in the working space. The space is usually reserved for small group work or as a play area.



Figure 2.5) preschoolers working space during the task-project

By acknowledging where and how preschoolers interact, one acknowledges the group and its characteristics. Thus, through the use of multimodal analysis, and from an ethnomethodology stance, it is made visible that the preschoolers orient to the toys, displays and other materials. It can be assumed that this is in part because they are readily available for them; in any case, it is clear that the context has an impact on their interaction. It is also visible that there are no chairs or tables so movement is not restricted. This is important data that will have an influence on preschoolers' movement around the working space during the task project. By acknowledging preschoolers' space, it is possible to acknowledge the classroom social order and the co-regulation stance that are both enacted and co-constructed by preschoolers such as the energetic movement around the space or the orientation to resources available in the working area.

2.5 SOCIAL SEMIOTICS MULTIMODALITY

Social Semiotics Multimodality provides for a compound framework that focuses on both the social aspect of meaning-making as well as the modes through which the meaning-making can occur. Social semiotics refers to the study of meaning and meaning-making; multimodality refers to the multiple modes of communication. Combined, the theory is referred as a Social Semiotic approach to Multimodality (Bezemer, Jewitt, Diamantopoulou, & Kress, 2012; Jewitt & Henriksen, 2016; Kress, 2004; Valero-Porras & Cassany, 2015). A key underlying principle to Social semiotics as a theory is that it is concerned with socially framed meaning-making and that meaning cannot be understood independently of its form (Kress, 2010). Or as Jewitt, et al. (2016) explain it, “A social semiotic theory of communication sees systems of meaning as fluid, contingent and changing in relation to context history and culture” (p.67).

Moreover, multimodality recognizes that communication is generated and conveyed through different, multiple modes and in an integrated and coherent way and not as the sum of separate parts (Bezemer & Kress, 2016). As Bezemer and Kress argue (2016) “In a social semiotic approach to multimodality, all modes, together with the non-material semiotic categories, are created as one integrated domain that constitutes the cultural/semiotic resources of a community” (p.16). In an acknowledgement of this multimodality of communication, Social semiotics focuses on meaning-making and the sign, as originated in the social action and interaction, and at the same time multimodality focuses on the multiple modes through which signs are realized.

Growing out of earlier theories of Semiotics, which is interested in meaning and signs, this theory places emphasis on the notion that meaning-making is situated in the social, beginning with the idea that the very origin of the sign is social and hence its production is thus created in the social (Andersen, Boeriis, Maagero, & Tonnessen, 2015). Such a stance not only recognizes the context in which meaning is made but the agency of the meaning-makers and the social and power relations present in communication (Jewitt, et al., 2016).

In this framework, the action of “making” is underscored: the ‘making’ of meaning (*meaning-making*), and the actor, (*meaning-maker*). Taken further this implies that signs are socially made (they do not appear out of a vacuum) and not merely used (Kress, 2010). Furthermore, by recognizing the agency of the meaning-maker it acknowledges that there are choices in the making (based on the interests of the sign-maker and in turn in the representation) and that these choices, in turn, are affected by the social order and by the enactment of the social order in which the meaning-maker is situated. Thus, the framework allows the analysis to account for the classroom social order and the collaborative social order as affecting or influencing the interaction and the co-construction. It is important to underscore that “the concept of the *sign maker* is used to refer both to the *producer* and to the *interpreter* of a sign” (Jewitt, et al., 2016, p.67).

The role of *interest* in meaning-making plays a relevant role and is made material in the *representation* although not always ‘recognizable’ to sign-(re)makers (we refer to sign-maker to the individual/s that ‘makes’ the sign and to sign-(re)maker to the individual/s that interprets the sign made by others). Representations are focused on the meaning-maker’s interest, which, according to Scollon and Scollon (2004) originates in the self (history, experience, place in time and history, context) and is then moved to the communicative intention. Representation is thus, a) what the meaning-maker wants to materialize; b) based on the interest of the sign-maker; or what engages her; c) shaped by the meaning-maker’s history and experiences; d) shaped by what the meaning-maker considers is important to focus on (Kress, 2010). In other words, a meaning-maker is moved by personal interests and communication interests. This combination of interests will focus the representation and guide the selection of resources that the sign-maker uses for making meaning. Hence, although the sign-maker is agentic, there exist constraints; limitations in her capability to choose the resources (availability) and design of the communication, including aptness to the environment; audience and interest to communicate.

We now look at the key definitions and units of analysis that are integral to a full understanding of the theories of Social semiotics multimodality and its application to this study.

2.5.1 Social Semiotics Multimodality: Key Concepts and application examples

2.5.2 Sign

The sign is the unit of analysis of Social semiotics multimodality. A sign is “a unit in which (...) a form has been chosen to be the carrier of meaning” (Kress, Jewitt, Ogborn, & Tsatsarelis, 2014 p.5). The sign-maker has the agency to choose a form (signifier) to represent the meaning (signified) she wants to communicate. For instance, in the following sequence of turns (an example from the extracts analyzed in this research), a preschooler suggests to another preschooler to use a ‘trophy’ to represent win. Thus, the preschooler had the agency to choose a ‘trophy’ (a cup) as a form (signifier) to represent ‘win’ as the meaning (signified). Thus, Diana asserts her agency to be a meaning-maker as seen in her suggestion to illustrate “*someone won*” by using a *trophy* that means *winning* (figure 2.6).

Diana: o una copa/ pondrás una copa porque alguien ha ganao *wan és ganar (or a cup/ you will put a cup because someone won *wan is win)
--

Genaro: win/ eso es win/ +++ wi::n: wi::n: (win/ that is win/ +++ wi::n: wi::n:)

Figure 2.6) Refer to episode 4.20

It must also be acknowledged that the representation of a sign “is *partial* in relation to the object or phenomenon represented” (Kress, 2010 p.71) thus, what is represented is what the sign-maker wants to communicate but not necessarily all there is to communicate. At the same time, if framed within a socioconstructivist perspective, the sign-maker has a certain ‘accountability’ to ensure that the sign is meaningful for others. This further underscores the importance of co-construction (negotiation) of meaning within the context.

The sign has three main characteristics (Bezemer & Kress, 2016) a) all signs are *motivated*, there is a motivation behind the meaning-maker’s choice of form (signifier) and meaning (signified) *connection* which is based on the *interest* of the sign-maker and the availability of resources (Kress, 2010); b) Signs are *shaped by the context* in which they take place, meaning-makers choose how to materialize the sign from a set of semiotic resources, modes, available in the environment (Bezemer & Kress, 2016); and c) Each mode offers, to the sign-maker, different potentials, *affordances*,

(Kress, 2010) which are different ways to materialize the meaning that have an effect on the meaning itself. For example, in figure 2.7, through body movement the preschooler can communicate that he just won, how energetic/rewarding the winning feeling is or that he is celebrating that he won; all of which would take rather a complex description in speech. However, he cannot communicate, through body movement, the time frame in which it happened.

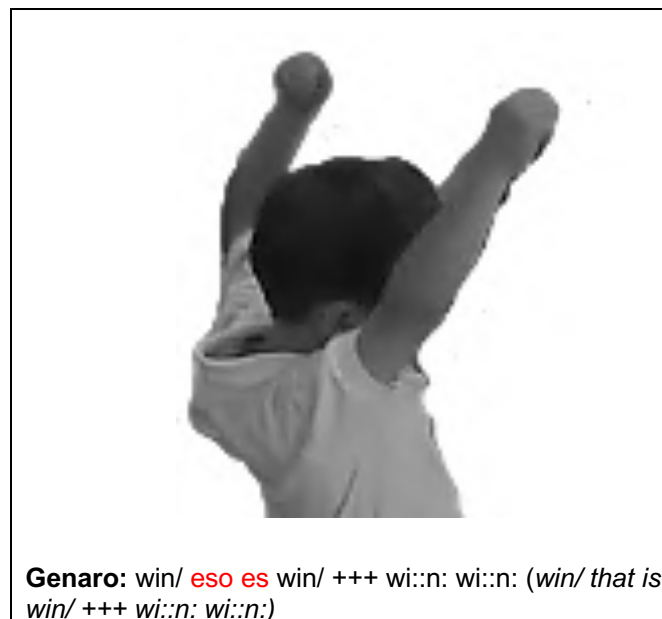


Figure 2.7) Refer to the episode 4.20

Signs are materialized through modes which can be embodied (gaze, gesture, posture...) or through something more tangible (drawing, writing, image...) (modes will be further explain in this section's subsection: 'modes'). Moreover, signs are produced and conveyed through various modes simultaneously, known as a *sign complex*. "The ensemble of signs as a whole makes meaning (...)" (Kress, 2010 p.58). If a sign is made through different modes, known as a *sign complex*, then each mode provides different nuances in order to portray what the sign-maker wants to represent. The example in 2.7, is a sign complex as the preschooler communicates the action of 'win(ing)' using speech and body movement. Both speech and body movement communicate different aspects of winning thus both modes communicate a more complex, more informative sign of 'win' than if just one mode is used. A *sign complex* is when various modes are used for one same sign (for example, 'win'). In this research analysis to refer to *sign complex* we use the term *multimodal sign* for clarity sake. On the other hand, it also has to be noted that interaction can, and is

often, multimodal. Individuals use various modes to communicate by orchestrating different modes to make meaning. For example, a parent taking the child to the school and telling the child to have fun (speech) and using a 'blowing kiss' gesture to say goodbye, the interaction is multimodal, but each mode is used for different signs. In this research analysis we use the term *multimodal turn* to refer to turns in which different modes are used to make meaning (although not the same sign).

The sign is thus a complex multilayered sign presented in a coherent whole. Individual (or reciprocal) choices regarding the ensemble of modes can be significant for research purposes. Martinec and Salway (2005) have referred to this selection as weighting of modes. In this 'weighting of modes' the choice includes deciding which modality is made predominant in the ensemble, or on the contrary, which modality is backgrounded. The weighting may also indicate the status of different modalities within the context, for instance, writing and illustration may have 'congruent' status in a high school text book on science but in a high school literary anthology text, the drawing mode would be complementary, rather than on equal status (Nikolajeva & Scott, 2000). In short, the predominance of mode selection for representation is not arbitrary nor random.

Finally, signs are "always newly made" in the sense that they are motivated by the interests, and resources, of the sign-maker (Kress, 2010); there are no two situations in which the same modes in the same context, motivated by the exact same interests, arise. This has been referred to elsewhere as 'resemiotization' (Iedema, 2003; Jewitt, et al., 2016).

In summary, signs are the *unit of analysis* of the Social semiotics multimodal approach. Signs are the merging of *meaning and form*; this merge is a *motivated* choice made by the sign-maker according to her *interests*, resources and context. Signs are always *newly made* as they attend to her interests and not merely to what is available.

In this section we have seen signs as the units of analysis of a Social semiotics approach. Signs are motivated and they are newly made in interaction by the

participant who has the agency to connect form (signifier) and meaning (signified) according to her needs and communicative interests. Signs are materialized through modes, that can be either embodied or material, which offer different affordances (possibilities/constraints). We will now provide examples of ways in which these theoretical understandings of meaning-making can be applied to a context of language learning.

2.5.3 Signs in education: example from this research

In figure 2.8, in an example extracted from the corpus of this research, the preschoolers, as principal sign-makers, use an ensemble of modes in which drawing and speech have co-equal status in order to convey their understanding of an ant. In the example preschoolers drew an ant and said (by recording their voice) the word 'ant'.



Child: /a/ /a/ /a/ /a:nt/

Figure 2.8) digital drawing and speech part of the illustration of /a/

This sign-making episode was carried out as part of the accomplishment of the collaborative task assigned by the teacher. During the task the children were following the “rules” established by the teacher. In this sense, the modes chosen attend to the task’s instruction; the modes that are to be foregrounded have been delineated, to a recognizable degree, by the teacher and the task to be completed. Preschoolers had the agency to not follow the instructions but in doing so (using the modes selected by the teacher), they are enacting the classroom social order. Specifically *drawing* was chosen as the most appropriate mode, by the teacher, with the idea in mind (motivation of task design) that the children could use their fine-

motor skills and later on, it could serve as a key for assessment. *Speech* was the mode co-selected by the teacher so preschoolers could present the object to her (identifying verbally the drawing and the beginning sound of the object drawn) so she could then assess whether the aim of the task was accomplished (for example, to check if the preschoolers draw an object beginning with the letter sound /a/).

In summary, the sign of 'ant' is made in two modes: speech and drawing. The child goes through a process of making meaning across various modes in the task.

2.5.4 Modes

We now return to the notion of 'mode' in order to look at it in more detail given that, as seen in the previous subsection, to explain signs modes need to be mentioned. Modes are semiotic resources that allow the materialization of signs, hence of meaning (Bezemer & Kress, 2016). As Diamantopoulou explains (2017) "The mode, as a cultural resource is anchored in the social domain and it refers to possibilities for representation beyond those of the senses" (p.88).

In order to be recognized as a *mode*, resources have to be recognized as a set, a set of resources, and such set needs to be recognized by a community. In other words "A mode is a *socially organized* set of semiotic resources for making meaning" (Jewitt, et al., 2016 p.71). As Bezemer and Kress (2016) argue, sign-makers are influenced by what other sign-makers, in similar communicative situations, do. Hence the semiotic work of a community is built and shaped during use; thereby creating a set of socially organized resources. For example, in a classroom raising the hand is usually understood as a turn request but in some contexts (school assembly) raising the hand can be understood as a silence request (if someone raises her hand the others in noticing it have to raise the hand and wait in silence), both silence or turn request are built and shaped in the community through its use.

Each mode offers different possibilities and constraints, *affordances*. The sign-maker uses various modes to make a sign that is as close to her needs as possible, while always trying to be aware of the "aptness of the available modes" (Jewitt, et al., 2016 p.71). By combining signs made in different modes, sign-makers can meet the

complex, often contradictory demands of their own *interest*, of the matter to be communicated and of the characteristics of the audience (Bezemer & Kress, 2010).

Each mode contributes to the rhetoric intention of the sign-maker. Modes, in ensemble, can be used to communicate the same (for example: the written word 'ant' and the drawing of an ant); to complement each other (the written sentence 'this is a minibeast' and the drawing of an ant) or to contradict each other (the written sentence "this is a fierce animal" and the drawing of an ant) all attending to the needs of the sign-maker. Hence, Social semiotics multimodality attends to the meaning-making and the multiple modes in which it is made.

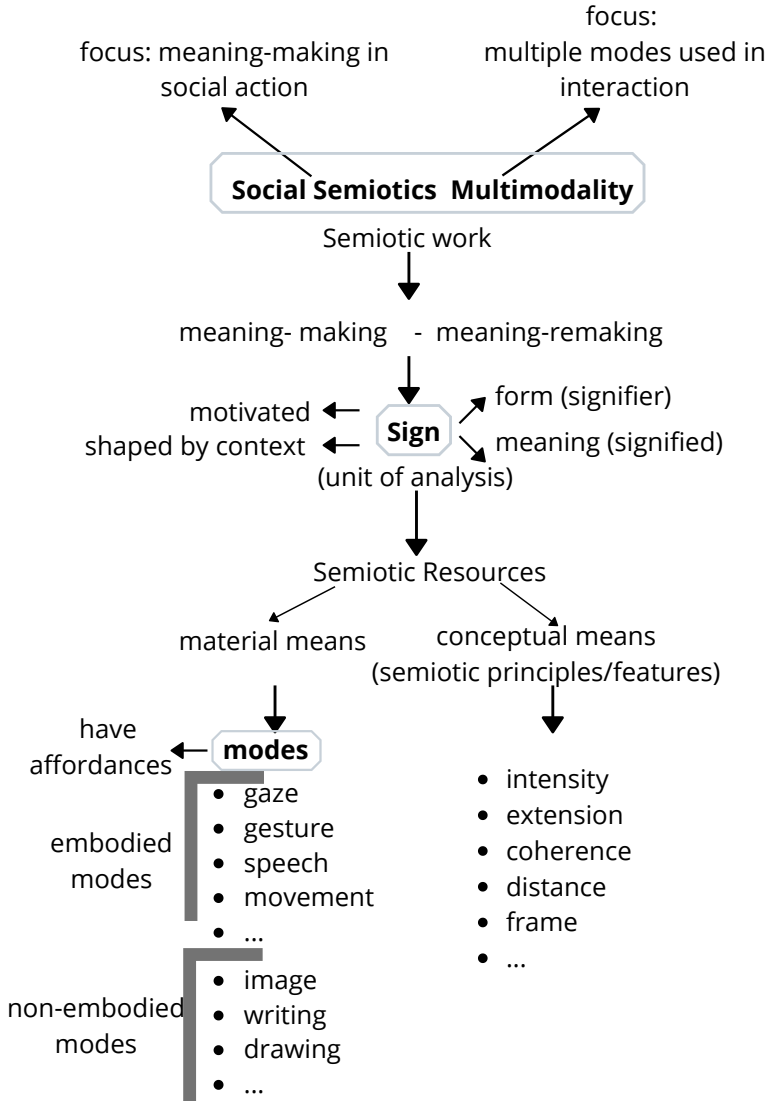


Figure 2.9) Social semiotics multimodality key concepts chart

2.5.5 Modes in Education: Examples from this research

To illustrate preschooler's use of modes in interaction and its relevance for this research and for educative contexts an example from the corpus of this analysis will be presented. Preschoolers have the agency to choose the mode in which they communicate. Thus, by adopting the stance of recognizing all modes in the analysis of interaction, in this case of language-related episodes, it is possible to identify relevant engagement. In figure 2.10, the preschooler uses the mode of gesture to communicate 'tiny'. Her engagement is solely based on her use of gesture, gaze and body orientation. Thus, by analyzing the modes in interaction, such as gesture, the engagement of a 'silent' preschooler is made visible. The preschooler is actively engaged in a discussion around the preciseness of the size of tiny in which some preschoolers engage through various modes including speech (refer to the extract 4.7).

This example, in parallel, illustrates that all modes have affordances, in the case of gesture a possible constraint is that if others are not looking at the sign-maker then it is lost in the making. A possibility on the other hand, is that it allows the individual to communicate with precision, as is the case in the example, with less effort than, for example, speech.



Figure 2.10) A preschooler communicating the size of tiny through gesture.

For a set of semiotic resources to be considered a mode, as explained earlier, such set has to be shared and known by the community. As seen in figure 2.11, the preschooler seen above (in figure 2.10) is not the only preschooler that uses

gestures. Thus, gestures are used in the community and understood by it. Through the examples it can also be seen that three preschoolers, in six different acts, use gesture to communicate 'tiny'. It is evident that the gesture is always different and it responds to the rhetoric intention of the child, in this case to show their understanding of the size of tiny (for questions of space refer to the extract 4.7 to see the full analysis).

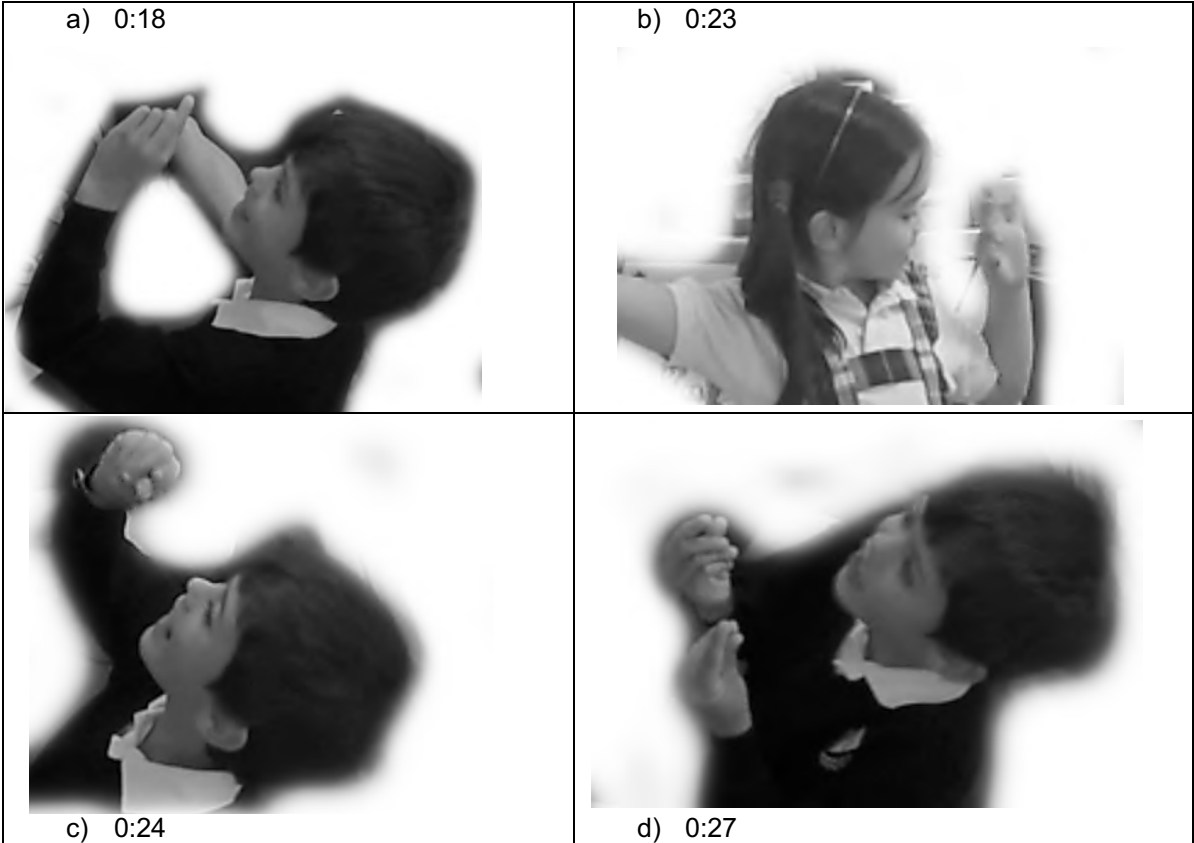


Figure 2.11) Preschoolers' communicating the size of 'tiny' at different moments.

In this section we have seen the Multimodal research frames that provide the background for this study, which is built from Multimodal Conversation Analysis, Multimodal Ethnomethodology and Social Semiotics Multimodality. Multimodal Conversation Analysis offers the frame to analyze the interaction as an organized sequence of social action in which each action is informed by previous actions helping to unveil co-construction and language exploration. Multimodal Ethnography offers the frame to recognize the situatedness of the interaction in a social and cultural context that is unique to the time and the participants under study. Social Semiotics Multimodality offers the frame to regard preschoolers' as meaning-makers

and to explore the semiotic resources they use, in the different modes, as agentic meaning-makers. In the following section Participation Framework will be discussed as the means to unveil preschoolers' orientation to others in interaction: a framework that is revisited during the analysis to adapt to preschoolers' interaction in autonomous and collaborative interactions.

2.6 PARTICIPATION FRAMEWORK

2.6.1 Goffman's Participation Framework in *Footing*

In 1979 Erving Goffman published *Footing* in *Semiotica* and later in 1981, the same paper as a chapter, in his book *Forms of Talk*. In *Footing* Goffman explained that a change in our footing is another way of talking about a change in our frame for events. This paper is largely concerned with pointing out that participants over the course of their speaking constantly change their footing, these changes being a persistent feature of natural talk (Goffman, 1981, p.128). By footing the author referred to the alignment of participants in an interaction. Goffman (1981) challenged the conceptions of *hearer* and *speaker* and the idea that interactions were dyads in which communication was "inaccessible" to non-members of the dyad. Goffman argued that being able to maintain the 'global folk categories' with terms such as 'hearer' and 'speaker', he could offer a frame for communication that included: additional participants and; non-participants; along with other-than-sound-elements such as: sight, touch, gaze and facial expression (pp.129-130). Hence, he proposed the breaking down of the notions of speaker and hearer into smaller coherent elements which could then be analyzed. This was the beginning of his Participation Framework.

Within Goffman's (1981) participation framework theory of communication, there is an 'official status' personified by 'ratified participants' (participants allowed to participate) and a non-official status personified by 'unratified participants'; this could be an 'eavesdropper', 'overhearer' or 'bystander' (pp.131-132). Furthermore, he proposed the idea of 'subordinated communication': 'byplay' (when ratified participants organized themselves in a smaller group), 'crossplay' (communication between some ratified participants and bystanders') and 'sideplay' (communication

among bystanders, usually whispering) (pp.133-134). In cases where the *subordinated communication* was brought into the main communication then 'collusion' in any of its forms (collusive byplay; collusive crossplay; collusive sideplay) could take place (p.134).

In relation to the speakers, Goffman (1981) recognized a 'production format' in which he described the 'speaker' as potentially playing three different functions; 'animator'; 'author' or 'principal', all simultaneously, two or just one of them at a time (p.145). The role in interaction that participants play can be considered as their 'participation status' while the relation of all the participants during the oral communication can be considered the 'participation framework' (p.137).

Moreover, in Goffman's framework for oral, communication analysis, it is acknowledged that the dual speaker-listener category is not sufficient for the analysis of interaction and that there is a need for a more detailed account. Thus, Goffman (1981) underscores the importance of gaze in the organization of turns, as well as body position and even touch (pp.129-130). However, in his theory of communication, speech was treated as a main mode (Duranti, 2004; Goodwin & Goodwin, 2006) placing more emphasis on the speaker, while the role of the "listener" was not as fully developed, leaving this role somewhat unattended (Levinson, 1988).

2.6.2 Critics to the Participation Framework

The work of Goffman put on the table the importance of the various roles that participants play in any interaction. However, the framework has been largely discussed and criticized placing it as a starting point for many other studies and theories to pull from.

As mentioned above, Goodwin and Goodwin (2006) criticized the framework as being focused principally on typologies of speakers, hence limiting the analysis to speech and speaker as the main focal points, leaving other roles as peripheral. For these authors the framework does not provide sufficient analytical coverage of the potential impact of other factors in the communication, including non-verbal actions.

In that sense, non-speaking participants are seen, almost by definition, as largely silent, whereas a comprehensive study of participation requires an analytic framework that includes not only the speaker and her talk, but also the forms of embodiment (including silence) and social organization through which multiple parties build the actions implicated in a strip of talk in concert with each other (Goodwin & Goodwin, 2006 p.23).

Goodwin and Goodwin's (2006) main critiques to Goffman's participation framework were that a) speakers and hearers are treated as completely different roles and that how they relate and recognize each other in interaction is overlooked, b) there are significant differences in the details given of the participant playing the role of speaker than that of the listener, positioning this latter at a marginal place; c) what is offered is a set of types not a unit of analysis hence the framework does not provide sufficient resources to analyze the organization of interaction; d) the framework puts speech at the centre and overlooks other modes, specially embodied modes (p.225).

2.6.3 Participation Framework revisited from a preschoolers' interaction perspective

In this research similar points as those discussed above can also be problematized when considering the interaction of young preschoolers. However, conceptually the framework provides some relevant tools for understanding the natural orchestration of interaction and the dynamic play of roles in interaction. Thus, it is proposed in this study to revisit the framework in order to adapt it to preschoolers' interaction and to help make visible the orchestration of meaning in very young learners' interaction, combined with the aforementioned Social semiotics multimodality approach (and the other supporting approaches).

In relation to the distinct quality of the "speaker", able to adopt the role of 'animator', 'author' and/or 'principal', and the "listener" as only able to adopt the role of 'listener', as a distinction that overlooks the role of the listener, Social semiotics does not make such distinction. As we have argued in the previous section Social semiotics multimodality considers all participants to be sign-makers. As Kress (2013) argues, communication is multimodal, implying that a) communication is triggered by a

prompt; b) communication takes place when there is an (any) interpretation of the prompt; c) communication is multimodal (Kress in De Saint-Georges & Weber, 2013). Given that communication relies on signs and meaning-making, that implies 'meaning-making' from both parties - the 'speaker' making signs and the 'listener' remaking the signs and interpreting them. Hence, both roles entail the making of meaning and are situated at the same level, given that both are active and agentive. Thus, in this research the terms 'listener' and 'speaker' are not used to refer to the participants; instead they are seen as meaning-makers or meaning-(re)makers. This is relevant, because it regards the preschoolers that do not engage with speech as agentive and active and at the same potential level as the others. Thus, it also places the focus on them and acknowledges they are participating although perhaps only through gaze and/or body orientation. In relation to participants as unrati ed, in this research this is not observed problematizing such view and opening a discussion.

In this section we have seen the Participation Framework. This framework offers insightful information to unveil preschoolers' organization and orientation to others in interaction although it poses some points that will be problematized and revised in the analysis, discussion and conclusion of this research. In the following chapter the research methods and methodologies applied to this research will be presented.

CHAPTER 3 – RESEARCH METHODS AND METHODOLOGY

In the previous section we have provided an overview of the research approach that mainly considered the theoretical underpinnings of our analysis. In this section the research methods and methodology employed in this study are now described in detail. First, the research aims of this study are presented. These are followed by an explanation of how this study is part of a larger action research from which only an action cycle is analyzed. Then data compilation and context are outlined in more detail by exposing the research context and the dual role of the teacher/researcher.

Next, the treatment of data analysis is defined, with a meticulous account of the five phases of analysis that include scanning data, selecting extracts, selecting language-related episodes, analyzing episodes and finally analyzing and discussing the cohort of 23 episodes. Widely used conceptualizations such as language-related episodes and language exploration triggers are explained for clarity and transparency purposes. Next transductions as the process and medium, used in this research, in which the audio-visual data is moved from its original format to a written and visual, institutionalized format, is described and explained. Finally, the transferability of this study is considered.

3.1 RESEARCH AIMS

This study is interested in preschoolers' use of iPads and Beebots in a formal educational setting of English as a Foreign Language (EFL) during autonomous and collaborative tasks. The task design aligns with preschoolers' developmental age needs: to interact with peers; to collaborate; to explore agency and autonomy and; to *explore language*. It aligns, as well, with the 21st century needs, to use *digital technology as a tool*. The research aims to make visible *language exploration triggers* that occur during preschoolers' peer interaction that consequently make evident *potentially transformative engagements*. Subsequently, positive uses of digital technology in the Early Years for foreign language learning are identified.

The research objectives are to:

- Identify, describe and analyze the **nature of preschoolers' peer interactions in language-related episodes** in preschooler's autonomous and collaborative EFL tasks supported by iPads and Beebots.
- Identify **language exploration triggers** in preschoolers autonomous and collaborative interactions in EFL tasks supported by iPads and Beebots.
- Identify, describe and analyze **potentially transformative engagements in preschoolers' peer interaction** in autonomous and collaborative EFL tasks supported by iPads and Beebots.

3.2 THE RESEARCH PROJECT

The first stage of this research was designed in 2015, inspired by a study that Lynch and Redpath (2014) carried out in an Australian primary school, with a preparatory year group (equivalent to preschool years; 4 to 5 year olds). Their study aimed to research the pedagogical intentions, practices and reflections regarding the use of iPads to support literacy learning. The research included various observations. One of the practices observed was a task designed by a teacher to create a digital alphabet book, using an iPad and an app, as a tool to produce an audiovisual book with the preparatory year group. The book was first outlined in paper. The preschoolers then learnt how to use different apps and with the teacher's support created the digital book.

Given the close relation to the research area and the age group target, the design of the task, creating a digital book of letters, Lynch and Redpath's (2014) pedagogical approach and project design observation was adapted as a starting point to design the task in this research project. At the time this study was initiated, the use of iPads in Early Years settings was just beginning to be explored more widely; in a large part due to its portability and capacity to engage students (Blackwell, Lauricella & Wartella, 2014; Falloon, 2014; Price, Jewitt & Crescendi, 2015; Flewitt, et al.; 2015 Kurcikova, Messer, Sheehy & Fernández, 2014; Nikolopoulo & Gialamas, 2015; Stephen & Plowman, 2014).

In this study, the task design included the creation of a digital book of letter sounds containing a given set of 24 letters: s; a; t; i; p; n; c; e; h; r; m; d; g; o; u; l; f; b; j; z; w; v; y and x (presented in this order). This selection of letters responds to the systematic phonics programme used in the school where this research takes place. The phonics approach introduces letter sounds instead of the letter names in alphabet order, so introducing 's' as /s/ (phoneme) and not as /ɛs/ (letter name). To simplify understanding, from now on *letter sound* is going to be used to refer to the letter presented by its sound (phoneme). The order of letter sounds presentation (not alphabetical) responds to the frequency of appearance in consonant-vowel-consonant (cvc) words given that when children are introduced to the letter sounds in parallel they are introduced to blending sounds (to join the sounds in a word, 'reading'). Children thus are introduced to letter sounds and to cvc words. The systematic approach focuses on introducing the letter sounds and on identifying the letter sounds in writing or oral production. For example, if a child knows the letter sounds /s/, /u/, /n/ she is also expected to be able, at some point, to identify the individual letter sounds in 'sun' and thus be able to read or write 'sun'. Hence, after identifying the letter sounds (e.g. relate grapheme 's' with phoneme /s/) part of the process is to work on the identification of beginning sounds in words (ending and middle sounds are also introduced but after the child is able to identify the beginning sound).

The instructions for the task design in this research indicated that the digital book the children created had to include 1) pictures, drawings or illustrations of objects, beginning with each of the 24 letter sounds, 2) a short recording of the (isolated) beginning sound and 3) the name of the object. For example, for /a/ children were expected to draw/illustrate an object beginning with /a/ like apple and then record "/a/ /a/ /a/ apple". The preschoolers were given an iPad and the app "My story" which was briefly introduced to them (the app is described in more detail below).

The teacher presented the app to the preschoolers during the first of the four sessions of the task project. The teacher used one iPad and created a digital book in the app with the group's name as a title (the app allows for several books to be created) and showed them how to add pages, record their voices in each page and

use the drawing tools. The teacher did not show the preschoolers how to use digital stickers (already made illustrations ready to insert in the digital book’s page) although the preschoolers found how to do it autonomously.

Once the task instructions had been delivered, the preschoolers worked autonomously without the aid of an adult. The learning objective was the correspondence of sounds and letters and the identification of beginning sounds in vocabulary in the target language (English). The final version of the digital book⁵ includes audio (children’s recordings), digital drawings and digital stickers. It was created by the students by themselves, using the iPad as both a tool and a presentation medium. In Figure 3.1 various examples are presented: a) and d) just using drawing tools; b) using drawing tools (for the letter sound) and digital stickers (for the object); c) using drawing tools and digital stickers (for the object).

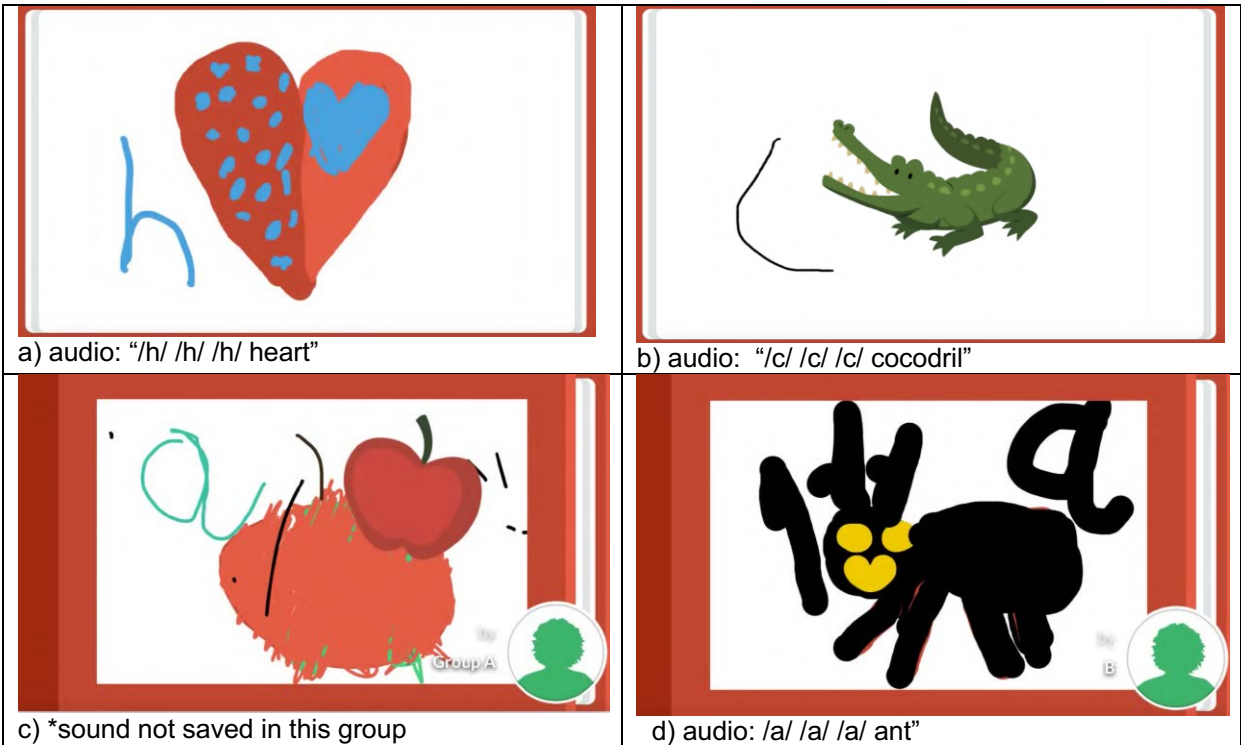


Figure 3.1 examples of the groups’ illustrations (c and d are the covers of the digital book)

The app was different to the one used by Lynch and Redpath (2014) due to availability. The app selected was “My story”⁶. This is a story-maker app similar to

⁵ The book of sounds’ illustrations of both groups are included in the annex
⁶ “My story” is now found as My Story bookmaker and is only available for iOs.

other apps previously used and discussed in studies of children's engagement with literacy apps and in children's use of iPad's literature (Kucirkova, Messer, Sheehy, & Fernández Panadero, 2014; Flewitt, et al., 2015). Its semblance to the apps in other research was one of the reasons for its selection as this helps provide replication of other studies. 'My Story' is an open-ended creative app that allows the user to create a digital book, which can include (digital) stickers found in a catalogue in the app, audio recordings, (uploaded by the user) photos, and features to draw on the screen including different colors, different coloring tools (pencils, paintbrushes, markers...) letters (text) and different background colors. Once completed, the book can be exported to a video format.

Because the study focuses on the use of technologies (plural) and not specifically on one particular tool and given the availability of Beebots to the teacher-researcher, and the increasing interest of robots in Early Years settings (Bartolini-Bussi & Baccaglioni-Frank, 2015; Howard, Miles, & Rees-Davies, 2012; Komis & Misirli, 2016; Misirli & Komis, 2014; Morgan & Siraj-Blatchford, 2013), the study was broadened to include the use of Beebots for language exploration during a second round of data collection.

Beebots are child-friendly robots, resembling a bee (see figure 3.2), that have 7 command keys: movement (forward, backward), turn (left, right), go, pause and clear (to eliminate all previous commands). The user has to press the commands and click "go" and the Beebot moves according to the commands. Thus the child-friendly robot requires some sort of 'programming' – which may range from very simple straightforward movement, to a series of turns and switches back and forth.

Beebots move a distance of 15 centimeters. They are often accompanied by a mat of 15cm x 15cm squares, which can be personalized (by customizing each square). The objective of these mats is to provide visual 'goals' so that users have to program the Beebot to go from goal to goal, or A to B. The customization of the mat allows the distance from A to B to be contextualized, for example asking preschoolers to go from a lake (square A) to the mountain (square B).



Figure 3.2) Beebot and Beebot's mat pictures extracted from TTS international

The Beebot's tasks presented to the preschoolers is based on the creative use of the Beebot. The instructions for the task project with the Beebots included 1) solve the challenge programming the Beebots, (it was not accepted to simply program the Beebot to move from A to B, the Beebot had to be programmed and used creatively to 'do' something) 2) use English to communicate. The two challenges given to the preschoolers were: a) a water spill that needed to be cleaned and; b) to create a train with 6 Beebots (all the 6 Beebots had to move chained to each other, as wagons, in the same direction). Preschoolers were introduced to the Beebots at the beginning of the year as part of their STEM curriculum so by the time the project took place they had experience in programming the Beebots.

In this study, the preschoolers worked in the same groups with the Beebots and iPads throughout the project. The project was initiated as an action research, further explained in the following sections, nonetheless this research only analyses the last cycle of action (what was outlined previously), both for Beebots and iPads.

3.2.1 Action research in this study

An action research is a method that involves action and often aims at a small-scale target. It is frequently implemented in context-specific groups and it aims at particular cases rather than implications or findings that can be generalized (Gonzalez-Acevedo, 2019). The method is adapted to each study and its aims but always implies cyclic steps: documentation, implementation and reflection (Cohen, Manion,

& Morrison, 2007). An action research is often employed in identified situations or contexts in which the overall aim is to offer a solution to a previously identified issue (Nussbaum, 2017; Pascual, 2017), in particular in educational settings. In this research, the identified situation was the use of iPads and Beebots for EFL learning in preschool settings; the *action research* served to identify effective ways to implement their use and enhance (language) learning outcomes while respecting the target-group age needs.

Thus, in this research the data collection analyzed is part of a wider action research. Prior to the analysis of the data collection an action research with two different foci was designed. The aim was to identify an effective and positive use of digital technology in the Early Years classroom to then *analyze the interaction in such practice*. In the action research one focus was centered on the use of the iPad to support EFL; another focus was the use of Beebots to support EFL. A third focus emerged from the own preschoolers' need to play with the iPads freely (choosing the apps of their preference and with no other goal than to use the iPad for play) a practice that was explicitly asked by the preschoolers' to the researcher: to have some "free" time with the iPad; this time was allocated to them and recorded.

For the iPad an action research design of three cycles was implemented (explained in more detail in a subsequent section) of which only the third cycle is analyzed in this research. For the Beebots two cycles were implemented (explained in more detail in a subsequent section) of which only the second cycle is analyzed in this research. The selected cycles respond to their relevance as they present the practices that were regarded as effective, positive and sensible for EFL learning, supported by digital technology. The Free-choice iPad use was recorded given preschooler's interests but is of no relevance in terms of language-related episodes and thus is not used in this research.

3.2.2 Action research: iPads

In the first cycle of the research data collection with iPads, the task was carried out in groups of 7 students, each preschooler with one iPad and with the support of the

teaching assistant. The teaching assistant was in charge of distributing the 24 letter sounds, making sure that as soon as a child finished illustrating one letter sound she could go to the next one. The teaching assistant made sure there were no repeated letters-sounds by distributing them among the preschoolers. After a first scanning of the recordings it was found that the students were using the teaching assistant's aid to solve all the digital and technological problems (for example: find the app, close the app, add/remove digital elements in the page...) and that the collaboration among them was limited as they were mainly working individually on their iPad and the help requested was directed to the teaching assistant, not to other peers. The app used was 'Doodle'; a free app for iOS (iPad) that allows the uploading and editing of pictures. In the first two action cycles the app used was 'Doodle' which is an open-ended creative app that allows drawing with different tools (markers, tampons, paintbrushes) and editing photos with such tools (coloring on the photo, adding shapes, writing on it...). This app was similar to the one used in Lynch and Redpath's research (2014) and it was chosen given the similarity. However, each digital page (composition) was saved as a single document requiring the teacher to create a document (power point) to create a digital book. Thus, in the last cycle the app was changed to 'My Story' as it allowed the creation of a digital book with multiple digital pages.

In a second cycle of data collection, the aid of the teaching assistant was suppressed, with the intention to increase the young learners' problem-solving skills. Due to the design of the task, the preschoolers worked autonomously, without the teacher's presence. In each session, the preschoolers were given a set of 6 letter sounds. The full set of 24 letter sounds was divided in four sets in four sessions as in table 3.1.

Session	Letters presented
1	s, a, t, i, p, n
2	c, e, h, r, m, d
3	g, o, u, l, f, b
4	j, z, w, v, y, x

Table 3.1 division of letters per session

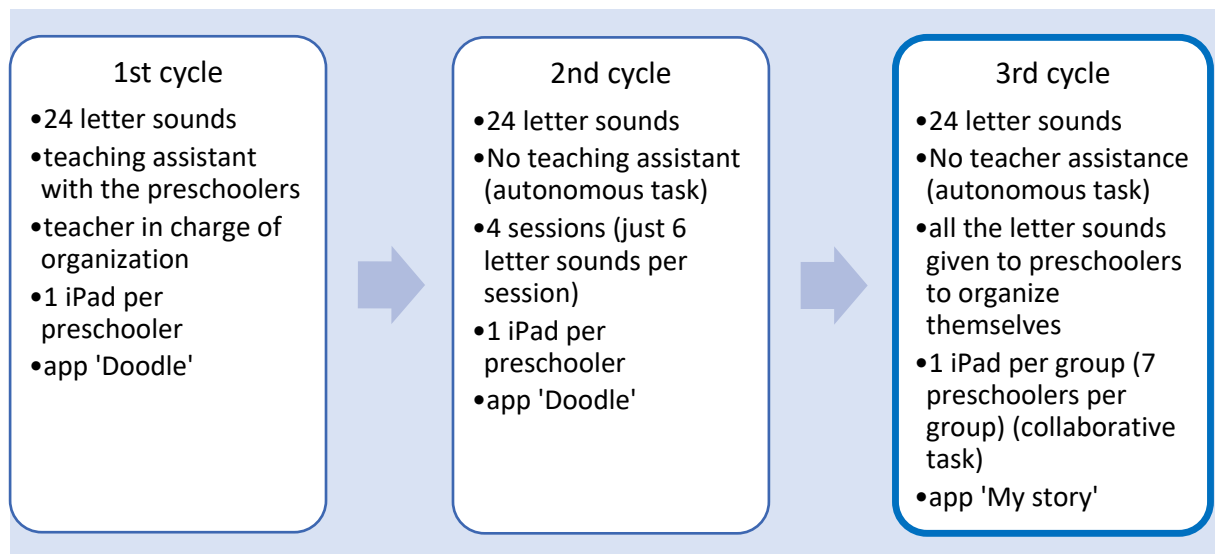
Hence in each session preschoolers' goal was to illustrate 6 letter sounds (one of the sets) and they were encouraged to organize themselves to be able to illustrate as a group all the letter sounds (so roughly one letter sound per preschooler). After a quick scanning of the recordings, it became evident that, once more, limited collaboration had taken place, as all the preschoolers were working individually with their iPads on the letter sound they were illustrating and often repeating the same letter sound as another preschooler. There was little evidence of the sense of group belonging and no major gains in a sense of membership, as the preschoolers were referring to their work as own and not as a group work. The same 'Doodle' app, as in the first cycle, was used in this cycle.

The first and the second cycle of this action research were not analyzed and are not included in this research. This decision was taken because a) the amount of data in the three cycles is too vast to cover in a single study; b) the study of all the cycles requires a comparative study which is not the aim of this study and c) the third cycle offers relevant and sufficient data for the research aims proposed here. The first two cycles were, however, scanned (a double focus visualization further explained in a subsequent section) although not fully analyzed. These cycles served to inform the task design based on the aspects that needed to be adjusted. The third cycle is the task design analyzed in this study.

In the third cycle, the same task was given, without the teacher's (or teaching assistant) aid (she was not present in the group work, the preschoolers worked autonomously) but with the major change of giving only 1 iPad per group. In this cycle the app previously used by the preschoolers was changed to the app 'My Story'⁷ The researcher, based on literature review, decided that 'My Story' was a more adequate app to promote literacy and interaction given that there was research focused on apps for preschoolers' literacy learning done with similar apps and given that it allowed to export the work as a video including all the digital pages created.

⁷ The researcher used a different app in the two previous cycles 'Doodle'.

The initial scanning showed evidence of collaboration and a sense of group belonging (collaborative social order) as well as evidence of *language exploration triggers*. At that point in time, neither language exploration triggers nor language-related episodes were yet identified (both to be explained in more detail in a subsequent section). However, the information pointed to a task design relevant to analyze.



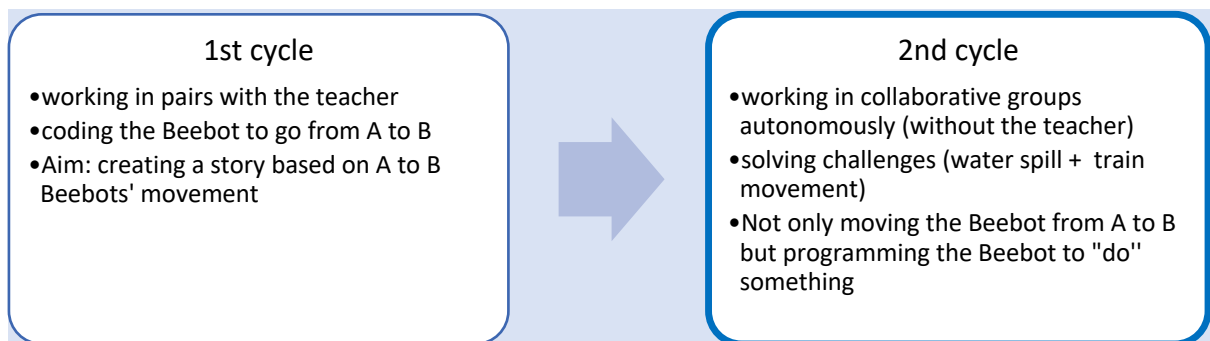
The data scanning served to identify moments in which the children were interacting and negotiating in relation to the target language. The preschoolers were given the 24 letter sounds (not divided in sets as in the second cycle) (s, a, t, i, p, n, c, e, h, r, m, d, g, o, u, l, f, b, j, z, w, v, y, x) to finish at their own pace although they were asked to do them in order (the teacher wrote the letters on a whiteboard in the order that can be seen above). Both groups needed four sessions to complete the task. During these sessions some complications emerged: the recording device ran out of battery, the children played with the camera, the angle of the recording was not useful. Thus, some data was discarded.

The total duration of the third cycle recordings is 8 hours. However, the complete set of recordings, of the three iPad cycles, is of 22 hours. Thus the 22 hours were scanned to define the scope of the analysis, although just 8 hours were analyzed in search of language-related episodes.

3.2.3 Action research: Beebots

During the first cycle of the Beebots' action research, the task designed was to use the robots to code a story. The students, with the teacher as a facilitator, had to work in pairs. One student had to tell a story, using the images on a mat, and the other had to code the Beebot according to the story. In a first scanning of the data it was found that the language production was rich, and that the negotiation of meaning was evident.

Thus, in a second stage the task was designed to find creative solutions to challenges given by the teacher and without the teacher present. The intention was that the learners carry out non-established uses of the robots, for instance not using them to go from A to B but to get the Beebots to 'do' something for the preschoolers. It is important to note that the two challenges the teacher gave the young learners did not have a set solution so the students could demonstrate their creative thinking. The first challenge was to program the six Beebots to imitate the movement of a train (in which each wagon is chained to the other and they all move in the same direction). The second challenge was to clean a water spill. The teacher spilled some water on the floor and asked the students to program the Beebot to clean it. In the data scanning it was found that there was target language use, social negotiation and technology learning. Moreover, it was also immediately evident that the interaction was not only very rich but also highly complex, thereby posing an analytical challenge.



Both action cycles were scanned and roughly analyzed before selecting the data to be included in this research. Although the first cycle offers rich and valuable

information the results with the iPad directed the focus to analyze preschoolers' peer interactions in *autonomous and collaborative tasks*. Thus the first cycle of the action research of the Beebots was discarded given that preschoolers' interacted with the teacher acting as a monitor and not in an autonomous and collaborative task. The second cycle, including 6 hours of recordings was analyzed and the language-related episodes are included in this research. However, the complete set of recordings, of the two cycles, is of 8 hours.

3.3 DATA COMPILATION

The data compiled consists of approximately 34 hours⁸ of video recordings of natural interaction (iPad, Beebots, free-choice). The videos were recorded using a wide-angle camera (brand GoPro), set up at a corner of the working space that the students used during the activity. The camera was turned on but no further operations such as switching angles or focus were operated by the researcher. This meant that the images and audio captured are of a wide angle of the corner of the working space and do not adapt to the interaction outside of that angle. The interaction, therefore, is not influenced by a third-party recording but by the recording device that at some point became personalized (Antoniadou, 2017). This is evidenced by the fact that the preschoolers are clearly aware where the camera is placed and that it is recording. In fact, at one point in the data collection, preschoolers are given explicit instructions to describe their creative process to the camera.

The groups were set up according to accessibility. 14 children had their parents' permission to be part of the study. The parents had been made fully aware of how the data were to be collected, the purpose underlying their recollection, how the data would be used and any limitations regarding the data collected (an example of the consent form is included in the annex). The consent form used was designed by the research group GREIP. The identity of the preschoolers is anonymized and any sensitive image or fragment that may identify the participants has been eliminated (Dooly, Moore, & Vallejo, 2017). The images of preschoolers have been edited to

⁸ Data compilation: Beebots total 8 hours (1st cycle 2hr, 2nd cycle 6hr); iPads total of 22 hours (1st cycle 6hr, 2nd cycle 8hr, 3rd cycle 8hr) Free-choice total 4hours (no cycles)

impede identification but without depersonalizing the participants. The 14 children were divided in two groups of mixed-gender students without any specific criteria for grouping. The children engaged in the designed activity in sessions of approximately 60 minutes.

From all the data collected, the selected tasks for analysis, for iPads and Beebots, were designed as an autonomous and collaborative group work, to be implemented without adult's guidance, (as explained in earlier sub-sections). In this design, groups of 7 students were given a task that was completed in separate sessions of 60 minutes. The data collection selected for analysis consists of 14 hours of recordings out of the 34 hours of compiled data.

3.3.1 Teacher researcher

In this study, the author adopts the dual role of 'teacher/researcher' (Alexakos, 2015). Within this dual role of teacher/researcher, there is an acknowledgement that this position allows her a deeper understanding of the context and learning situation under study, as the research is framed in a practice and context well known by the teacher/researcher.

As Alexakos (2015) claims, teacher's research, in her own classroom, cannot be discarded as too subjective, as this criticism might be consigned to any research method based on human interpretation. The key is to design a rigorous and systematic research (Alexakos, 2015). This research is rigorous in the collection and treatment of data and the analysis is systematic, as is explained in the data collection and analysis section. Being the teacher/researcher requires the researcher to explore the classroom social order present in the classroom, which is unavoidable (Zembylas, 2014) and this has been included in the analysis and discussion. In this sense, analyzing one's own practice requires distancing from teaching praxis and taking a stance as a researcher during the analysis and discussion. This has required the researcher to only focus on the information available in the data, recognizing and avoiding the use of non-contrasted or non-relevant information such as knowledge of the group class. To do so acknowledges the dialectical interplay between the researcher and the teacher, or the I and the other (Tobin, 2014).

3.3.2 Research context

The preschool in which the data collection takes place is a private multilingual school located in Catalonia, Spain. It offers 50 percent of the language of instruction in English, a foreign language in the context of the school; 25 percent of the total instruction in Catalan and 25 percent in Spanish, the latter two languages being the official languages in the school context and region. The students are in their last year of preschool and are between 5 to 6 years old.

The socio-economic situation of the preschoolers and families is a high-socio-economic status. The preschoolers' home language is either Catalan or Spanish, most of them using, in different degrees, both languages at home except two preschoolers who just used Spanish at home. Thus, most preschoolers had a bilingual home language setting, some with bilingual parents (both speaking Catalan and Spanish) and some with parents using different languages at home (one using Catalan while the other using Spanish). Given the young age of the students no special needs cases were recognized at the moment of the intervention but cannot be discarded as being diagnosed later on after the compilation of the data.

3.3.3 Language-related episodes

As discussed previously, part of the data treatment process has been to identify and select relevant episodes in the study which can help lead to the aims of this research. The data set, of 14 hours, is an unmanageable amount of data; moreover, while the data compiled is recognizably rich at the same time is not all of them relevant to advance in the proposed questions. Thus, the widely used construct of 'language-related episode' is borrowed to aid in the identification and selection of episodes to analyze. A language-related episode is "any part of a dialogue where the students talk about the language they are producing, question their language use, or correct themselves or others" (Swain & Lapkin, 1998 p.326). In this research this definition has been adapted to cover episodes in which preschoolers were seen negotiating or exploring the target language by means of talking about language, questioning their or other's language use, correcting themselves or others, using the target language, orienting to the task's language requirements, producing and/or sharing ideas or suggestions in or about the target language.

This conceptualization of episode was used to select the episodes relevant to untangling, teasing out or tracing language exploration. Language-related episodes are described as instances of language meta-awareness in which participants pay attention to form, function and meaning as well as issues that arise in interaction or self or other correction of language features (Swain & Lapkin, 2001). Swain (2006) argues that language-related episodes are examples of 'languaging' which she defines as using the language to reflect about language which is in itself learning. In this research, to talk about meta-awareness or learning is complex. As explained earlier, learning is not immediately visible from observation (the actual process versus learnt outcomes) and meta-awareness at such young ages is complex and challenging to demonstrate. Thus, in this research the episodes serve to identify *potentially transformative engagement* which point to interaction that can be considered as a potential generator of learning. By the same token, rather than claiming to pinpoint language learning, this study looks at the identification of language-related episodes to unveil *language exploration*.

Research using language-related episodes usually focuses on specific language features to observe. For example, in research with adults learning a foreign language the focus ranges from lexical (García Mayo & Zeitler, 2016), form (Fernandez Dobao, 2014), form from a playful and non-playful stance (Bell, 2012), lexical and morphosyntactic (Williams, 1999), lexical, form and discourse (Swain & Lapkin, 2002) and in a study in which language learning is supported by augmented reality, form, function and meaning (Sydorenko, Hellermann, Thorne, & Howe, 2019). However, De la Colina and García Mayo (2007) found that the linguistic focus of participants is affected by the task design and Bell (2012) found that despite the teacher's intended focus in an activity, participants can attend to different language focus even those not planned by the teacher. In this research, there is no predetermined linguistic focus as the analysis aims to unveil what happens in preschoolers' peer interaction hence, being open to any *language-related* feature and/or aspect explored or any action taken during the interaction.

3.3.4 Language exploration triggers

One of the aims of this research is to unveil the nature of preschoolers' interaction in EFL tasks. Given that the aim of this research is to make preschoolers foreign language exploration visible it is relevant not only to describe the exploration but to pay attention to how such exploration is generated. A 'language exploration trigger' is understood in this research as the point where a stimulus generates a discussion related to language. The stimuli can be material or non-material, for example the environment, elements or artefacts in it or, participants' speech or acts. The exploration discussion is understood in the broad sense, as explained earlier, as talking about the language whether, agreeing, disagreeing, questioning, constructing or adding to others' ideas. Language exploration triggers usually involve more than one participant, although participants can explore language individually and make it available through self-talk.

Although the conceptualization of 'language exploration triggers' have not been found in related studies as a concept or analysis unit *per se* it has been found that the term 'trigger' is usually used to refer to 'something that generates something else' in its broad semantic meaning (Davitti & Pasquandrea, 2017; Egbert, 2004; Mercer & Howe, 2012; Shiro, Migdalek, & Rosemberg, 2019). Given that 'language exploration trigger' is widely used in this research it is germane to define it as it is used in this study for the sake of clarity. Firstly, it builds on the notion of language-related episode. Fernández Dobao (2014) delimited the extent of 'language-related episode' to the following: an episode's beginning is when a language issue is raised in the interaction and it finishes when such issue is either resolved or skipped by the participants. This may be done by changing the topic of the conversation or by the termination of such (Fernández Dobao, 2014). Adapting these parameters, in this research, the selection of language-related episodes is delimited by the appearance of a language issue, discussion or presentation in the interaction and by its closure or disappearance. Thus, by selecting the language-related episode one is identifying the trigger *per se*. It is considered that paying attention to the trigger of the language-related episode is equally relevant as identifying the language-related episode as it offers useful information to EFL pedagogy by making visible what or how language exploration is triggered in preschoolers' interaction.

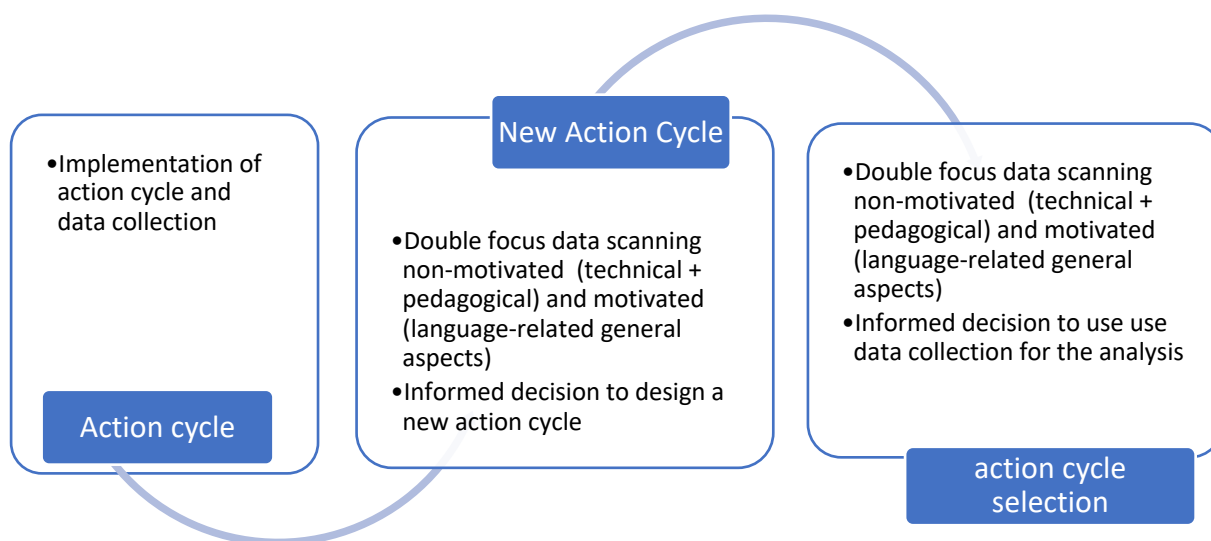
3.4 DATA ANALYSIS

The data corpora of the study consist of 14 hours of video recordings of preschoolers' interaction during the previously described tasks; from these a total of 23 episodes are presented here. The methodology employed is a micro-analysis of **modes in interaction** including a focus on gaze, movement, vocalization (speech and vocal sounds), gesture, body posture, position in space, and movement (actions). These were first identified through a detailed, 2-second x 2-second span, in which each mode is analyzed in isolation. The most salient modes are then included in what are called *transductions*. This notion, taken from physical science, refers to the act of transducing. To transduce is understood here as the act of converting one process such as interaction into another mode, such as a written mode. In this case, however, the term is used to refer to the act of converting or describing in great detail the modalities entailed in the interactions into a static form (written script). The transductions are discussed in greater detail further on.

3.4.1 Process of data analysis: 1st phase scanning

The data compiled in each cycle, for Beebots and iPads, were recorded and scanned. The scanning consisted on a double focus visualization: a non-motivated visualization to identify aspects that needed modification whether technical (camera angle, audio, battery duration) or pedagogical (orientation to the task, orientation to collaboration, language exploration) and; a motivated visualization focused on language-related aspects that included taking notes of relevant aspects (for example: not much English use) which were very general at that stage. In this motivated visualization there were no expectations nor a defined target, solely the focus to annotate aspects relevant to language exploration. Following this double focused scanning of data, the next step involved making adaptations to the research design, based on technical issues and/or pedagogical questions before the implementation of the subsequent data compilation cycle (explained in earlier sub-sections).

This double non-motivated and motivated visualization, after each cycle, allowed for decisions to be taken regarding the relevance of the data and guided the researcher in the decision of implementing a new cycle of action.



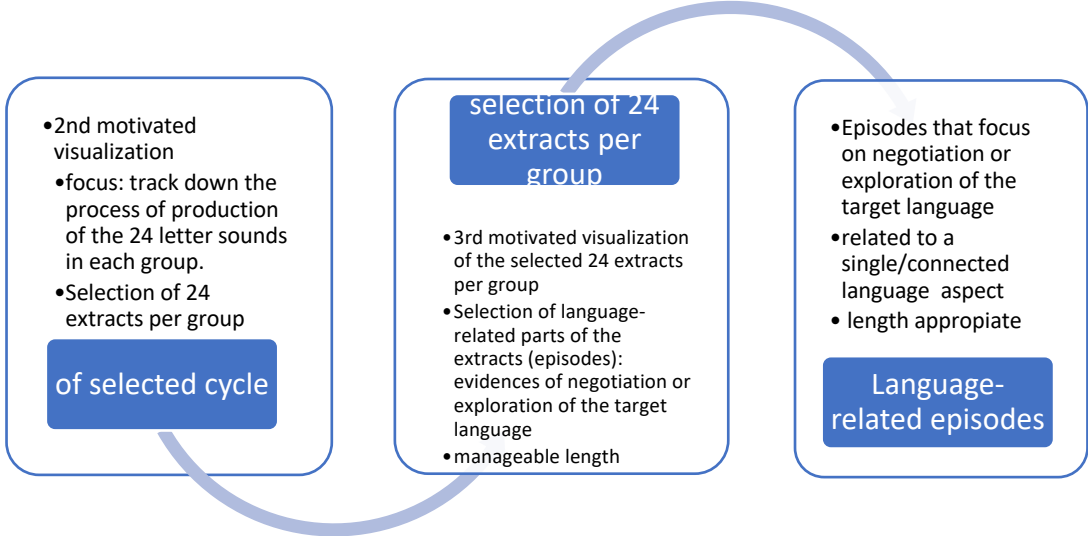
This scanning process led to three cycles of action for iPads (a total of 22 hours of recording) and two cycles for Beebots (a total of 8 hours of recordings). Of these cycles, the second scanning led to the selection of the cycles for the action research, which proved to be of most interest to the overall study (3rd cycle for iPads and 2nd cycle for Beebots). The culling of data for final, in-depth analysis was also important to ensure a set of appropriate and manageable data for this study although the rest of the data were not discarded and there are plans for returning to the data for other studies in the future.

3.4.2 Process of data analysis: 2nd phase selection of extracts

Once the action cycle was selected for analysis, through a double focused scanning of the data, a second motivated and detailed focused visualization of the selected collection of recordings was undertaken. The motivated data visualization led to a selection of relevant extracts to be further analyzed. Relevancy for selection consisted first in tracking down the letters included in the final product; the digital book of letters. Once identified, the interactions related to the final product were divided into different moments in the process of production of each letter sound. This led to extracts of the process of production of each of the 24 letters per group. These extracts were then visualized for a third time, again with a motivated focus, to select the *language-related episodes* which are regarded in this research as any part of a dialogue in which preschoolers were seen negotiating or exploring the target

language by means of talking about language, questioning their or other’s language use, correcting themselves or others, using the target language, orienting to the task’s language requirements, producing and/or sharing ideas or suggestions in or about the target language (based on Swain & Lapkin, 1998 p. 326).

The selection of language-related episodes was based on a) *language-related interactions*: episodes in which preschoolers were seen negotiating or exploring the target language by means of talking about language, questioning their or other’s language use, correcting themselves or others, using the target language, orienting to the task’s language requirements, producing and/or sharing ideas or suggestions in or about the target language (based on Swain & Lapkin, 1998). This selection was then organized and delimited by a) ‘*single language aspect focus*⁹’: episodes were divided into language-related episodes in which the preschoolers’ were negotiating or exploring a single or connected language aspect (for example in an extract in which preschoolers negotiated first about pronunciation and then about letter formation the extract was divided into two episodes unless they were connected) (from each extract one or more episodes emerged); b) *manageable length*: a maximum length of 3 minutes per episode (in some cases episodes are divided in two). Some of these extracts were discarded for analysis for diverse reasons (technical mostly), but the number of these is not significant. All the episodes relating to language exploration are included except those in which the recording quality does not allow the analysis.



⁹ In selecting language-related episodes Fernandez Dobao (2014) limited the episodes to a single language problem, they considered a language-related episode began when the issue arise and that it was finished when the issue was solved or the topic was changed or dismissed.

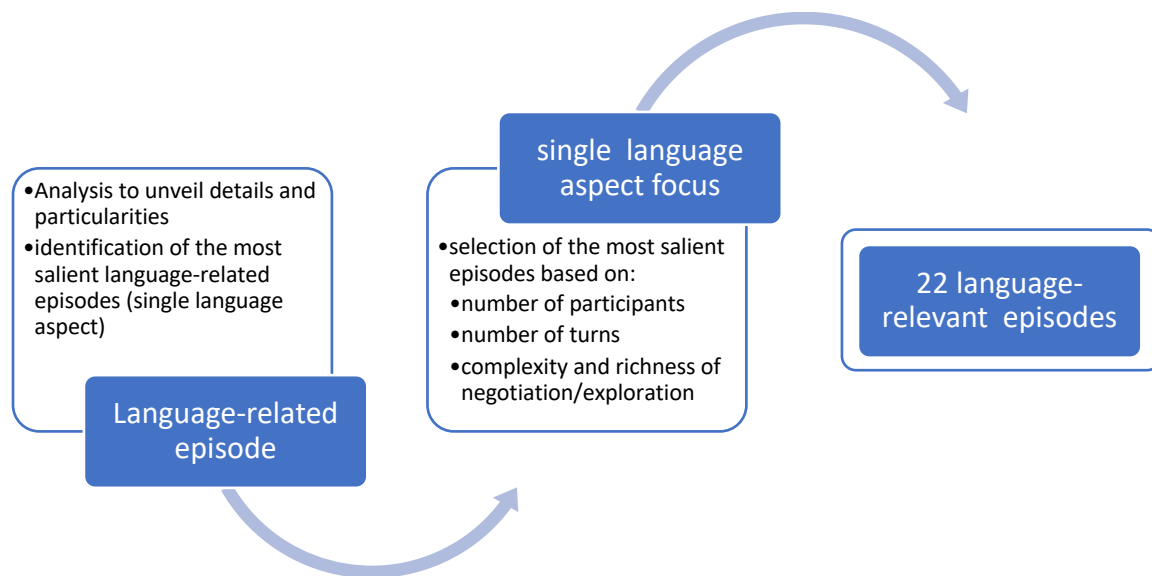
3.4.3 Process of data analysis: 3rd phase, selection of language-related episodes

Each language-related episode was examined again aiming to unveil details and particularities. Comments were annotated in relation to the language features, aspects or actions explored and salient modes and the relations between modes were annotated, as can be seen in the example below which is a digitalization of the handwritten comments in field notes.

Extract: Group A (3 rd cycle iPads) June 2	
Video: 25732	
Letter sound: /n/ 'net'	
Single episodes: 2	
Single language aspect focus 1	9:27-9:32. /n/ /n/ net puedo hacer una net, net es una red (<i>I can do a net, net is a red</i>) *Vocabulary + plurilingualism * Just Pier and Jan interacting – all the group sitting down. * salient gaze and use of body torque by Pier. * Pier uses body orientation to interact (check!)
Single language aspect focus 2	12:14-12:20 La /n/ no la /c/ (<i>the /n/ not the /c/</i>) *Letter formation * orientation to the iPad *Interaction based on speech and gaze oriented to the iPad * Maia disagrees and group agrees with Maia

Figure 3.4) Transcription of hand-written comments on an episode and the language-related identification.

From the collection of all the language-related episodes the most salient were selected according to the information visible in it (number of participants, number of turns, complexity and richness of the negotiation and exploration; use of various modes) and using the annotations and new visualizations to make informed decisions to select the extracts. The selection was a total of 22 language-related episodes. One extra episode was added as it was considered necessary given that one of the extracts pointed to the personalization of the recording camera, the researcher decided to scan a fragment of 15 minutes in search of *all* the turns related to the personification of the camera in the fragment. The extract was thus included and analyzed although it was not part of the initial selected language-related extracts.



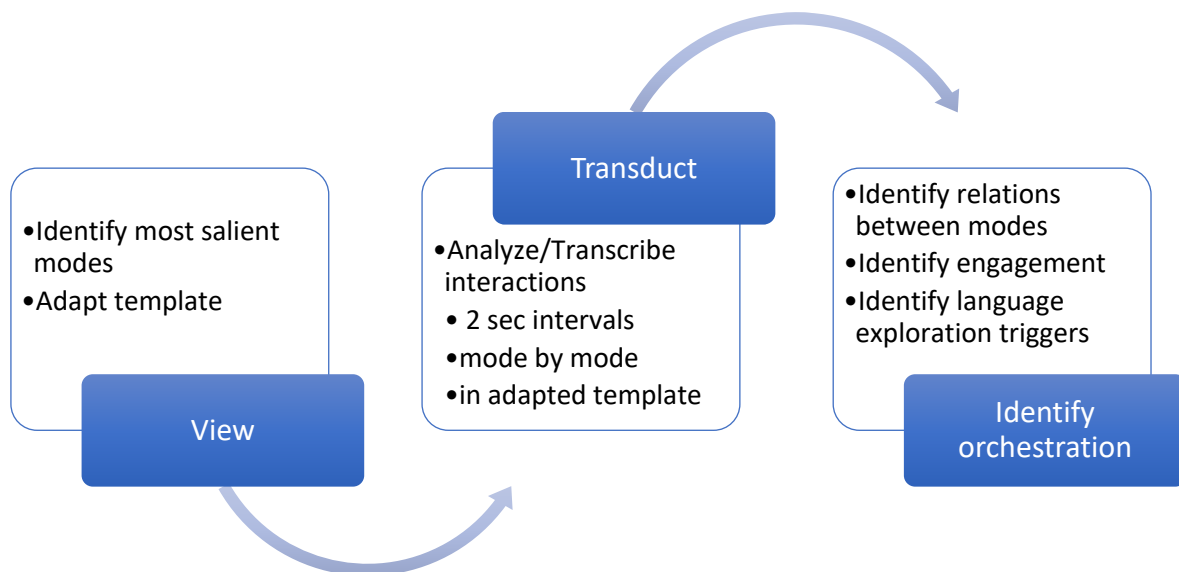
3.4.4 Process of data analysis: 4th phase, analysis of language-related episodes

From the selected 22 language-related episodes some episodes were analyzed with the free analysis software *Elan*. Given the amount of information for each extract, *Elan* proved to be a suitable software for analyzing different modes and different participants however the layout of the detailed information was complex and made the analysis even more challenging to examine. Consequently, an Excel document was used for the analysis and the use of *Elan* discarded.

After analyzing a limited set of extracts with minute detail the researcher set up a series of steps for the process of analysis, followed by the creation of a template for transduction (with Excel) which was then used as a master for all the analysis although adapted specifically for each language-related episode. All of these preliminary processes that led to the transductions became both the process of analysis and the analysis itself (explained in detail in the subsection 'transduction').

Thus, using the Excel template the language-related episodes were analyzed by modes. This entailed analyzing each mode in isolation and transcribing the modes in relevant fragments of time. Once all the relevant modes were analyzed in isolation the result was a *transduction* (to be further explained in a subsequent section) specifically designed, using the Excel template, for each extract according to its nature (the most salient mode). Then the relations between modes was analyzed

within a frame of 'orchestration of modes', using the video recording to contrast relevant information.



The process consisted of viewing the extract; identifying the most salient mode; adapting the analysis template to highlight the most relevant modes; analyzing and transducting (transcribing various modes) each preschooler's interaction by modes in fragments of 2 seconds x 2 seconds (this was done mode by mode in isolation); analyzing the orchestration of modes with the template and finding relevant aspects and relations between modes, engagement and language exploration triggers. The modes in interaction analyzed are gaze, gesture, vocalization (speech and vocal sounds), movement and position in space.

3.4.5 Process of data analysis: 5th phase, analysis and discussion of the collection of language-related episodes

Once all the extracts and transductions were finished, they were all analyzed as a cohort to make visible the patterns and relations, if any. The findings pointed to some interesting features which were then organized in categories. This led to a final examination to find all the relevant patterns observed in the collection of language-related episodes. This analysis of the data as a cohort allowed a possible conceptualization of the nature of preschoolers' interaction; language exploration triggers and the potentially transformative language exploration engagement.

In sum, the data have been collected from 3 cycles of action for iPads and 2 cycles of actions for Beebots. The process of data analysis had five different phases that ranged from more general treatment to a micro treatment of the data. Throughout the process, the most salient language-related episodes were selected and visualized various times.



3.5 TRANSDUCTION

Usually in social research transcriptions are used for data treatment and analysis. Regularly, transcriptions have been regarded as turning talk into writing for its analysis (Bezemer & Mavers, 2011). As Lapadat (2000) argues “(i)n the early days of developing the Tape-Transcribe-Code-Interpret (TTCI) process for gathering and interpreting qualitative data (Lapadat and Lindsay 1999), transcription simply was not an issue” (Lapadat, 2000 p.207). This unconcern rested in the assumption that transcription is transparent, and furthermore, that the language it records is also

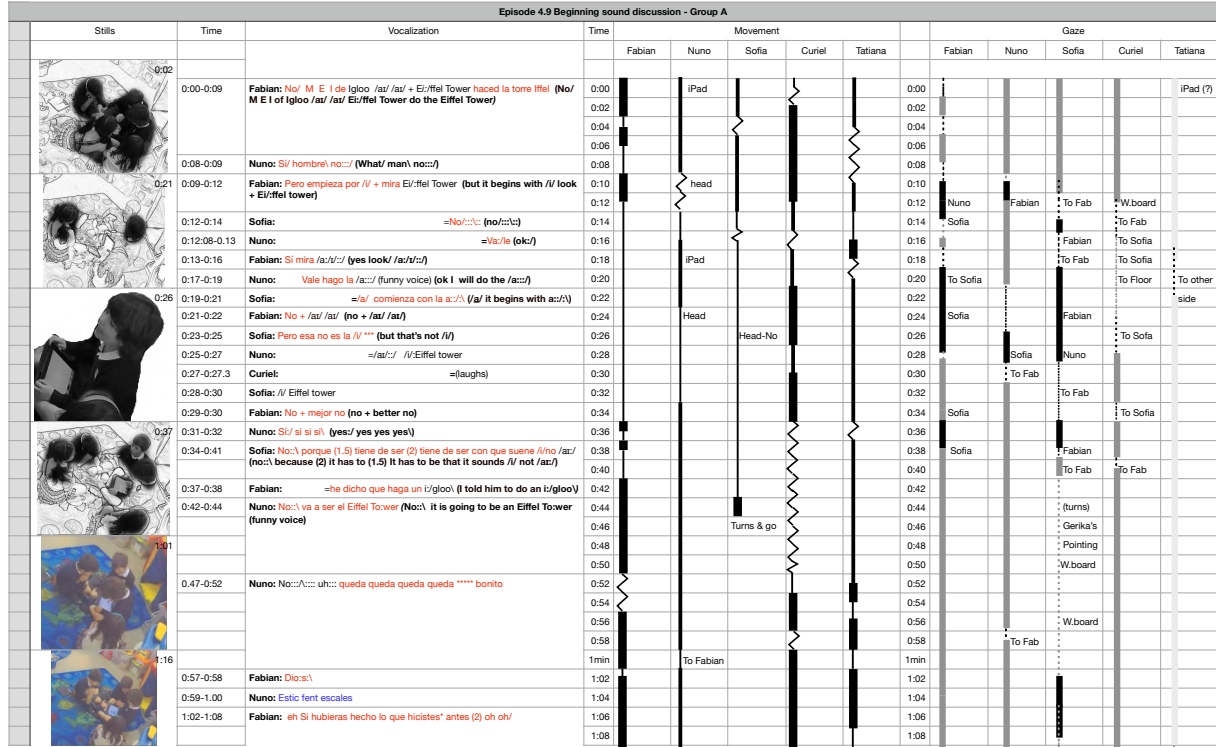
transparent. In other words, the verbatim transcript is a one-to-one match with the spoken words and the spoken words are the sum of the observable event. (Lapadat, 2000).

However, the data collected in this research is highly complex given that the aim is to present in a paper format all the relevant modes. Thus, the transcription as a tool to turn speech into writing (and to include stills of the relevant actions if the transcription is multimodal) is not sufficient for this research as it was needed not only to identify the most salient or loaded modes but to further decide how to *turn* them to a paper format. For instance, it was necessary to decide how to include movement, written description or multiple stills, and how to organize and include *all* the loaded modes. For example, in figure 3.4, movement is represented with shapes and dotted lines that change their position in the table. Thus, in this research *transductions* are used (Bezemer & Mavers, 2011). A *transduction* “(...) names the process of moving meaning-material from one mode to another” (Kress, 2010 p.125). There are no conventions for multimodal transductions (Mondada, 2007) and the simple act of transducing an event of a few seconds is in itself an act of meaning-making (Cowan, 2014a).




Thus, considering that all modes are given equal importance in multimodality and that Social semiotics analyses signs and sign-making, this study analyses the signs and sign-making made by students in all modes (Bezemer et al., 2012; Kress et al., 2014) (refer to Social semiotics). There is complexity in displaying all of the different simultaneous uses of multiple modalities in preschooler’s meaning-making in a micro analytical frame in a single medium. Given that the institutional medium for this report is paper, the recorded interaction presented has been transduced to fit a template that can demonstrate and describe simultaneous multiple modality use in order to analyze the orchestration of the modalities during the interaction and to identify, describe and analyze the nature of preschoolers’ peer interactions and the potentially transformative engagements in said interaction.

3.5.1 Transduction in this research

To present an example, figure 3.3 illustrates the transduction of a fragment of the recordings analyzed in this research project.



a) Miniature of the transduction

Episode 4.9 Beginn		
Stills	Time	Vocalization
	0:00-0:09	Fabian: No/ M E I de Igloo /a:/ /a:/ + Ei:/ffel Tower haced la torre lffel (No/ M E I of Igloo /a:/ /a:/ Ei:/ffel Tower do the Eiffel Tower)
	0:08-0:09	Nuno: Sí/ hombre\ no:::/ (What/ man\ no:::/)
	0:09-0:12	Fabian: Pero empieza por /i/ + mira Ei:/ffel Tower (but it begins with /i/ look + Ei:/ffel tower)
	0:12-0:14	Sofia: =No:::/: (no:::/:)
	0:12:08-0:13	Nuno: =Va:/e (ok:/)
	0:13-0:16	Fabian: Sí mira /a:/::/ (yes look/ /a:/::/)
	0:17-0:19	Nuno: Vale hago la /a:::/ (funny voice) (ok I will do the /a:::/)
	0:19-0:21	Sofia: =/a/ comienza con la a:::/\ (/a/ it begins with a:::/\)
	0:21-0:22	Fabian: No + /a:/ /a:/ (no + /a:/ /a:/)
	0:23-0:25	Sofia: Pero esa no es la /i/ *** (but that's not /i/)
	0:25-0:27	Nuno: =/a:/::/ /i:/Eiffel tower
	0:27-0:27.3	Curiel: =(laughs)
	0:28-0:30	Sofia: /i/ Eiffel tower
	0:29-0:30	Fabian: No + mejor no (no + better no)
	0:31-0:32	Nuno: Sí:/ si si sí\ (yes:/ yes yes yes\)
	0:34-0:41	Sofia: No::/\ porque (1.5) tiene de ser (2) tiene de ser con que suene /i/no /a:/ (no::/\ because (2) it has to (1.5) it has to be that it sounds /i/ not /a:/)
	0:37-0:38	Fabian: =he dicho que haga un i:/gloo\ (I told him to do an i:/gloo\)
	0:42-0:44	Nuno: No::/\ va a ser el Eiffel To:wer (No::/\ it is going to be an Eiffel To:wer (funny voice)

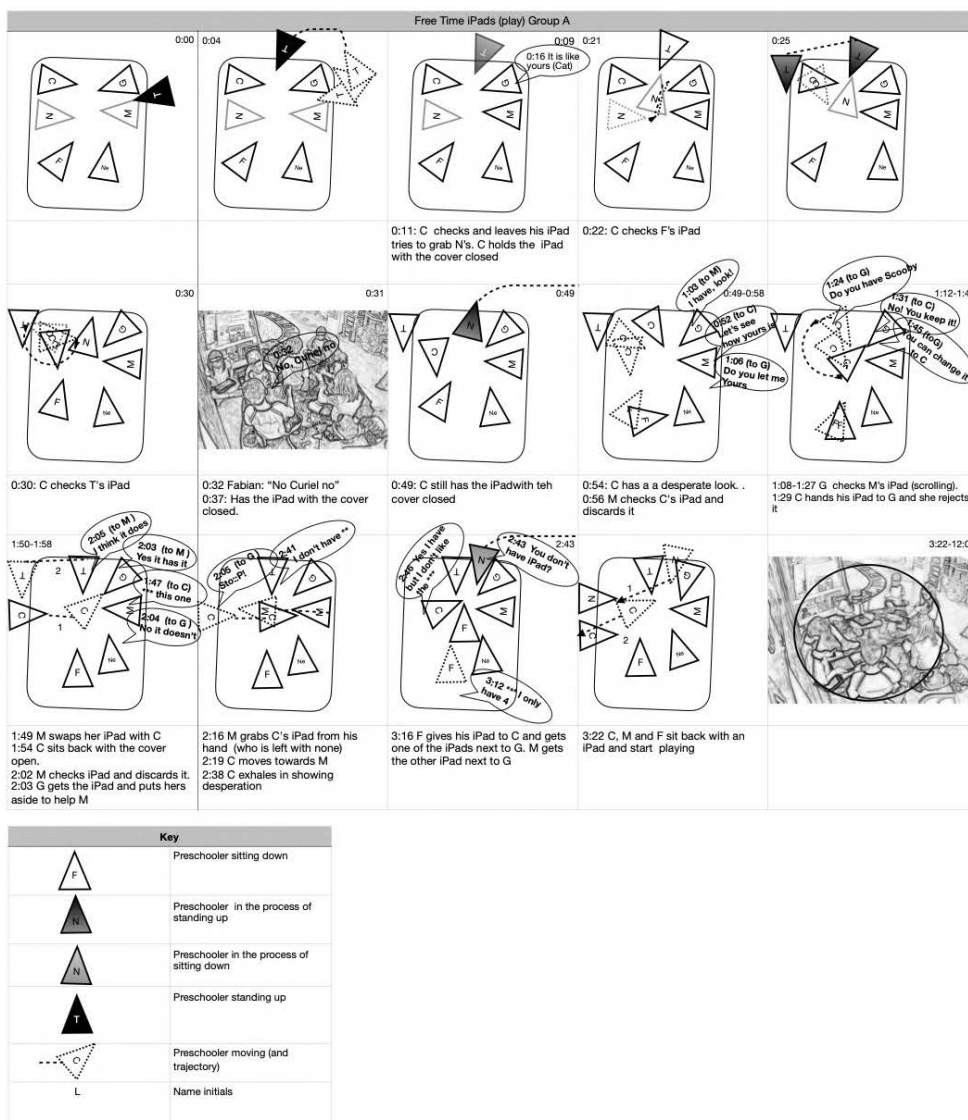
Time	Movement					Gaze				
	Fabian	Nuno	Sofia	Curiel	Tatiana	Fabian	Nuno	Sofia	Curiel	Tatiana
0:00		iPad								iPad (?)
0:02										
0:04										
0:06										
0:08										
0:10		head								
0:12						Nuno	Fabian	To Fab	W.board	
0:14						Sofia			To Fab	
0:16								Fabian	To Sofia	
0:18		iPad							To Fab	
0:20						To Sofia			To Sofia	
0:22									To Floor	To other side
0:24		Head				Sofia		Fabian		
0:26			Head-No						To Sofia	
0:28							Sofia	Nuno		
0:30								To Fab		
0:32									To Fab	
0:34						Sofia			To Sofia	
0:36										
0:38						Sofia		Fabian		
0:40									To Fab	
0:42										
0:44									(turns)	
0:46			Turns & go						Gerika's	

Figure 3.3 a) Miniature of the original format b) transduction of a language-related episode. For visibility the table has been divided in two parts. The transduction is a single table horizontally oriented refer to episode 4.9.

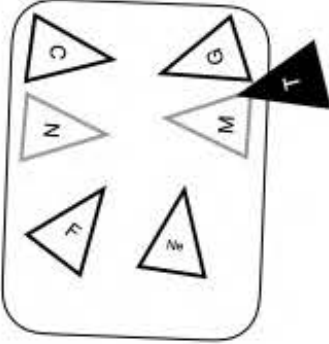
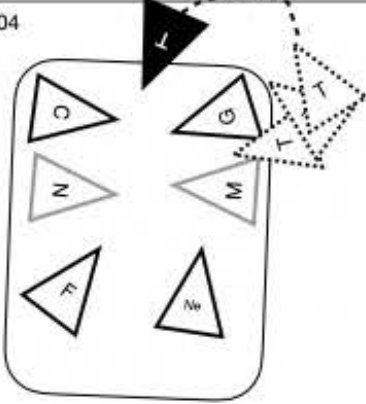


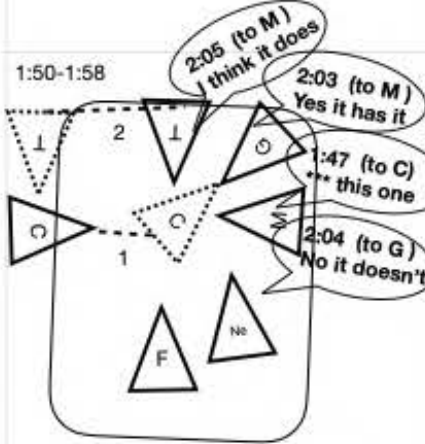
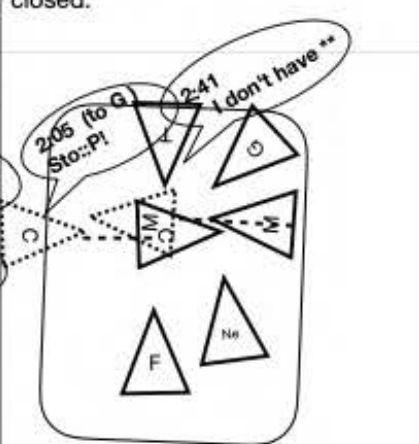
In a transduction process there is meaning-(re)making. This implies that the researcher, guided by her interests (what to represent, how to guide the reading/interpretation of the transduction, use of space...) decides how to present the data. Inevitably this will not capture, with exactitude the interaction, thus there is a reconstruction and (re)meaning-making taking place. In figure 3.3, the researcher's interest is to a) present what happens in the recording in a format that fits a paper-based medium, due to institutional restraints of writing a doctoral thesis; b) make visible the relevant moments during the episode (for example: gestures, gazes, movement that offer relevant information on the interaction organization); c) represent all the modes, or the most loaded modes; d) provide a representation of the interaction that is relatively easy to understand without accessing the data in the video. According to Bezemer and Mavers (2011), the changes in the presentation of data (transductions) is a growing interest in multimodality as there is a felt need to describe the interaction in social practices attending to the multiplicity of modes through which people communicate.

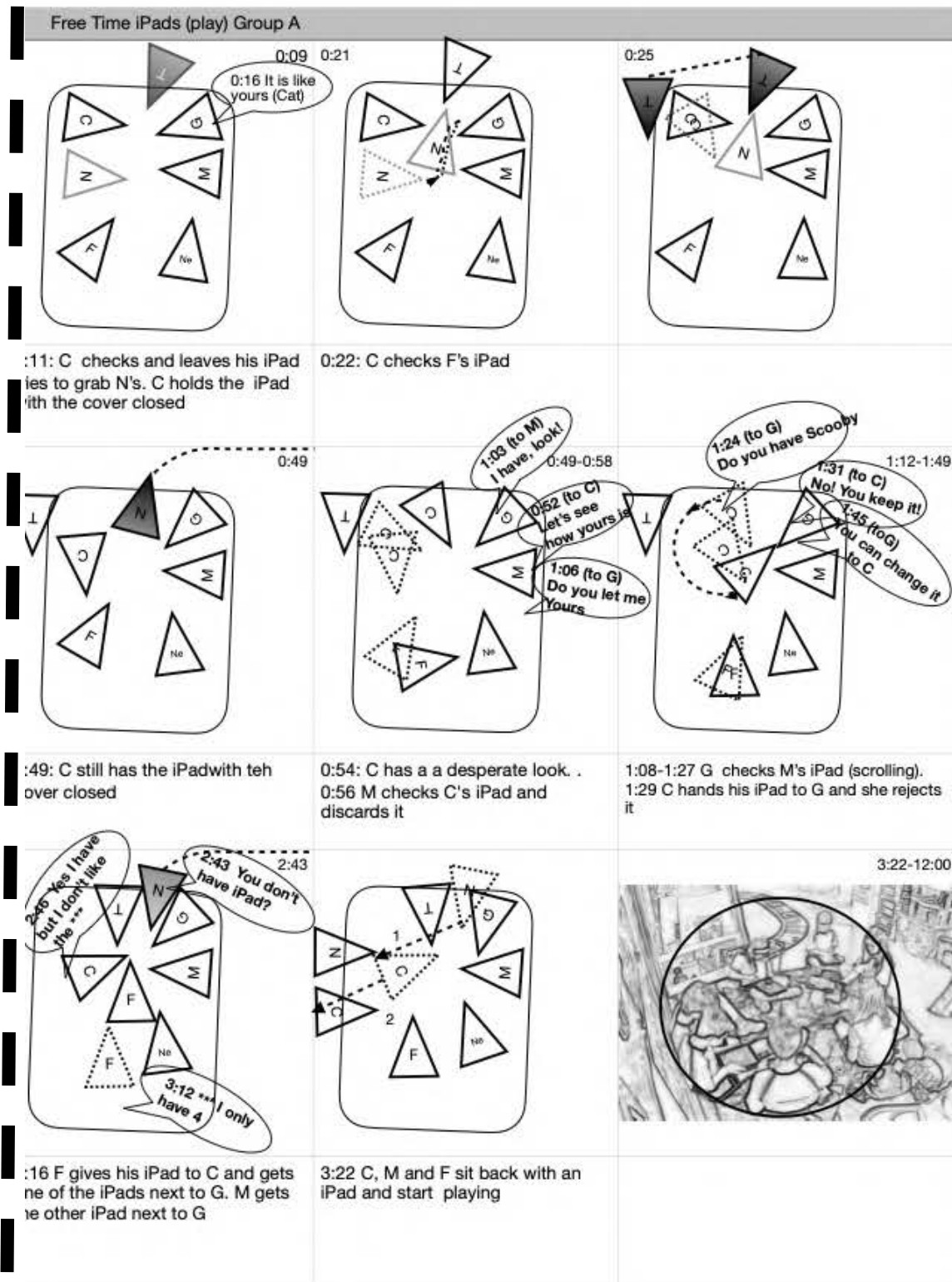
In any description of multiple modalities that scans different formats, inevitably there will be some modalities that can be displayed easily and others less so. In a video, for instance, one is able to observe the action as it happens in time whereas on paper, the action could still be represented but it would imply a colossal amount of pictures, placed sequentially and probably with text descriptions, in order to try to reconstruct the same actions faithfully. This implies that the researcher must take decisions regarding which modalities to highlight, to the detriment of others, in the transductions. For instance in figure 3.3, because sequentiality of action is important for our analysis (refer to CA section), time is represented in the first column and selected pictures in the second (see figure 3.3). This gives greater relevance to how the action unfolds. The third column is vocalization, thereby highlighting the children's utterances. The following two columns are movement and gaze, which are coded with different lines to represent what is happening. This layout is adapted to each episode in order to adapt to the interaction presented.

The transduction is thus at the same time representing a part of the interaction and the aspects deemed most relevant for the researcher in order to reply to the original research questions. As not all the elements of the original modes are available for a paper-based medium, a decision on how to use the affordances of the different modes must be taken. For instance pace, which is an element of movement, gaze, speech and interaction is represented by the timescale column (Lamy, 2012). However, even in the unlikely case of being able to represent all elements that compose the highly intricate ensemble of human interaction, the quantity of details implies that transductions are always and by necessity, selective (Have, 1990). The design of the transduction foregrounds or de-emphasizes particular modes according to the research aims and to accomplish the communication goals of the sign-maker (in this case the researcher).



a) miniature of the transduction in its original format

<p>0:00</p> 	<p>0:04</p> 
<p>0:30</p> 	<p>0:31</p> 
<p>0:30: C checks T's iPad</p>	<p>0:32 Fabian: "No Curiel no" 0:37: Has the iPad with the cover closed.</p>
<p>1:50-1:58</p> 	
<p>1:49 M swaps her iPad with C 1:54 C sits back with the cover open. 2:02 M checks iPad and discards it. 2:03 G gets the iPad and puts hers aside to help M</p>	<p>2:16 M grabs C's iPad from his hand (who is left with none) 2:19 C moves towards M 2:38 C exhales in showing desperation</p>



b) Transduction of an episode (segmented in two parts for visibility)

Figure 3.4 a) miniature of the transduction in original format b) transduction of an episode (not included in the research as it was considered not language-related although is part of the data corpus and was analyzed). The transduction is presented in two segments for visibility reasons

In figure 3.4, the transduction brings movement, from a bird's eye view, forward. Speech, position in space and action are also represented although what is highlighted is the movement. It can be observed that what seems more important in the interaction in the example above is movement, not speech, which was very limited. What is foregrounded is how the students move continuously until finally forming a perfect circle formation. In this case, the researcher's interest was to accentuate the energetic movement during problem-solving and that once the problem is resolved the movement is minimal.

Thus, in the transduction, the reader (as viewer and interpreter of the transduction) can easily see that there is movement from point zero to minute three twenty-two and that from minute three twenty-two to minute twelve the movement is very scarce. Hence, transduction is in itself communicating the interest of the researcher through her representation. In short, a multimodal transduction can offer a tool not only to represent an event but to analyze interaction and to discern the multimodality of such (Cowan, 2014b).

It is clear, by comparing the two examples, that a transduction is moving from one set of mode-ensembles (video: gaze, gesture, body orientation, speech...) to another set of mode-ensembles (written format: image, writing, layout...). As stated earlier, this implies meaning-making as there are the restrictions of the change such as the differences in affordances and elements of the mode or modes and the interest of the researcher as a sign-(re)maker. In conclusion a transduction is "(...) the remaking of meaning involving a move *across* modes -a process in which 'meaning material' is moved from one mode to another" (Jewitt, et al., 2016 p.72).

3.6 TRANSFERABILITY

In order to ensure the reliability and transferability of this qualitative research, the data collected was approached without a biased expectation but with the sole aim to observe and identify foreign language exploration. The analysis, once the initial data scanning and all the foreign language-related episodes were identified, began with an unmotivated and repetitive viewing (Maynard, 2013) as part of the analysis and

discussion process in which, as explained earlier, the interaction was transduced mode by mode, preschooler by preschooler through multiple viewings.

To ensure reliability and validity in the analysis of the data, a stable process of analysis was designed (Cohen et al., 2007). Thus after a process of analyzing a reduced set of episodes and presenting such episodes and pre-analysis to diverse academic settings (conferences, data sessions, presentations) a process of analysis and a template was designed to carry out the analysis in such a way to ensure a stable process and a guided view (explained in the previous subsections). In this sense, in relation to data analysis in qualitative research, Dooly and Moore (2017) argue that reliability stems from a detailed account of all the processes and from a focus on making sure, through multiple revisions, accurate data is presented.

CHAPTER 4 – ANALYSIS AND DISCUSSION OF THE 23 EPISODES

In this chapter we will see the 23 language-related episodes selected for this research. The episodes are presented individually. Each episode includes the ‘transduction’ or the re-making of the interaction from an audio-visual format to a written-visual format, the analysis in which the key aspects are highlighted, the discussion of the main points in each episode and the synopsis of the analysis. The episodes have been organized in chronological order, beginning with episodes that took place during the first session of the digital book of sounds’ task, supported by the iPad, followed by episodes in the second session and by episodes in the third session (there are no selected episodes from the fourth and last session). There is no explicit order of the groups (A and B) as the sessions were held in parallel. The last two episodes are the Beebots supported episodes.

NOTE TO THE READER:

The following section is designed as a collection of 23 language-related episodes. Each episode is presented with the transduction that is adapted to the interaction so not all the transductions present the same format (refer to the chapter 3, transductions). Each transduction is followed by the analysis of the episode which is presented to illustrate to the reader what is occurring during the episode. The analysis focuses on the sequentiality of turns (refer to chapter 2: Conversation Analysis). To further guide the reader, in the analysis, between brackets and with a smaller font size, the key aspects to highlight are included next to the action presentation, for example:

“The whole-group orients towards the letter sounds’ whiteboard at 0:06 (participation framework: whole-group)”

As can be seen in this example, the action is described and in brackets (or *italics*) the key aspects to note are specified. After the analysis a brief summary of the key aspects is presented.

Given that most episodes are multilingual, Catalan, Spanish and English, to guide the reader and avoid the use of excessive description of the languages, used in interaction, each language has been color-coded. Thus, the reader can easily identify with the following colors the different languages used by the participants Catalan, Spanish and English (not having access to a color version will not result in a lack of information as the color-coding is for easier access but all the information is included). For example:

At 0:02 Pier directs himself to Jan and makes available to him “Ja:n/ la M no está/” (“Ja:n M is not there/”)

Following the analysis of each episode the discussion is presented. Given the richness of the selected language-related episodes the most salient actions are highlighted and reviewed in the discussion section although all the language-related actions and key aspects are signaled in the analysis presented in brackets. The key aspects presented serve to a) illustrate the reader on what is observed to be occurring and b) they build the basis for the final discussion based on the complete collection of the analysis of the 23 episodes, leading to some general conclusions. Thus, the discussion of an episode is solely of the episode presented. At the end of the discussion a synopsis is presented. The final discussion of the 23 episodes as a cohort is included in chapter 5 followed by the conclusions in chapter 6.

GLOSSARY OF KEY TERMS:

- **Agreement:** acceptance of other’s actions (explicitly or casually)
- **Collaborative social order:** The social order co-constructed as part of participating in the autonomous and collaborative task.
- **Co-regulation:** preschoolers’ stance to co-regulate each other’s actions
- **Correction:** when a preschooler corrects an action (from another preschooler or herself)
- **Classroom social order:** the social order co-constructed as part of being a member of the school community
- **Disagreement:** rejection of other’s actions

- **Engagement:** engagement with a classmate's actions, object in the classroom or stimuli
- **Language exploration:** This responds to the varied exploration of language features, aspects and/or actions which includes: **language use** (strategic language use); **language switch** (key strategic language use); approximation (creative language use); **language-test** (a test to prove a language-related stance) (creative language use); **phoneme/grapheme identification**; **pronunciation**; **vocabulary suggestion** (in the target language); **representability** of words (how to represent/illustrate a given word); **letter formation**; **co-construction** (of ideas, corrections, arguments); **correction** (of a language-related aspect); **reflection on the use of language** and **description/definition** of an object act or idea.
- **Movement:** preschoolers' movement, usually referring to moving from point A to B, although references to 'body movement' such as body-torque can be found.
- **Multimodal sign:** the same sign (meaning and form) done in more than one mode (for example 'this' in speech and pointing at the referent of 'this') (a.k.a sign complex) (refer to 'sign' in chapter 2)
- **Multimodal turn:** a turn in which more than one mode (gaze, gesture, speech, body orientation...) is used to (communicate) make meaning. Each mode communicating a different sign.
- **Participation framework:** preschoolers' orientation during the interaction to:
 - **Subgroup:** a subgroup of the main group of 7 preschoolers
 - **whole-group** the group of 7 preschoolers
- **Physicality:** the trait of using physical contact as a communicative action
- **Playfulness:** a playful attitude
- **Self-regulation:** preschoolers' stance to self-regulate own actions
- **Self-task organization:** a preschooler's act of choosing or attempting to choose the letter sound or illustration for her turn as iPad manager and illustrator
- **Spontaneous play:** self-motivated play
- **Suggestion:** an option given usually by another preschooler

- **Repetition:** repetition with or without variation of a turn or part of a turn, by the same or other preschoolers.
- **Task-completion orientation:** a preschooler's action that is oriented to complete the task following the tasks' instructions.

(SPEECH) TRANSCRIPTION KEY:

(+) a pause between .1 and .5 of a second

(++) a pause between .6 and .9 of a second

(1) (2) (3) pauses of (1)(2) or (3) seconds respectively

/ rising intonation

\ falling intonation

: lengthening of the preceding sound; each additional colon represents a lengthening of one beat

*** unintelligible

/o/ sound articulated, to be read as phoneme

A letter name, to be read as a letter name

Italics = English











Spanish

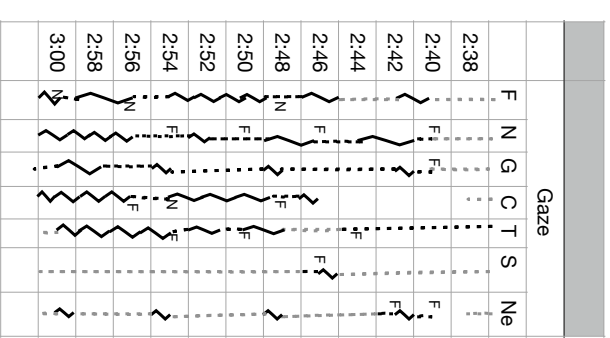
Catalan

[] action

4.1 EPISODE: INDEX FINGER AS A POINTER

		Skills				Time	Vocalization	Gaze								
								F	N	G	C	T	S	Ne	T*	
0:00						0:00-0:16	Teacher: /s/ /a/ /r/ /l/ (+) come on all of you /p/ /n/ /c/ /e/ /h/ /r/ /m/ /d/ /g/ /o/ /u/ /h/ /b/ /y/ /z/ /w/. /n/ /k/ /kay/	0:00	0:02	0:04	0:06	0:08	0:10	0:12	0:14	0:16
0:02																
0:04																
0:06		0.03														
0:08		0.09/o/														
0:10			0.14/x/													
0:12																
0:14																
0:16																
0:18						0:17-0:18	? :yo la m primero (me /m/ first)	0:18								
0:20		0.17				0:20-0:21	Teacher: No it has to go in order. ha/	0:20								
0:22						0:22-0:22	Sofia: me /s/	0:22								
0:24						0:23-0:26	Teacher: yes okay, it has to go in order do you have/, do you know how you are going to do it?	0:24								
0:26								0:26								
0:28		0.28				0:28-0:28	Gerika: me the second	0:28								
0:30			0.29			0:28-0:34	Teacher: okay, doesn't matter is up to you, but it has to go in order, in that order okay/, yes/	0:30								
0:32								0:32								
0:34						0:34-0:36	Gerika: o sigui qui vol for la /r/ (so who wants to do /r/)	0:34								
0:36		0.40				0:37-0:39	Tatiana: podem fer un	0:36								
0:38			0.41			0:39-0:44	Teacher: = eh:m, Fabian you are in charge of telling the camera now we are doing this because of this and because of that okay/	0:38								
0:40								0:40								
0:42								0:42								
0:44								0:44								
0:46		0.52				0:46-0:48	Teacher: pretend that it that works ****	0:46								
0:48			0.56			0:49-0:58	Fabian: **** ok camera, we are doing the hm /s/ (+) because is going to be in order	0:48								
0:50								0:50								
0:52								0:52								
0:54						0:54-0:59	Gerika: =jo faria com una cosa aixi i I despues com **** (I would do something like this and then ****)	0:54								
0:56								0:56								
0:58								0:58								
1:00								1:00								

	Stills	Time	Vocalization
2:38		2:39-2:40	Fabian: okay now we are doing the sound
2:40		2:40-2:40	Curriel: ahhh (exhalation)
2:42		2:43-2:46	Nuno: ahora tu saldrás de espaldas en la cámara (now you will appear giving your back to the camera) [he'll laughing during last three words are articulation]
2:44		2:45 to the	
2:46		2:45-2:50	Gerika: y también puedes hacer *** yellow y ya está (+) axí sí sembra que és (and you can also do *** yellow and that's it like that it seems it is)
2:46		2:46-2:48	Nuno: =no porque está sin batería (no because it has no battery)
2:54		2:43-2:54	Fabian: llevará *** minutos recargando eh (it will be *** minute recharging eh)
2:56		2:54-2:56	Nuno: Hola/ (hello/) looking and waving at the camera until 3:00
2:58		2:57-2:58	Fabian: do:s horas\ (two: hours\)
2:59			



Name abbreviation key	
Fabian	F
Nuno	N
Sofia	S
Curriel	C
Tatiana	T
Gerika	G
Nerea	Ne

Gaze Key	
Classroom	⋮
iPad	█
Someone/ group	⋮
Eye contact	█
Recording camera	↘

4.1.1 Analysis: Gesture and gaze in interaction - Group A



The episode occurs at the first of the four sessions of the book of sounds' task project. The language-related episode is composed of two extracts, separated in time, one of fifty-nine seconds and the other of twenty seconds. The first extract is part of the teacher's explanation of the task, the second extract is part of the task process.

Starting at 0:00 the teacher presents the letter sounds, written on a whiteboard, that the students have to work on as part of the task “/s/ /a/ /t/ /i/ (+) come on all of you /p/ /n/ /c/ /e/ /h/ /r/ /m/ /d/ /g/ /o/ /u/ /l/ /f/ /b/ /j/ /z/ /w/ /v/ /y/ /x/ ‘kay!’”. The articulation of the sounds is clearly marked (figure 4.1.1). The teacher uses her index finger to point at each sound while articulating it (multimodal sign). After four sounds the teacher encourages the students to join in the activity of identifying the sounds on the whiteboard, with the open request of “come on all of you” and whisking her free hand (the other holding an iPad). The teacher looks at the whiteboard at all moments, not establishing eye-contact with the students, except when saying “come on all of you”, at the last sound “/x/” and to check if the students are following “kay”.



4.1.1) The teacher marking the articulation of the sounds /e/, /m/, /o/, /x/.

During the instruction-giving activity, the students look at the whiteboard and when the teacher looks at the students at 0:14 (“/x/” and “kay”) the students look at the teacher (figure 4.1.2) showing mutual orientation.



4.1.2) teacher giving instructions at 0:14 and preschoolers engaging with the teacher.

Immediately after the instruction delivery is finished, at 0:06, the teacher leaves the working-space. At 0:17, once the teacher is out of the working-space, an unidentified preschooler says “yo la m primero” (“me /m/ first”) this is heard by the teacher who turns around and offers a clarification “No it has to go in order, ha!” (self-task organization)(task-completion orientation)(co-regulation)(disagreement). Sofia, the iPad manager and illustrator tells the teacher “me /s/” (which is the first letter sound on the whiteboard (self-task organization)(collaborative social order: co-regulation) (language use). The teacher agrees “yes okay” and quickly repeats “it has to go in order” and points

at the whiteboard, at 0.23, signaling the whiteboard as the order (multimodal turn). In the same turn the teacher asks “do you know how you are going to do it?” (task-completion orientation)(co-regulation). Gerika looks at the teacher and tells her “me the second” to which the teacher answers “okay, doesn’t matter is up to you, but it has to go in order, in that order okay/, yes/” with an averted gaze and using her hand gesture, at 0.29, to mark that it is up to the students how they decide to organize themselves (figure 4.1.3) (repetition) (self-task organization)(co-regulation) (multimodal sign). Gerika, announces that she is going to be next and offers the third position “o sigui qui vol for la /t/” (“so who wants to do /t/”) (which is the third letter in the order given) (collaborative social order: co-regulation).



4.1.3) teacher’s gesture “is up to you”

At 0.33, the teacher leaves the working-space for the second time and quickly turns around and walks back to the group, orienting her body to Fabian, to give one more piece of instruction “= eh:m, Fabian you are in charge of telling the camera now we are doing this because of this and because of that okay/”. In doing so, she is assigning the narrator role to Fabian (although the teacher does not give a title to the role at that initial moment, she appoints him as “narrator” later during the session¹⁰). The teacher points at Fabian with her index finger while saying “you” and looks and points at the camera when saying “camera”. When saying “because of this and because of that” the teacher uses her index to point to one side and the other as signaling “this” and “that” (figure 4.1.4) (multimodal sign)(multimodal turn). Soon after

¹⁰ This is not included in the extract as happens notably very separated in time

that, the teacher turns around and facing the other way continues giving instructions “pretend that it that works”¹¹.

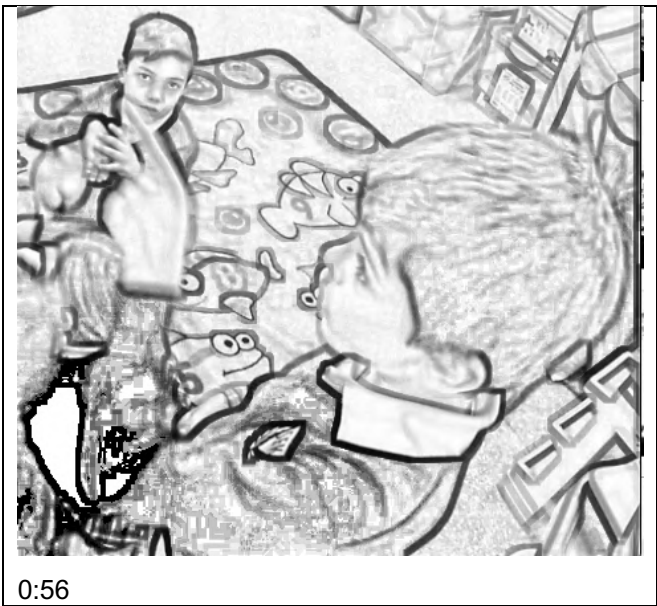


4.1.4) Teacher’s multimodal sign during her turn at 0:39-0:44

At 0:28, Fabian stands up and looking at the camera says “ok camera, we are doing the hm /s/ (+) because is going to be in order” (classroom social order: co-regulation) (language use). Fabian points at the whiteboard while saying “is going to be in order” (figure 4.1.5) (multimodal sign). Nuno gazes at the camera at that moment and there are some other students briefly gazing at the camera. Nuno, after gazing at the camera, gazes at Fabian and smiles as an affirmative reaction and in alignment to

¹¹ The GoPro camera has a red blinking light to signal it is recording. During one of the previous sessions the students, using their knowledge of the digital technology, thought it was running out of battery and started playing with the camera resulting in it falling down; losing the angle in which it was placed, hence the teacher told them not to touch it even if it was out of battery. Hence, although recording the teacher commented, in the field notes, that she told preschoolers “pretend that it that works” for them not to play with the camera when the camera was blinking.

Fabian’s actions (playfulness). Nuno then turns and gazes at Nerea who smiles at Nuno and then quickly looks at Fabian.



4.1.5) Fabian showing the camera “in order”

At the second extract of the episode, Fabian, at 2:39, has moved and is standing in front of the camera, giving his back to it, he turns his torso and tells the camera “okay now we are doing the sound” (figure 4.1.6) (movement)(language use). Nuno briefly gazes at Fabian and then at the camera and Nerea gazes at Fabian. After three seconds, at 2:43, Nuno laughs and gazes at Fabian and tells him “**ahora tu saldrás de espaldas en la cámara**” (“now you will appear giving your back to the camera”) pointing at the camera while saying “camera” (figure 4.1.6) (task-completion orientation) (collaborative social order: co-regulation).



Figure 4.1.6) Fabian’s gaze at 2:40 and Nuno’s laugh at 2:45 (words between brackets what is being uttered)

Fabian immediately turns his torso to the camera and all the preschoolers gaze directly to the camera for a second while Fabian says “no porque está sin batería” (“no because it has no battery”) (disagreement). Curiel, Tatiana and Nerea gaze at the camera and Nuno gazes at Fabian and then at the camera. Fabian half turns his body to the camera pointing at it and approaching it (figure 4.1.7) (movement). Then quickly gazes back at Nuno saying “llevará *** minutos recargando eh” (“it will be **** minutes recharging eh”). Nuno looking at the camera says “hola/” (“hello/”) waving his hand in a playful manner while Nerea and Curiel look at the camera and Tatiana gazes at Nuno (Figure 4.1.8) (playfulness)(multimodal sign)(collaborative social order: co-regulation).



4.1.7) Fabian acknowledging the camera



Figure 4.1.8) Nuno greeting the camera

4.1.2 Discussion

This language-related episode was selected given that a language exploration trigger, that arises during the interaction, is visible and thus makes evident a potentially transformative engagement. In this short episode the actions that are highlighted respond to: a) the use of multiple modes to accomplish communicative interests and needs: the use of pointing and eye contact directed to the camera or conceptual or material elements; b) co-construction of the collaborative social order: acknowledging the camera during the task; c) preschoolers target language use.

The first to be looked at in this episode is the index finger pointing gesture used to point at artefacts, material or conceptual, that is initiated by the teacher and adopted by the preschoolers; indicative of being co-constructed through the interaction and promoting the co-construction of the collaborative social order of the task. First, we consider how the communication aim is accomplished through the use of multiple modes. In the transduction one can observe the teacher using her index finger to point at the letter sounds written on the whiteboard while she is pronouncing them (Figure 4.1.1). The pointing gesture serves as a link, connecting the spoken sound (phoneme) to the written letter (grapheme), hence aiding in the revision and identification of the letter sounds and connection between phoneme-grapheme. At 0:03, The teacher encourages the students to join her in saying all the sounds out loud “come on all of you” using a quick whisking gesture with her hand. This gesture aligns with the rhetoric pedagogic intention of the teacher to promote the preschooler’s engagement in the identification and the recognition and connection of letter sounds. It can be argued that the teacher uses the gesture to embody her rhetoric intention of getting the students to join in the revision of the phoneme-grapheme relation.

At 0:20, we observe the teacher reentering the working space, almost immediately after leaving. She turns around to correct a student and to clarify the instruction “no it has to go in order ha/” while quickly pointing at the whiteboard, thus connecting the organization of the graphemes on the whiteboard with ‘the order’. This gesture links the conceptual “order” to the order in which the letters are written on the whiteboard. At 0:22 Sofia asks a question and the teacher, briefly answers followed by remarking

a second time “it has to go in order” and pointing at the whiteboard. At 0:23 the teacher asks a question and, at 0:28, Gerika answers with her future action “me the second” the teacher engages with Gerika’s answer and replies “okay, it doesn’t matter is up to you” and remarks her previous instruction related to the order “it has to go in order, in that order okay/”. Every time the teacher says “*order*” she points at the whiteboard with her index finger. Hence the index finger pointing at the whiteboard closely links the whiteboard (with the letter sounds in order) to the conceptual order in which the letters should be organized in the pedagogical activity. In this way the teacher makes it explicit to the students that the whiteboard represents “that order”. There seems to be no obstacles in the communication as students understand and follow the organization (as evidenced in the final outcome in the digital book).

A different use of gesture is visible when the teacher, briefly leaving for a second time, turns and gazes at Fabian and appoints him a role in the group (figure 4.1.4.). “eh:m Fabian you are in charge of telling the camera we are doing this because of this and because of that okay/”. The teacher’s use of the pointing gesture has different meanings; at “Fabian” she points at the carpet as if pointing at the group but not anyone in particular; at “you” she points at Fabian establishing eye contact with him, thereby selecting him and distinguishing him from the group; at “camera” she gazes straight at the camera and points at it, followed by “we are doing this because of this because of that” using a gentle pointing finger, from one side to the other, to sign “this” and “that”. It is visible how the pointing gesture is used as a multimodal sign (sign complex) together with speech and gaze so pointing and maintaining direct eye contact when saying: “Fabian”, “you”, “camera”, and a less focused gaze in “this and “that”. Hence the multimodal sign (the meaning made through the compound of gaze, gesture, speech and body orientation) is “Fabian” a selection from the group; “you” a direct instruction for you; “camera” acknowledges the camera; “this” “that” signals different actions that should be explained to the camera.

The teacher’s use of pointing to accomplish or embody her rhetoric intentions can be observed. However, the reaction of the students to the pointing gesture is also visible and relevant. At 0.56 Fabian (figure 4.1.5), points at the whiteboard while explaining

to the camera that the activity “is going to be in order”, thereby he connects, just as the teacher did, the whiteboard with the order to follow. Significantly, in this short episode we see that Fabian not only adopts the pointing gesture first utilized by the teacher, but he also makes use of the conceptual artefact of “the order” in reference to the whiteboard, deploying gesture to include the whiteboard as part of his meaning-making. In short, the evidence points at Fabian re-making the conceptual use of the whiteboard, as “that order”, modelled by the teacher through the multimodal sign she used to show such connection: pointing, gazing and orienting the body. However, Fabian’s position in space and the camera recording angle do not cover the letters written on the whiteboard just the whiteboard from a side angle. This can suggest that, by Fabian referring to the whiteboard from a non-visible angle, the connection of what is written on the whiteboard and the order to be followed is more conceptual than material. However, it might also be because the preschooler is simply not aware that the camera angle does not reach the letters on the whiteboard although Fabian is observing the same as the camera as he is in the same angle view.

At 2.46, Nuno tells Fabian “**now you will appear giving your back to the camera**” pointing at the camera when saying “camera”. This is a remaking of the pointing sign of the teacher and an evidence that Nuno has been aware of the presence of the camera and the need to acknowledge it. It can be argued that, if Nuno comments to Fabian that he is going to “**appear giving your back to the camera**” it is because the camera is understood as an artefact that is present in the task and that he is aware of the recording angle of the camera. It also suggests that the camera has seemingly been included in the collaborative social order and that preschoolers seem to understand the relevance of the camera recording angle; further supporting the assumption of the previous point made related to Fabian’s pointing to the whiteboard as a conceptual order.

At 2.47 (figure 4.1.7), Fabian turns his torso to the camera, showing signs of understanding what giving the back to the camera means, hence, providing evidence of recognizing the recording angle of the camera is relevant to the overall situated meaning-making. Fabian, at 2.47, pointing at the camera (re-making the teacher’s

gesture and multimodal assemble) says “no”. Fabian tells Nuno that he is not giving his back to the camera “no because it has no battery”. In this case, showing that he is aware that he is not being recorded as the camera has no battery. At 2:54 Fabian points again at the camera while referring to it “it will be *** minute recharging eh” and at 2:57 he suggests that it has been recharging for “two: hours”.




It can be argued that the teacher’s use of the pointing gesture to connect the whiteboard to the “order” is used by Fabian for the same purpose, hence re-making the sign. It can also be argued that Fabian and Nuno use the finger pointing to refer to the camera at the same time acknowledging it as part of the task and seemingly showing its inclusion in the collaborative social order of the task. It is significant that Fabian uses the target language, English, when talking to the camera but uses Spanish when talking to Nuno. Fabian uses the target language at 0:49 while the teacher is still in the working space “*** ok camera, we are doing the hm /s/ (+) because is going to be in order” and; at 2:39 “okay now we are doing the sound” once the teacher is out of the working space.

It appears that the camera is not only acknowledged but is co-constructed as part of the classroom social order and the collaborative social order enacted during the task project. This is brought about by the teacher’s treatment to it and the preschoolers’ adoption of such treatment. Thus, through the teacher’s overt acknowledgment of the camera, through the use of direct gaze, body orientation gesture and explicit instruction towards the camera, she elicits a similar recognition of it by the preschoolers. The camera is accepted and included by the preschoolers in the collaborative social order through their embodied acknowledgement of it. (Refer also to the episode 4.21 that tackles the personification of the camera).

In general, it has been visible how the teacher models a multimodal ensemble (gesture, body orientation, speech, gaze) and how it is re-made in interaction by the students. It is relevant to point that such re-make also implies that the preschoolers connect the order of the letters in the whiteboard, which is tangible with a more conceptual concept “the order” which is part of the task instruction.

Synopsis: In this short language-related episode, the following features are visible: the **collaborative social order, co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of engagement and compliance with the teacher's instruction in recognizing the camera; **task-completion orientation and self-task organization orientation**; self-motivated **movement** in the working space to interact with the camera and with peers (participation framework); **playful attitude** towards the camera. The visible language exploration triggers are engagement with the teacher's instructions that generates compliance, **agreement, repetition** and the use of **multimodal** answers (either multimodal signs or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language switching** triggered by the **co-construction** of a social order to acknowledge the camera.

4.2 EPISODE: “ESTÁ DEL REVÉS YO CREO”

Episode 4.2 Gesture and gaze in interaction - Group B																			
Time in Seconds	Vocalization	Stills	Gesture					Gaze											
			Jan	Dia	Llu	Gen	Mai	Mig	Pier	Gen	Mai	Mig	Pier						
0:01																			
0:02	Jan: <i>Aia esperar la /s/ primero la + de sol</i> (aia wait the /s/ first the one + of sun)																		
0:03																			
0:04																			
0:05	Diana: <i>Y ahora puedes hacer</i> (and now you can do)																		
0:06																			
0:07	Lluvia: <i>Ara + (now +)</i>																		
0:08	Jan: <i>sol/ (sun/)</i>																		
0:09	Genaro: <i>++ sun/ sun/</i>																		
0:10	Jan: <i>Pon la /s/ en grande y después de ponerlo en grande lo puedes dibujarla</i> (put the /s/ in big and after putting it big you can draw it)																		
0:11																			
0:12	Miguel: <i>Yo /i/ (me /i/)</i>																		
0:13																			
0:14																			
0:15	Lluvia: <i>Pero muy grande no porque ***</i> (But not too big because ***)																		
0:16																			
0:17																			
0:18	Lluvia: <i>Está del revés + yo creo</i> (it is upside down I think)																		
0:19																			
0:20	Maia: <i>sí: (yes:)</i>																		
0:21	Jan: <i>No está bien está bien Genaro</i> (No it is ok it is ok Genaro)																		
0:22	Jan: <i>Tienes la *** qué mal</i> (you have the *** how bad)																		

4.2.1 Analysis: Letter formation – Group B

The episode occurs at the first, of the four sessions of the book of sounds' task project. The language-related episode is composed of one extract of twenty-two seconds and it presents preschoolers discussing the directionality of an /s/ that has been written on the iPad. Genaro is the iPad manager, and he is representing a 'sun'.



The group is working in a whole-group formation, Genaro is the iPad manager, Genaro, Pier, Lluvia and Maia are sitting in a circle formation gazing at the iPad. Diana is standing, leaning on the wall, gazing at the iPad (figure 4.2.1). At 0:01 Jan suggests to the group “*Ala esperar la /s/ primero la + de sol*” (“*ala wait the /s/ first the one + of sun*”)



Figure 4.2.1) the whole-group organization starting at 0:00

At 0:05 Diana engages with Jan's speech turn and proposes “*Y ahora puedes hacer*” (“*and now you can do*”) an incomplete idea (collaborative social order: co-regulation). At 0:07 Lluvia engages with Diana and utters “*ara +*” (“*now +*”). At 0:08, Jan articulates “*sol*” (“*sun*”) in Spanish. Genaro overlapping Jan utters “*sun/ sun*” (vocabulary). At 0:09, Jan who briefly stands up kneels down being closer to Genaro and to the iPad's screen (figure 4.2.2a) (movement). At 0:10 Jan, using his finger to touch the screen,

changes a setting and says “**Pon la /s/ en grande y después de ponerlo en grande lo puedes dibujarla***” (“*put the /s/ in big and after putting it in big you can draw it*”) making reference to the size of the letter drawing in the digital page (figure 4.2.2b). At 0:12 and overlapping Jan, Miguel proposes “**yo /i/**” (“*me /i/*”) in relation to the letter sound he wants to illustrate (self-task organization). His gaze is engaged with the iPad screen.

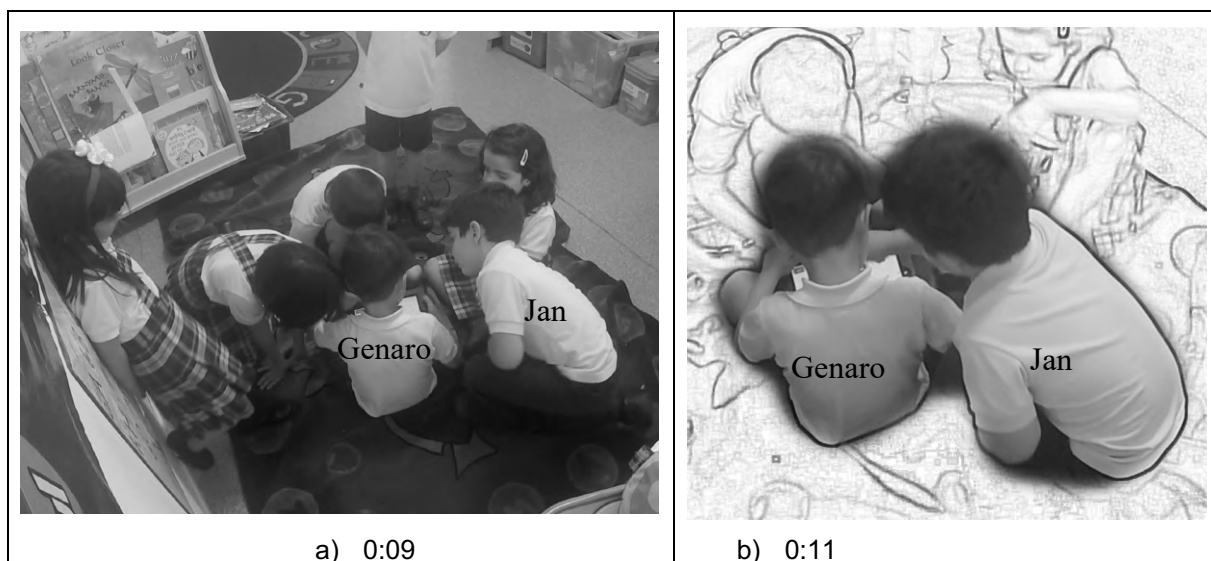


Figure 4.2.2) a) Jan kneels down getting closer to Genaro. b) Jan touches the screen with his index finger.

At 0:15 Lluvia, engaging her gaze with the iPad screen suggests “**Pero muy grande no porque *****” (“*but not too big because ****”) disagreeing with Jan’s previous comment about the size of the letter. At 0:18, Lluvia looks up at Diana, who is standing in front of her, and gazing at her says “**Está del revés + yo creo**” (“*it is upside down + I think*”) (figure 4.2.3) (multimodal turn)(correction)(task-completion orientation). At 0:20 Maia engages with Lluvia’s comment and agrees “**sí::**” (“*yes::*”) and overlapping her Diana makes explicit her *disagreement* “**no, así**” (“*no, like this*”) *agreeing* with Lluvia and offering the correct answer with gesture (alliance)(task-completion orientation). Diana uses her index finger to trace the letter ‘s’ in the air (figure 4.2.4) (multimodal sign)(language-test).



Figure 4.2.3) Lluvia directing her gaze towards Diana (Lluvia's turn 0:18- 0:20 "it is upside down").

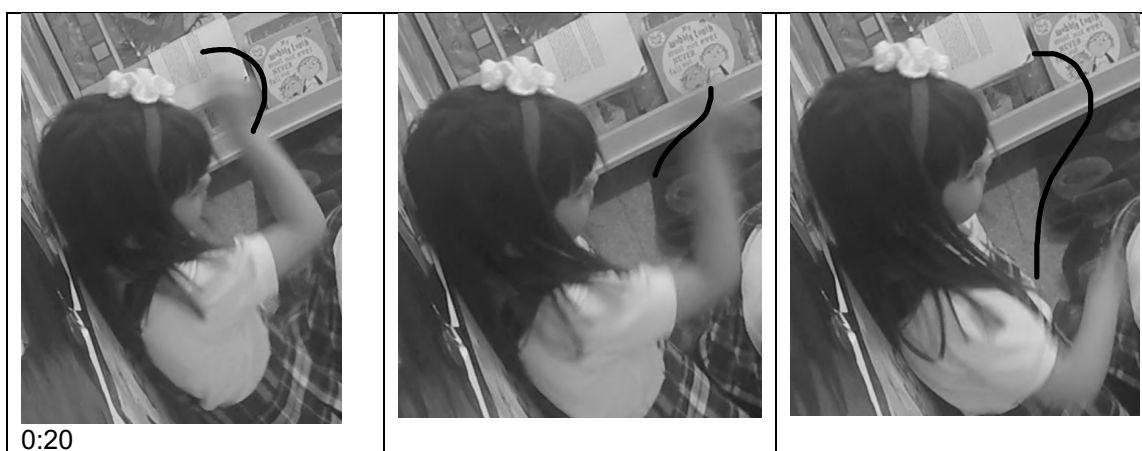


Figure 4.2.4) sequence of Diana's index finger gesture tracing 's' in the air at 0:20

At 0.21 Jan disagrees with Lluvia, Maia and Diana's comment and replies "**No, está bien está bien Genaro**" ("no, it is ok it is ok Genaro") validating Genaro's tracing (task-completion orientation)(alliance). At 0:21 Diana starts tracing the letter 's' with her finger on the air and she *repeats* the action 3 times (figure 4.2.5) until 0:27 (task-completion orientation)(language-test). At 0:22 Jan utters "**Tienes la *** qué mal**" ("you have the *** how bad") although the reference of this turn is not known.





Figure 4.2.5) Diana from 0:22 to 0:26 tracing letter 's' two times

4.2.2 Discussion

This language-related episode was selected given that during the interaction a language exploration trigger is visible through preschoolers' engagement and assessment of the letter formation 's'. This exploration makes evident a potentially transformative engagement. In this short episode the actions that are highlighted respond to: preschoolers engaging with the assessment of the letter formation of 's' showing task-completion orientation and a co-regulation stance.

During the episode, the preschoolers are working with the letter sound 's'. At 0.18 Lluvia, in assessing the letter 's' drawn by Genaro on the iPad, offers her assessment of the letter. Lluvia says "it is upside down + I think", manifesting that the directionality is incorrect *according to her*. It is interesting to observe that she downgrades the negative assessment, emphasizing that it is her point of view "I think". The structure of her sentence is interesting as well, she marks her assessment and stresses the 'I think' leaving it at the end. This can be seen as evidence of Lluvia engaging in a language exploration trigger. By engaging with the drawing of the 's' on the iPad she uses her knowledge to assess if it is correct or incorrect and in noting it is incorrect conveys her assumption to the rest of the members of the group. This shows a collaborative social order in which preschoolers co-regulate each other and are entitled to have an opinion on the task being done.

It is also interesting to observe that Lluvia, when revealing her assessment verbally, raises her head to engage her gaze with Diana's (figure 4.2.3). It can be argued that Lluvia is looking for Diana's alignment and support for her position. Hence, it is

relevant to observe how Lluvia requests, through her gaze, Diana's orientation to her assessment. Through the multimodal interaction Lluvia's comment generates a language exploration trigger that promotes a potentially transformative engagement as evidenced by Maia and Diana's orientation. Diana, as a matter of fact shows with her finger a language-test to prove that Lluvia is correct.

Lluvia's assessment triggers a language exploration action as Pier, Diana and Maia engage with her evaluation. Maia, agrees with Lluvia that the letter formation of the 's' is incorrect. Diana also agrees with Lluvia while verbally disagreeing with Genaro's tracing "no, like this" and offering a language-test by tracing the letter with her finger in the air (figure 4.2.4). At 0:20 thus, Diana presents proof to support her disagreement (figure 4.2.4).

At 0:21, Jan joins the discussion and directing himself to Genaro, the iPad manager, asserts "No it is ok it is ok Genaro". Hence, Jan not only engages and arrives at his own (contrasting) opinion of Lluvia's initial assessment but reassures the iPad manager (Genaro) that his 's' is correct. This provides evidence that another participant of the group, Jan, is also engaged and oriented towards the task and co-regulation stance.



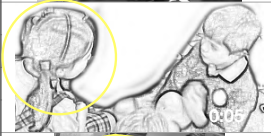











At 0:22, Diana continues tracing the 's' two more times (figure 4.2.5), demonstrating that she remains engaged in forming an opinion of the letter formation and that she is able to provide proof to support her argument. In this episode the language exploration trigger is an assessment of an incorrect *tracing* made by a classmate which results in them assessing the action of *tracing* and subsequent metalinguistic decision-making, involving both agreement and disagreement. It is also interesting to observe that the disagreement seems natural and done in a conversational manner, underscoring the way in which these preschoolers negotiate their understanding comfortably and providing further argument that the collaborative social order is co-constructed and maintained through the interaction thus allowing for co-regulation.


In general, it has been visible how the verbally explicit assessment of a preschooler to the group generates a language exploration trigger in which four other members of

the group engage in generating their own opinions regarding the directionality of the letter 's' drawn on the iPad, thereby generating metalinguistic talk. It is also visible how the use of multiple modes in communication (whether in a multimodal sign or in a multimodal turn) allow preschoolers to be agentic in language exploration.

Synopsis: In this short language-related episode, we have highlighted the **collaborative social order** and **co-regulation** stance in preschoolers' peer interaction, achieved through displays of **task-completion orientation** by engagement and assessment of other's illustration's letter tracing. As well as **self-motivated** engagement with the interaction by silent and non-silent preschoolers through different silent modes. The identified language exploration triggers are engagement with a **correction** that generates **disagreement** and **agreement (alliances)**, **repetition** and the use of **multimodal** answers (either multimodal sign or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points are; assessment of the chosen object's **representability**, **language switching** and the **co-construction** of an opposite argument, to disagree with the letter formation of the iPad manager, through the description of a joint argument (alliance).

4.3 EPISODE: “FEM LA /A/”

Episode 4.3: Letter sound or Letter name - Group A		
Stills	Time	Vocalization
		0:01-0:02 Sofia: Fem la /a/ (we are doing /a/) 0:03-0:04 Fabian: Now we are doing /ai/ “A”
		0:04-0:05 Sofia: /a:./ 0:05-0:07 Fabian: Sí, *** (yes, ***)
		0:06-0:09 Nuno: = Como tu estas allí como tu eras el de la cámara (as you are the one of the camera)
		0:09-0:10 Nerea: Tienes que decirlo (you have to say it) 0:11-0:12 Fabian: Es que lo acabo de decir/ (Is just that I just said it)
		0:12-0:13 Curiel: =You did A
		0:14-0:16 Nerea: Ya pero lo tienes que decir a la cámara (yes but you have to say it to the camera)
		0:17-0:19 Fabian: ok camera now we are doing /ai/ “A” 0:18- 0:19 Nuno: =Hola cámara/ (hello camera/) 0:19-0:20 Curiel: Ho:la cámara. (hello camera)

Episode: 4.3 Group A - (extra)		
Stills	Turn	Vocalization
	1	Tea: you are group/
	2	Nuno: /ai/ A
	3	Fabian: ai/ A

4.3.1 Analysis: Letter name or letter sound – Group A

The episode occurs at the first, of the four sessions of the book of sounds' task, and as part of the second letter sound the students work on: /a/. Gerika is the organizer of the illustration and iPad manager and is drawing an apple. The episode is composed of one extract of 20 seconds.



Starting at 0:01 the preschoolers are sitting in a circle formation, with two students sitting outside of the circle. Sofia, previously responsible for drawing, hands the iPad to Gerika, who is the next illustrator. At 0:02 Sofia, who has just given the iPad to Gerika, turns her head towards Nuno and says “Fem la¹² /a/” (“we are doing /a/”). Fabian, recently appointed “in charge of telling the camera¹³” by the teacher, engages with Sofia and looking straight at the camera says “Now we are doing A”. Sofia reacts to the A (letter name), establishing direct eye contact with Fabian and making explicit she does not agree (with the use of the letter name /ai/) by marking an elongated “/a::/” and gently moving her head to one side to emphasize her disagreement (disagreement)(multimodal sign). Fabian maintaining eye contact with Sofia tells her “si” (“yes”) followed by an unintelligible utterance (agreement)(phoneme-grapheme identification). Fabian uses an open palm gesture possibly to indicate doubt or tension (figure 4.3.1a/b) (disagreement)(multimodal sign).

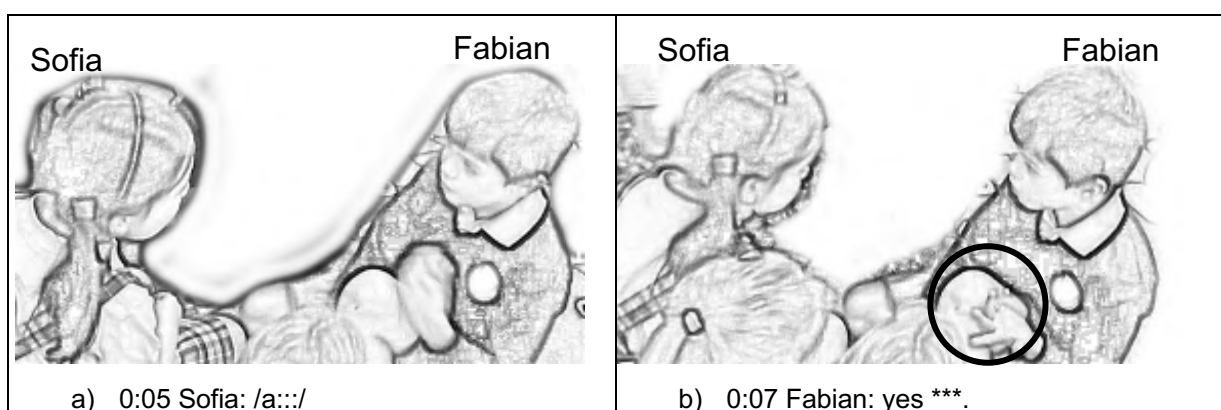


Figure 4.3.1: Close up of direct gaze exchange between Sofia and Fabian

¹² In Catalan “fem la /a/” would be translated as a question “let’s do /a/” but the use in the interaction is an affirmation translated as “we are doing /a/”

¹³ This part can be seen in the extract 4.1

The emergent discussion is interrupted by Nuno who stands up and directs himself to Fabian “**Como tu estas allí como tu eras el de la camara**” (“As you are there as you are the one of the camera”) but not establishing eye contact with him as he is walking around the circle (movement). Fabian turns his head to Nuno, at 0:075, and starts standing up, dissolving the dyad with Sofia (movement). At 0.09, Nerea looks and points straight at the camera while telling Fabian “**tienes que decirlo**” (“you have to say it”) making reference to his role of speaking to the camera the letter sound the group is working on (multimodal sign)(task-completion orientation). Fabian, standing up and looking at Nerea, responds by telling her “**Es que lo acabo de decir**” (“that is just that I just said”) with a rising intonation and an open palm gesture stressing possible tension (refer to 0:12 in the transduction). This is the second open palm gesture used by Fabian in a matter of a few seconds (the first at 0:07) (multimodal sign).

At this point, another participant intervenes. Curiel sitting at the circle looks straight at the camera and, in English, says, at 0:13, “you did A” repeating Fabian’s previous turn at 0:03 (language use)(repetition). Curiel re-uses the letter name, instead of the letter sound made available by Sofia at 0:04 and immediately looks at Sofia with a smile as if ratifying Fabian’s selection of letter name over letter sound (figure 4.3.2) (playfulness).



Figure 4.3.2: Curiel look at Sofia right after saying “You did /ai/” to the camera.

At 0:14, Nerea, directing herself to Fabian and looking, pointing and with a gentle head move towards the camera restates her previous comment “**Ya pero lo tienes que decir a la cámara**” (“yes but you have to say it to the camera”) (multimodal

sign)(repetition)(task-completion orientation). At 0:17 Fabian, who is in front of the camera, acknowledges Nerea’s request and facing the camera says “Ok camera now we are doing /ai/” (repetition)(co-regulation), indicating a clear alignment to Nerea’s suggestion. However, Fabian re-uses his previous selection of letter name over letter sound, showing a disalignment with Sofia’s prior suggestion regarding pronunciation. Sofia who is still sitting in the circle looks straight at Fabian intensely at the same moment he says “/ai/” (figure 4.3.3). Fabian turns his head but does not establish eye contact with Sofia, although the disalignment is mitigated again by Nuno and Curiel greeting the camera in a *playful* way.

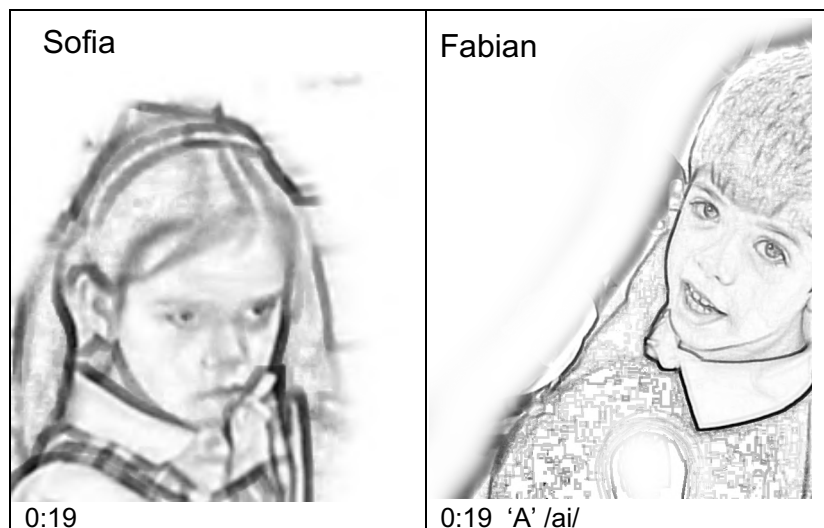


Figure 4.3.3: Close up reconstruction of minute 0:19 Sofia look at Fabian while he is saying “ok camera we are doing ‘A’ /ai/”

4.3.2 Discussion.

In this short episode the actions that are highlighted respond to: a) language-related confrontation and; b) the acknowledgement of the camera by the preschoolers. The co-construction of the collaborative social order through which the camera is introduced by the teacher as an element to which “telling” the process of the task and the enactment of the suggestion is explored in more detail in the extract 4.21.

To contextualize the discussion, it has to be clarified, as already discussed in chapter 3, that the preschoolers do not learn the names of the alphabet (as in ‘tee’ for t), they are introduced exclusively to the letter sounds (‘ta’). The letter names at the school are introduced in second grade. Furthermore, the preschoolers in this class are not

taught, as part of the activities or curriculum, the English alphabet song (with the letter names). However, the groups were given letter names “A” and “B” for this task’s project by the teacher who just randomly used a simple way to identify the groups (information from the fieldnotes). The group of this extract being “A”.

To further observe this group’s introduction to the letter name ‘A’, an extract that had occurred at the beginning of the session (so separated in time from the extract being analyzed here) during the instructions is presented as a context (included in the transduction as well). The teacher asks the children which group they are and two preschoolers answer “A” (letter name). Hence, there is evidence that they have been presented with letter name “A” by means of the name of the group (figure 4.3.4) and that they recall it. The preschoolers and the teacher use the letter ‘A’ as the title of the book.

Still	Time	Vocalization
	1	Tea: you are group/
	2	Nuno: <u>/ai/</u> “A”
	3	Fabian: <u>ai/</u> “A”

Figure 4.3.4: Teacher asking the group name and preschoolers using the letter name

At, 0:01 Sofia makes explicit, “*we are doing /a/*” referring to the letter A by its related sound. Fabian, who has been appointed as the ‘narrator’ by the teacher, establishes eye-contact with the camera and says “now we are doing A” referring to the letter that is the focus of the activity referring to it by its *name* rather than its *phonetic sound*. Sofia, disagrees and using a multimodal sign (sign complex), direct eye contact; slight turn of the head and; elongated */a:::/* corrects Fabian’s utterance made to the camera. Instead, she proposes the letter sound, making it evident to him that it is the

phonetic sound of /a/ that is the target objective. Fabian maintains his direct gaze and with a slight movement of the head shows agreement, while simultaneously displaying an open hand palm gesture. This gesture enacted together with a verbal “yes” is in response to Sofia’s previous turn and is as well a multimodal sign that makes visible that he both agrees and is confused by Sofia’s previous correction (figure 4.3.1). This initiation of disagreement and discussion, which is attenuated in the next turn by another member, emerges from the use of different referents for the letter ‘A’; its alphabetic designation or its related sound. At that point, 0:07, it seems that Fabian has understood that both the letter sound /a/ and the letter name /ai/ can be used to refer to ‘A’. It seems, however, that Sofia does not recognize /ai/ as referring to ‘A’ or, perhaps places preference on the instructions for the task at hand.

The discrepancy between the two participants is relevant as it makes manifest that there is a discussion emerging in reference to ‘A’. Sofia and Fabian, each from a different standpoint, think about the signified that the signifier ‘A’ presents to them. This reflection is triggered by Sofia being agentic and confronting Fabian’s choice. It is relevant, as well, that although Sofia has not been placed in charge “of telling the camera” by the teacher, she still feels ratified to challenge Fabian’s choice of narrative. This emphasizes Sofia’s orientation towards the completion of the task and her co-regulation stance.

On the other hand, although the discussion is interrupted at 0:05 by Nuno making a direct comment to Fabian, the theme is picked up again by Curiel at 0:12. Curiel establishes direct gaze with the camera and utters “You did A”. Who he is referring to the pronoun “you” is not clear, it might be Gerika as the illustrator of the drawing or Fabian with his previous comment to the camera. However, there are relevant aspects in this recap. First, Curiel activates the discussion again, second, Curiel, speaks in English to the camera, just as Fabian did, making evident that the camera is an acknowledged element introduced by the teacher in the group work (see this more in detail in extract 4.21). Thirdly, Curiel uses the letter name, positioning himself in agreement with Fabian and in disagreement with Sofia, who has championed the use of the letter sound as the correct referent. Interestingly, immediately after his utterance, Curiel looks at Sofia with a playful smile. It can be argued that Curiel’s

intention is not merely to display his alignment in the discussion, but also to re-open it, through a playful intervention, perhaps indicating mitigation to a potential dispreferred response by both Sofia and Fabian. However, the discussion is not continued by Sofia as she is looking at Fabian.

Fabian, who is being pressured by Nuno and Nerea to fulfil his role of commentator at 0:17, moves very close to the camera and says, “Ok camera we are doing A”. Fabian has not modified his way of referent, instead he repeats the letter name and in doing so he reaffirms his stance of referring to ‘A’ by its name and not sound. Notably he does not direct his statement to Sofia or at least there is no evidence of it. However, Sofia, who is behind him, not very close but not very far, reacts to this utterance. Through her facial expression and gesture, it is apparent and can be seen in the data that Sofia does not agree (figure 4.3.3). Fabian, however, does not perceive her disalignment because he is not facing her and she changes her gaze when he turns his back. The point of contention has been attenuated once more.

Through this episode it is possible to make visible that there is a *potential* transformation engagement triggered by the confrontation between the use of the letter name or the letter sound. This might have affected the participants knowledge, whether to ratify their own stance, to question their own stance or simply by positioning in the confrontation. The potential transformation seems to involve three participants and is not centralized in one point in time but instead is intermittent. It is also made manifest that this is a language exploration trigger in which there is potential transformation in relation to how to refer to ‘A’.

Synopsis: In this short language-related episode, it is visible: the **collaborative social order** in preschoolers' peer interaction through displays of **task-completion orientation and co-regulation** triggered by a language-related confrontation; self-motivated **movement** around the working space to interact with subgroups and the camera. The visible language exploration triggers are engagement with the task that generates **activate participation; disagreement** with other's actions; the use of **multiple modes in interaction** (either multimodal signs or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language use** to accomplish the role of appointed narrator; **letter name** identification and; **phoneme identification** (Preschoolers use a phonics approach at school so they are used to letter sounds (phoneme) and not the letter names).

4.4 EPISODE: “¡GATO! CAT!”

Episode 4.4 Language switching - Group A				
Stills	Time	Vocalization	Movement	Movement
	0:03	0:01-0:03 Sofia: <i>Cuala faig la /c// (which one do I do /c//)</i>	0:01	0:04
		0:03-0:04 Nerea: <i>Sí/ (yes/)</i>		
		0:04-0:05 Sofia: <i>Què puc fer/ (what can I do/)</i>		
		0:06-0:07 Nerea: <i>car</i>		
	0:04	0:06 - 0:09 Fabian: <i>=vinga/ ara tenim que volar (come on/ now we have to hurry)</i>	0:04	0:06
		0:07-0:08 Sofia: <i>=faré un ca:t (I will do a ca:t)</i>		
		0:08-0:9 Nerea: <i>Vale/ (ok)</i>		
		0:09-0:10 Fabian: <i>=tenim que volar (we have to hurry)</i>		
	0:11	0:11-0:12 Sofia: <i>cat/</i>	0:11	0:13
		0:12-0:12:5 ?: <i>/c/ /c/ /c/</i>		
		0:12-0:14 Nuno: <i>=ahora només un segundo /c/ /c/ cat (now only one second /c/ /c/ cat)</i>		
	0:18	0:16-0:19 Curiel: <i>Solo tenemos un segundo has visto que rápido **** (we only have one second have you seen how quickly ****)</i>		0:21
		0:19-0:21 Gerika: <i>amb la E/ no sé què faig amb la e (and what do I do with E/ I don't know what do I do with E)</i>		
		0:21-0:22 Curiel: <i>tenemos que/ (we have to/)</i>		
	0:24	0:21-0:24 Nerea: <i>a:h + egg/</i>	0:24	0:26
		0:24-0:26 Curiel: <i>**** A ver puedes ser igual de velocidad* como yo (**** let's see you can be as speed as me)</i>		
		0:26-0:28 Fabian: <i>has un cat/ haz un cat/ (do a cat/ do a cat/)</i>		
	0:31	0:28-0:32 Nuno: <i>four minutes/ + four minutes/ + four/</i>	0:29- 0:31 Nerea: <i>=o mira la idea per aquí (or look for the idea here)</i>	
		0:32- 0:35 Fabian: <i>cuatro minutos nos quedan (four minutes/ we have left)</i>	0:31-0:32 Gerika: <i>Estar/ estar\ /s/ ((e)star/ (e)star\ /s/</i>	
		0:36-0:37 Nuno: <i>four/</i>	0:36-0:38 Gerika: <i>no/ es:tar és amb la S (no/ (e)star is with S)</i>	
		0:38-0:39 Sofia: <i>Para/ (stop)</i>	0:31	0:41
	0:33	0:39-0:41 Fabian: <i>Pero te pregunto **** (but I ask you ****)</i>		
		0:41-0:43 Sofia: <i>un gato:/ cat/ (a ca:t/ cat/)</i>		
		0:45-0:48 Gerika: <i>jo faré un egg + un egg frito + i faré I faré una *** frita (I will do an egg + an egg fried + and I will I will do **** fried)</i>		
	0:41			

Movement Key

Student sitting	●
Student standing up	■
Student with iPad	□
Trajectory of walk	—
Board with sounds	⋮
Trajectory of movement	⋯
Carpet	▭

4.4.1 Analysis: Language switching – Group A

The episode occurs at the first, of the four sessions, of the book of sounds' task project. The episode is composed of one extract of forty-eight seconds. Starting at 0:00 the group is not in the working space (figure 4.4.1a). Sofia, the iPad manager, has the iPad on her hand and walks towards the carpet (movement). At 0:01 Sofia asks Nerea “*Cuala* faig la /c/*” (“*which one do I do /c/*”), requesting a confirmation from Nerea of the letter sound she has to work on (self-task organization) (task-completion orientation). Nerea replies to Sofia confirming that it is the letter sound /c/ “*sí*” (“*yes*”) while using her arm and open palm in a gesture (figure 4.4.2) (multimodal answer). At 0:04 Sofia and Nerea are standing up, facing each other, in the middle of the carpet. The rest of the group is not on the carpet (figure 4.4.1b) (movement).

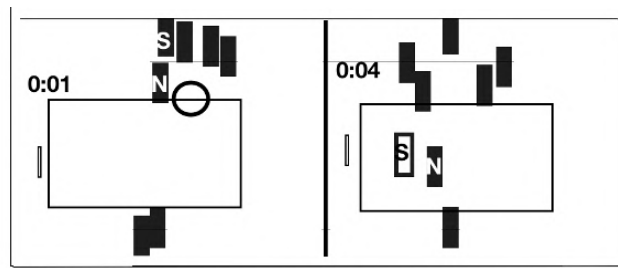


Figure 4.4.1) Preschoolers' grouping at a) 0:01 and b) 0:04 (S: Sofia. N: Nerea)

At 0:04 Sofia asks Nerea “*Què puc fer*” (“*what can I do*”) gazing at Nerea and using an open palm gesture to emphasize her question (figure 4.4.2) (multimodal answer) (task-completion orientation)(co-regulation) to which Nerea suggests “*car*” (task-completion orientation)(beginning sound)(language switch).

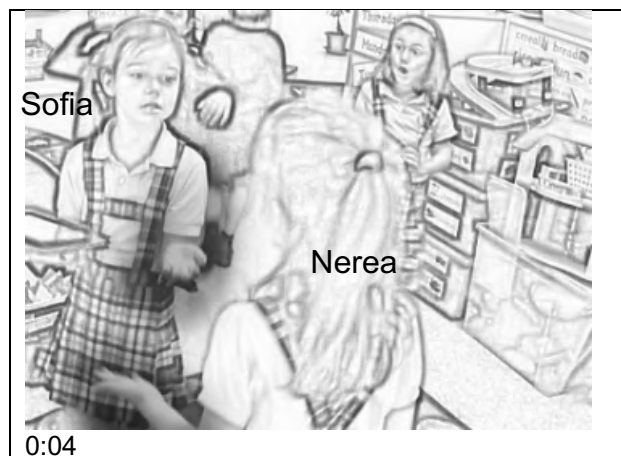


Figure 4.4.2) Sofia's gesture at 0:04 in asking to Nerea “*what can I do*” and Nerea's arm and hand gesture generated at her previous turn at 0:03.

At 0:06 Fabian comments to the group “*Vinga/ ara tenim que volar*” (“*come on/ now we have to hurry*”) making reference to the time they have left to finish the assigned activity (task-completion orientation: co-regulation). At 0:06 Sofia kneels down and then sits with the iPad on her hand. At 0:07, Sofia directs her attention to Nerea and tells her “*faré un ca:t*” (“*I will do a ca:t*”), elongating the sound /a/ and stressing the sound /c/ thereby making explicit to Nerea what she is planning on doing for ‘t’ (language switch). Nerea agrees indicated by her Spanish response, “*vale*” (“*ok*”). Fabian, at 0:09, repeats his prompt to the group, for the second time, “*tenim que volar*” (“*we have to hurry*”) as a rephrasal of his previous turn (repetition)(task-completion orientation: co-regulation). Sofia, does not respond to Fabian’s prompt, instead she is engaged with the iPad’s screen as indicated by her continual gaze and then her utterance, “*cat*” (language switch).

At 0:11 all the group is now on the carpet, Sofia is at the center kneeling down and the rest of the group, except Gerika, is circling and gazing at her from a standing position (Figure 4.4.3) (participation framework: subgroup). At 0:12, Nuno aligns with Fabian’s comment related to the time left and connects it with Sofia’s choice by expanding on the need to hurry (“*ahora només un segundo /c/ /c/ cat*”) (“*now only one second /c/ /c/ cat*”) (task-completion orientation: co-regulation). At 0:16, Curiel also aligns with Nuno’s previous turn and comments “*Solo tenemos un segundo has visto que rápido ****” (“*we only have one second have you seen how quickly ****”) in relation to the time left and seemingly in relation to how quickly he had been during his turn (he was the iPad manager before and was really quick) (task-completion orientation: co-regulation).

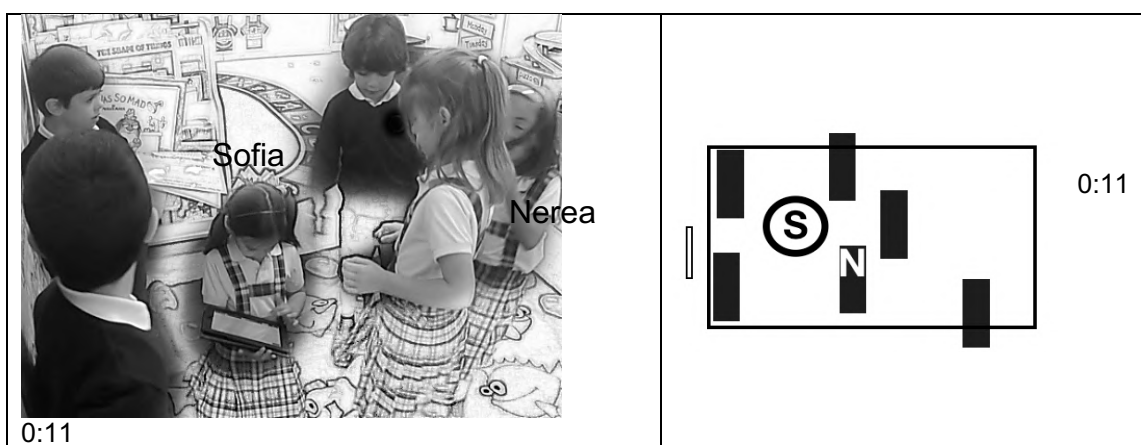


Figure 4.4.3) Preschoolers formation at 0:11. (S: Sofia, N: Nerea)

At 0:18, the circle formation is dissolved and Gerika and Nerea are now facing each other in a subgroup while the rest of the group is dispersed (Nuno is playing with the toy kitchen) (figure 4.4.4) (spontaneous play)(movement). At 0:19, Gerika asks Nerea “*jo què faig amb la E/ no sé què faig amb la e*” (“*and what do I do with E/ I don’t know what to do with e*”) (Gerika makes this comment in Catalan in which the letter sound /e/ and the letter name E is equivalent). Gerika and Nerea are standing in front of each other in a dyad and Curiel joins them (Figure 4.4.4) (task-completion orientation: co-regulation)(self-task organization).

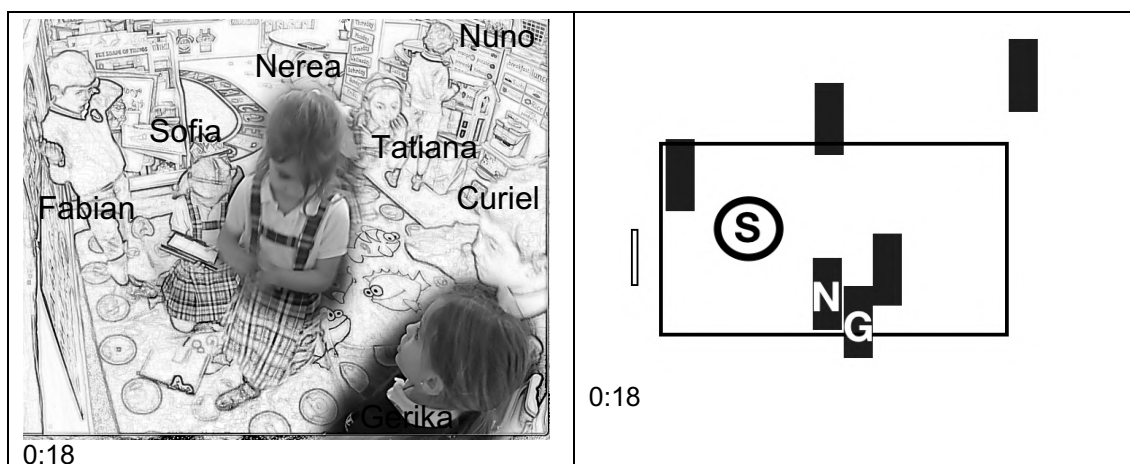


Figure 4.4.4) Preschoolers formation at 0:18

At 0:21, Sofia has not changed her position she is still kneeling down. Nerea, Gerika and Curiel are still positioned in a triad. At 0:21 Nerea offers a *suggestion* to Gerika’s request “a::h + egg/” (language use). At 0:24 Curiel joins Sofia, Fabian and Tatiana and comments to Sofia “**** *A ver puedes ser igual de velocidad* como yo*” (“**** *let’s see you can be as speed as me*”) making reference to how quick he had made the illustration during his turn as iPad manager (movement). At 0:25 Nerea and Gerika’s subgroup is dissolved again and Gerika moves closer to the whiteboard and Catalan ABC poster on the wall (movement)(participation framework: subgroups).

At 0:26 Fabian offers a *suggestion* to Sofia “*haz un cat/ haz un cat/*” “*do a cat/ do a cat/*” (language switch). Fabian has not changed his position, leaning against the wall and standing in front of Sofia who has not moved either (task-completion orientation). At 0:31, Nuno who was on the opposite side of the carpet and playing with the toys turns around and faces Fabian and using an emphasized gesture of showing four

fingers, makes the utterance, “four minutes/ + four minutes/ four/” (figure 4.4.5a) (Language use)(multimodal sign). Fabian reacts to this comment and, at 0:33, bends towards Sofia, and says emphatically “**cuatro minutos nos quedan**” (“*four minutes/ we have left*”) (Figure 4.4.5b) (multimodal sign)(task-completion orientation).



Figure 4.4.5) a) Nuno’s gesture “4” b) Fabian bending towards Sofia

Shortly afterwards, Nuno leaves the working space and the interaction subgroup is reduced to Sofia and Fabian. Sofia engages with Fabian’s emphasized comment and gazing at him replies “**para/**” (“*stop/*”), disaligning herself from Fabian’s insistence on the time left to complete the task. Fabian establishes eye contact with Sofia and seems to mitigate his insistence by explaining “**Pero te pregunto ******” “*but I ask you *****”. At 0:41, Sofia maintains eye contact and replies with an elongated syllable, first in Spanish and then in English her choice of word, “**un ga:to:/ cat/**” (“*a ca:t/ cat/*”) (Figure 4.4.6) (language use).



Figure 4.4.6) Sofia exaggerating “cat”

In a dyad, at 0:29 Nerea and Gerika maintain a conversation in parallel to that of Sofia and Fabian. Nerea suggests to Gerika to “o mira la idea per aqui” (“or look for the idea here”) making reference to the Catalan ABC poster Gerika is looking at (self-task organization)(co-regulation). At 0:21 Gerika voices an idea aloud, “estar/ estar\ /s/” but then rejects it in the following turn “no/ es:tar és amb la S” (“no *estar* is with S”) (in Catalan the word for star is *estrella* and is the picture for E in the Catalan ABC poster”) (language switch)(self-correction)(beginning sound). Gerika rejects her own suggestion of the English word star, demonstrating her knowledge that it does not begin with /e/ despite the fact that she did place an /e/ during her utterance of the word, thereby approximating the pronunciation to the word in Spanish. At 0:45 Gerika kneels down next to Sofia and declares to the group “jo faré un egg + un egg frito + i faré I faré una *** frita” (“I will do an egg + an egg fried + and I will I will do **** fried”) (representability)(language switch). Gerika picks up, accepts and co-constructs Nerea’s suggestion adding details to the representation (Nerea had suggested “egg” in turn 0:21) and expresses to the group her intention to illustrate a fried egg (co-construction).

4.4.2 Discussion

In this short episode the actions that are highlighted respond to: a) preschoolers switching languages and using the target language strategically for the word to be included in the task; b) the use of multiple modes to accomplish communicative interests and needs; b) co-construction of an idea regarding which object to illustrate; c) preschoolers self-motivated movement when joining or dissolving subgroups or approaching classroom resources to get ideas for illustrations.

In first place it is interesting to observe strategic language switching. During the first three turns Sofia and Nerea interact in Catalan, however, at the fourth turn Nerea offers a suggestion in English. It is worth highlighting that the only word articulated in English up to that moment is “car”, by Nerea, given as a reply. Then, Sofia utters a “I will do” in Catalan but offers her choice in English “ca:t”. It appears a strategic selection of language that orients to the task’s aim. The word articulated in the target language refers to the object to be illustrated or a suggestion regarding what can be illustrated; and which must be related to a word in English. The same strategy can be

observed later in the interaction when, at 0:19, Gerika, talking about her coming turn, asks Nerea in Catalan “and what can I do with E/ I don’t know what to do with e” and she is offered a suggestion, an object beginning with /e/, in English “a::h + egg/” by Nerea. Gerika asks the question in Catalan but the answer is offered in English, the language in which the suggestion (related to the illustration) is going to be used.

Similarly, at 0:26, Fabian offers a suggestion to Sofia (this is self-motivated as no one has asked him for a suggestion and Sofia is already drawing a cat) in which he uses Spanish to communicate and switches to English for the object he suggests “**haz un cat/ haz un cat/**” (“do a cat/ do a cat/”). It is interesting to observe how the same strategy of using the home language, either Catalan or Spanish, for the utterance and the object word in English is employed by several participants. This strategy makes visible the agency of preschoolers in switching to the task’s target language when needed. This extract demonstrates the preschoolers’ use of either Catalan or Spanish for the discussion on task completion, with language shifts to English only for the word they are going to use in English in the task which is indicative of a language switch that is precise and strategic.

It is also interesting to observe that a longer and more elaborated turn is put forward at 0:45 by Gerika, in which she describes what she plans to illustrate in Catalan and just uses English for “egg”, the object she is going to illustrate, “*jo fare un egg + un egg frito + i fare una *** frita*”. It seems, through these similar turns, that the strategy is shared among the group and that this same strategy implies that the preschoolers are aware that although the *object* does not change (car, cat, egg, star) if referred to in English, Catalan or Spanish, the *word* used to refer to it is different in form. This makes visible how language switching, in this case, implies language exploration as there is a careful selection of what can be said in the home language and what is best expressed in the target language due to its direct relationship to a tangible illustration of a feature of that target language.

Furthermore, in the extract we can observe how Gerika accepts Nerea’s suggestion (“a::h + egg/”) and then expands on the idea by thinking how to illustrate the egg

(eggs **fried**), making visible the co-construction, between the two participants, of the eventual illustration of the letter-sound 'e'.

It is also worth noting how when Fabian, at 0:39, who is still not aware of Sofia's selection of cat for her illustration, asks Sofia in Spanish "**Pero te pregunto *****" ("*but I ask you ****") and gets a reply from Sofia in both Spanish and English. Prior, Sofia's previous turns were in **Catalan** so in this turn Sofia is offering an answer "**un ga:tol ca:t/**" to Fabian in the same language he has asked her the question, followed by a translation of the word into the task's language. This makes visible that Sofia is agentic and competent in language switching. Summarizing, Sofia answers the question in the same language she is asked, which is different from the language she had been using previously, and immediately translates her answer to English, perhaps because in Spanish the word does not begin with /c/, which is her target letter sound. The preschoolers not only switch languages from English to their home language but do so between Catalan and Spanish as well, demonstrating their multilingual competence. In this short extract, Sofia, Nerea and Fabian make use of the three languages they have in their repertoires and Nuno and Gerika of two languages, highlighting their plurilingual competence.

Related to the use of the target language and home language and the strategic competence, at 0:31, Gerika uses the prompt of the Catalan ABC poster and says "**estar/ estar/**" articulating an /e/ at the beginning of the word 'star' which in Catalan is *estrella* (star is the object illustrated for 'e' in the Catalan ABC poster). Nerea selects the word looking at the poster and, apparently, translates it from Catalan to English. In English 'star' does not begin with 'e', however. So in her translation there is an interference that potentially would accommodate an incorrect translation of the word and make it appear to be apt for the task. Adding an initial /e/ (similar to the word in Catalan) to the word 'star' would be incorrect, although it should be noted that this is a common mispronunciation of Catalan and Spanish speakers of this word in English. Seconds later, Gerika herself discards the option, offering a self-repair and self-regulation, "**no/ es:tar és amb la S**" (no/ (e)s:tar is with S). A language exploration trigger is visible, in which Gerika finds an apparent answer and a few seconds later recognizes that she is placing a letter sound at the beginning of the

word that is not correct (in the target language), hence it is not an appropriate answer as she had first thought. The cognitive process is triggered by Gerika's use of the Catalan ABC poster which had a star (*estrella*) for the letter sound /e/ (figure 4.4.7). It is relevant to note how the same aspect which Sofia, Nerea and Fabian appear to be aware of, the importance of using the target language when referring to the object to be illustrated is shared by Gerika.

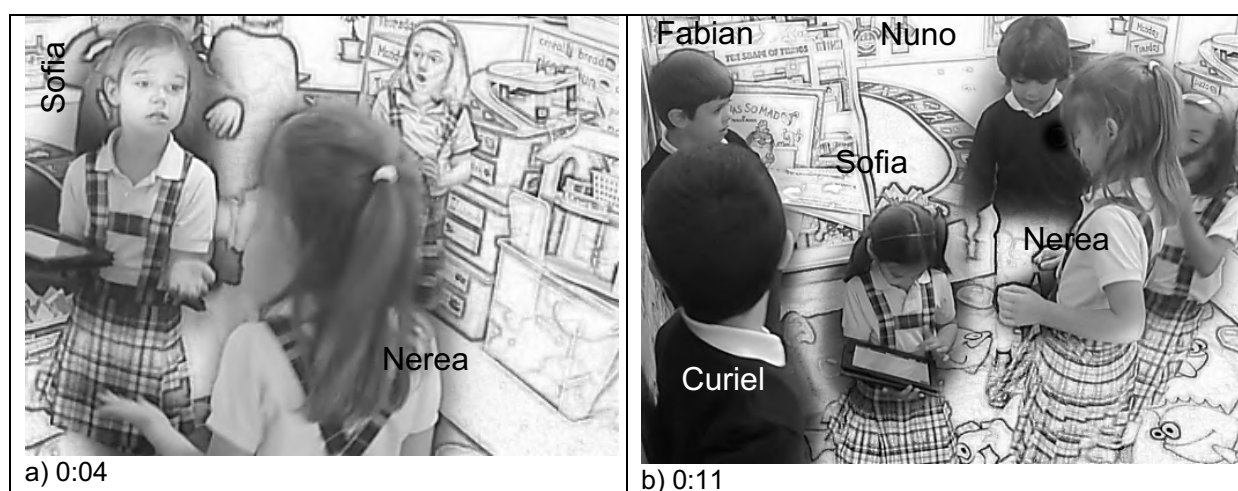
The episode foregrounds how the preschoolers seem to be aware of what is best uttered in which language, as seen by their use of language switching when needed. It can also be discerned how Gerika overcomes a translation mistake through language reflection, making her language exploration visible. It is also worth highlighting that Gerika and Nerea seem to be aware of the classroom's language resources (e.g. the illustrated poster of letters in Catalan) and that they consider them useful to "look for the idea (t)here". It seems that they are aware that although the prompts are in Catalan and not in the target language they can still get ideas. Thus, the agency of preschoolers to use languages in a dynamic and resourceful way is made visible, evident in their use of prompts in languages different from the target language.



Figure 4.4.7: Gerika is looking at the Catalan ABC poster and Nerea comments to her "or look for the idea here"

In terms of interaction it is interesting to observe the interaction and how preschoolers adopt different participation frameworks. The interaction flows in different subgroups and underpins the progression of the task. Position in space,

which is lively and energetic (as can be observed in the transduction), supports the task completion as the preschoolers shift fluidly between different interaction subgroups, allowing them to attend to different aspects of the task, generating considerable movement in the working space. In Figure 4.4.8, it is visible how, at 0:04, Sofia's object choice decision begins in a dyad between her and Nerea while the rest of the group is not even on the carpet area. At 0:11, all the group is gathered around Sofia, who is managing the iPad, while some preschoolers make comments about the time left. At 0:24 Nerea and Gerika discuss the next letter sound to be illustrated and do so in a dyad, which at some points Curiel, joins and participates to create a fluxional triad. At 0:29, Gerika and Nerea move close to the Catalan ABC poster to look for a word beginning with /e/. At 0:31, Nuno, gazing at and positioning his body towards Fabian tells him "four minutes/ + four minutes/ + four/" and then Fabian makes a comment to the iPad manager related to the time left so co-constructing this in a triad between them. In figure 4.4.8, it is visible how the movement which at first glance seems chaotic and volatile actually allows the preschoolers to interact fluidly and quickly, commenting on and co-constructing different aspects of the task. Thus, it is visible that, despite the apparent volume of brisk movement in a short timespan, there is an orientation towards task completion and a collaborative social order that triggers co-regulation and collaboration.



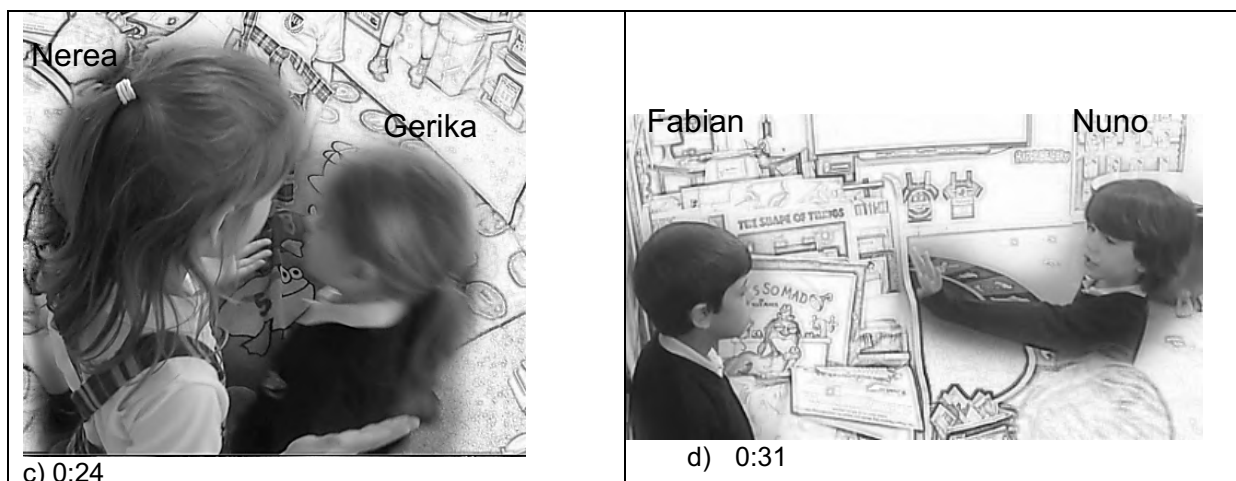


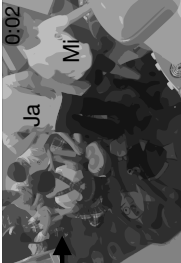


Figure 4.4.8) Different groupings

We can also observe how the preschoolers use multiple modes and semiotic resources to accomplish their communicative goals. For example, in Figure 4.4.8a (0:04), Sofia and Nerea use not only speech but gesture, gaze and position in space to communicate. Similarly, Nuno uses an emphasized gesture of the number four with his fingers. Although Nuno uses speech to say “four minutes” his closeness and where he places his hand gesture, at Fabian’s eye level and very close to his face, underscores the importance of Nuno’s message (figure 4.4.8d (0:31)). Thus, preschoolers use of gaze, gesture, body orientation and position in space is not random but aligned with their communicative interests.

In conclusion it is made visible, in this extract, how the preschoolers show their agency through their use of the target language when needed, including switching across languages during turns and in the same turn. This deployment of plurilingual resources are extended to the way in which they make use of prompts in different languages as useful to get an idea for the target language. We also observe how one preschooler self-repairs by reflecting on her choice of word to illustrate. By identifying that she had placed an initial sound that was not correct in the target language, she was able to recognize the mistake and self-repair, indicated in changing her choice. In this episode there is evidence that preschoolers are agentic and that there are language exploration triggers in the interaction and during the task completion. In relation to movement, the transduction reveals how dynamic, yet highly orchestrated, their movement is and how, in general, it does not interfere with the task completion; rather it helps generate task accomplishment.

Synopsis: In this short language-related episode, we have observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation; self-regulation** through **self-task organization orientation**; self-motivated movement from **subgroups** to **subgroups** to interact with peers (participation framework) generated by **movement** in the working space. The language exploration triggers visible are engagement with **questions, comments** or **suggestions** that generate **agreement** and **repetition** and; the use of **multiple modes in interaction** (either multimodal signs or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); identification of **beginning sound**; assessment of the chosen object's **representability, co-construction** of illustration ideas and; **language switching**

4.5 EPISODE: "CRODODILE"

Episode 4.5 Pronunciation exploration - Group B											
Vocalization		Stills	Movement		Gaze						
Time in Seconds					Jan	Dia	Llu	Gen	Mai	Mig	Pier
0:01	Maia: Déjame ver (let me see)	Miguel: /k/ /k/ /k/ /k/ /k/ /kɒdri/									
0:02				Jan: standing up facing the work circle but not very close T							
0:03	Pier: Arriba del todo arriba del todo Lluvia (on top of everything Lluvia)	Genaro: Estaba en *** (it was in ***)									
0:04											
0:05		Genaro: /k/ /k/ /k/ /k/ /k/ /kɒdri/									
0:06											
0:07											
0:08	Miguel: /kɒkɒreɪ/	Maia: equiz/ e::qui::z/ (x) [ekz/ e::k::s] (x letter name)		Jan: still standing up, now facing the wall, starts playing football with a pillow. The group is not on his eye sight.							
0:09											
0:10											
0:11		Miguel: /kɒkɒreɪ/									
0:12											
0:13		Lluvia: /k/ /k/									
0:14		Pier: /kɒkɒdri:/:									
0:15											
0:16		Genaro: /kɒ'kɒ'dri:/:		Jan: slightly walks around the working circle facing the center of the circle							
0:17		Diana: /kɒk.ə.draɪ/									
0:18											
0:19		Jan: /kɒk.ə.draɪ/									

Gaze Key		
Participant	Classroom object	No information

Participants' name Key					
Jan	Diana	Lluvia	Genaro	Maia	Pier
Jan	Dia	Li	Gen	Mai	Pi

4.5.1 Analysis: Pronunciation exploration – Group B

The language-related episode occurs at the first of the four sessions of the book of sounds' task project. The preschoolers are working on the letter sound /c/. Pier is the iPad manager and the drawing illustrator. The language-related episode is composed of one extract of nineteen seconds.



Starting 0:01 Miguel articulates the word crocodile “/k/ /k/ /k/ /kɔ'kɔdɾl/” (pronunciation)(beginning sound identification)(vocabulary), as he does so, he has his back to the group (figure 4.5.1a), simultaneously in the sitting subgroup Maia (0:01) and Pier (0:03) are talking about the work being done in the iPad. At 0.05, Genaro, who is working in the circle and directing his gaze towards the iPad screen, reacts to and *repeats* Miguel's turn with a slight variation in the pronunciation. To achieve his turn, he uses the task cue of articulating the beginning sound before the word “/k/ /k/ /k/ /kɔ'kɔdɾl/” (pronunciation)(beginning sound identification)(repetition). The whole-group, except Miguel, are gazing at the iPad, Jan from a standing position (figure 4.5.1b) (spontaneous play).

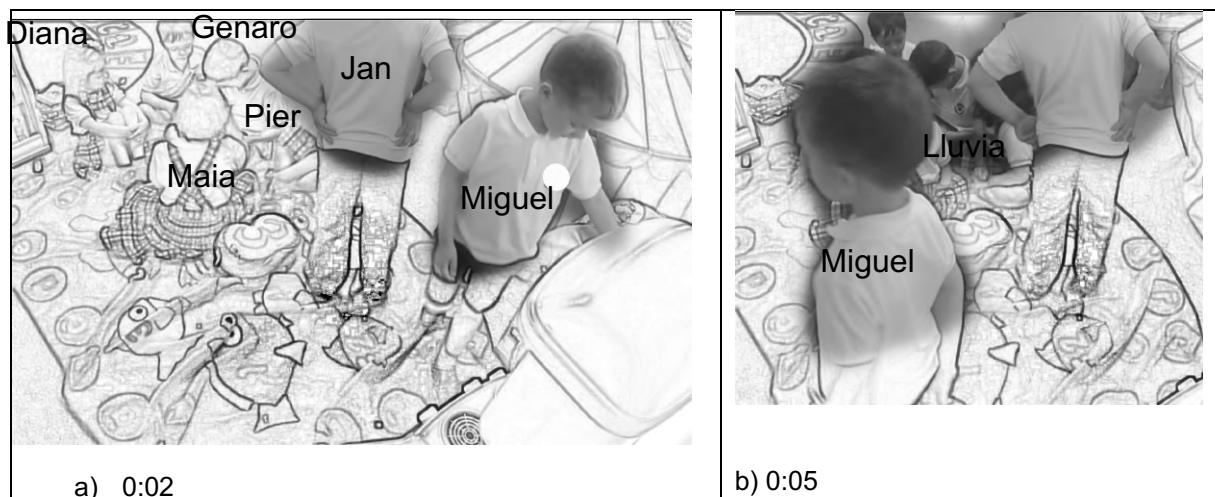


Figure 4.5.1) Whole group sitting, Miguel playing at 0:02 and Jan and Miguel standing walking around the circle at 0:05.

At 0:08 Miguel *engages* with Genaro's reaction, although he does not direct his gaze nor positions his body towards him but to the whole group (figure 4.5.2a). Miguel articulates “/kɔkɔɾɛɪl/” (pronunciation)(repetition), changing the way he pronounced crocodile the first time. Thus, going from “/kɔ'kɔdɾl/” to “/kɔkɔɾɛɪl/”. Miguel (from a

standing position that is not clearly oriented to the iPad) and the rest of the group are *engaging* with the whole group, as exhibited by their gaze and body posture, and everyone is oriented towards the iPad except Jan who is playing football with a pillow from 0:09 to 0:15 (figure 4.5.2b) (spontaneous play).

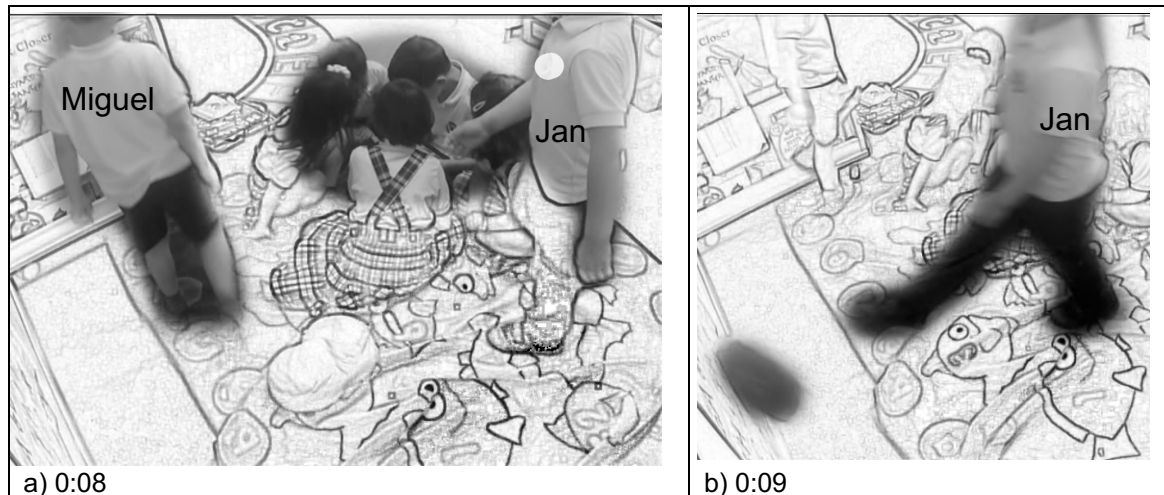


Figure 4.5.2) a) interaction subgroups at 0:08. b) Jan playing football with the cushion at 0:09

From 0:09, Miguel's standing body posture is oriented towards the iPad and towards the whole group interaction. Everyone, except Jan, is sitting in a circle formation and gazing at the iPad. At 0:11 Miguel offers, for the third time, a form of *pronunciation* of the word crocodile “/kɔkɔreɪl/” which is a *repetition* of his second speech turn. At 0:13 Lluvia articulates “/k/ /k/” which is the *beginning sound* the group is working on.

At 0:14, Pier who is the iPad manager, articulates the word crocodile. However, he offers an incorrect pronunciation which is closer to that of Miguel's first pronunciation proposal (at 0:01) which stresses the last syllable “/ˈkɔkɔdrɪl:/” (pronunciation) (repetition). At 0:16, Genaro *repeats* the word, using the same pronunciation as in his previous speech turn at 0:05, although with some added stress on the two first syllables “/ˈkɔˈkɔˈdrɪl:/” (figure 4.5.3) (pronunciation)(repetition). At 0:18 Diana joins into the interaction and pronounces “/ˈkɔk.ə.drɪl/” (pronunciation)(repetition) which is a very close correct pronunciation of the target word, crocodile. Jan, who is facing and standing outside of the working circle, seems to assess the suggestions for correct pronunciation being offered and makes available a new form of *pronunciation*, which does not coincide with Diana's: /ˈkɔk.ə.drɪl/ (pronunciation)(repetition).



Figure 4.5.3) preschoolers' formation at 0:16

4.5.2 Discussion

This language-related episode was selected because it shows a language exploration trigger that arises during the interaction, representing a potentially transformative engagement. In this short episode the actions that are highlighted respond to: a) pronunciation exploration; b) preschoolers' self-motivated movement, body posture and gaze as part of preschoolers' communicative interests and personal needs.

It is relevant to note that in the nineteen seconds the episode lasts, there are eight pronunciations of the word crocodile, out of which, six different pronunciations are provided by the preschoolers. The pronunciation of the word crocodile is done in a natural way. The preschoolers Miguel, Genaro, Jan, Pier and Diana all make available to the group different pronunciations of the word 'crocodile'. The articulation of the word is not accompanied by an explicit intention of correction either in the intonation, gesture or speech. Moreover, it is observable how, upon hearing Genaro's proposal of how the word should be pronounced, Miguel changes the way in which he pronounces the word in his second turn. Considering the different pronunciations in order 1) /kə'kɔdri/; 2) /kɔkɔdri/; 3) /kɔkɔreɪ/; 4) /kɔkɔreɪ/; 5) /'kɔkɔdri:/; 6) /'kɔ'kɔ'dri:/; 7) /'kɔk.ə.draɪ/; 8) /'kɔk.ə.draɪd/ it is perceptible how the pronunciations become more similar to each other, apparently each one influences the next, especially if one pays attention to the last syllable of the word. The key point

is how this language exploration trigger occurs during the task and how it makes visible a potential transformation that occurs *during* the engagement in the interaction. It is worth highlighting that although the word is not correctly pronounced preschoolers engage in enunciating the word crocodile according to their knowledge and in doing so are also undertaking the exploration of the pronunciation of a word in the target language. This extract presents these preschoolers as agentic in exploring the target language and the task as a suitable experience for language exploration triggers to occur.

It can also be noted how the whole group is sitting in a circle formation gazing at the iPad and engaging with the working circle on the one hand and how, on the other hand, the body posture and position in space of Jan and Miguel changes during the interaction from a 'not oriented to the group' to an 'oriented to the group's position. For example, at 0:02 Miguel is seen playing with the toy kitchen, with his back to the group, and at 0:09 Jan is pretend-playing football with a pillow. At 0:16 they are both still standing but orienting towards the group that is sitting down. Jan and Miguel are very active in the interaction and it is Miguel who first initiates the round of pronunciations with an exploratory articulation of the word crocodile. This highlights how preschoolers' interaction is lively and energetic. Body posture and gaze orientation towards the iPad or working group does not determine the participation in the interaction in this extract. In the episode it has been visible how the two preschoolers, Jan and Miguel, are engaging in spontaneous play, with their body and gaze oriented to the toys, and walking around the circle while the rest of the group is in circle formation, being in fact very active in the interaction and negotiation. In summary, this episode underscores that preschoolers can engage in language exploration triggers while actively engaging with toys or walking, demonstrating that movement does not necessarily constitute interference to task orientation.

In general, this short episode has made visible these preschoolers as agentic language explorers and as active participants. It is interesting to note how the exploration happens without explicit, intended correction; rather it is simply part of the natural negotiation in the interaction. This extract has also shown how preschoolers are able to stay on task while moving and playing during task.

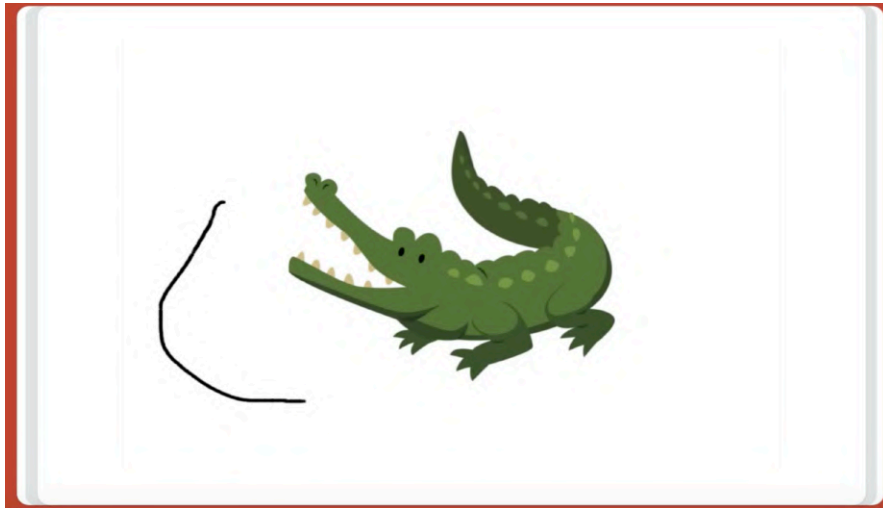

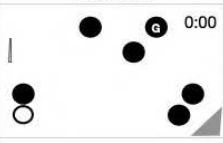

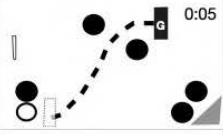

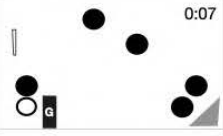

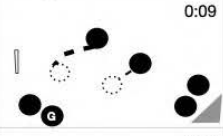

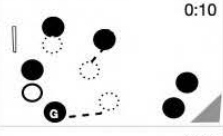

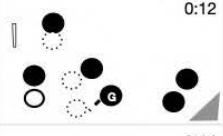

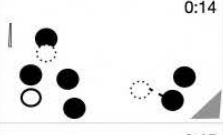

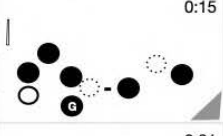
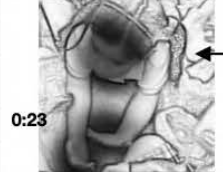
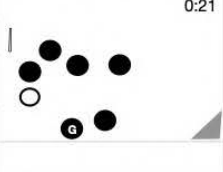


Figure 4.5.4) Crocodile illustration for the digital book of sounds, the crocodile is a digital sticker available in the app.

Synopsis: In this short language-related episode, it is visible: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; self-motivated movement around the working space to play and **spontaneous play**. The visible language exploration triggers are engagement with a **suggestion** that generates several **repetitions with variations in pronunciation**. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); **beginning sound** identification; **language switching** and; **pronunciation exploration**.

4.6 EPISODE: “TAULA , TABLE”

Episode 4.6 Language switching - Group A			
Stills	Time	Vocalization	Movement
			
	0:04-0:05	Gerika: <i>I què faràs amb la T/</i> (and what are you going to do with T/)	
	0:07- 0:08	Gerika: <i>Què faràs amb la T Nerea/</i> (what are you going to do with T Nerea/)	
			
	0:10-0:10	Gerika: <i>Tete/ tete/</i>	
	0:11-0:11	Sofia: <i>Una taula</i> (a table)	
	0:14-0:15	Nerea: <i>table/ vale</i> (table/ ok)	
	0:15-0:16	Nuno: <i>Oye ***</i> (hey ***)	
	0:16-0:17	Nerea: <i>Table/</i>	
	0:17-0:18	Nerea: <i>Table/</i>	
	0:17-0:18	Sofia: <i>=Table:/</i>	
	0:19-0:20	Gerika: <i>Però jo faria un tete</i> (but I would do a tete)	
	0:22-0:26	Sofia: <i>tete/ bueno un un germà ****</i> (tete/ well a a brother ****)	
	0:24-0:28	Fabian: <i>vinga que ens queden ens queden vint minu:tes/</i> (come on we have left we have left twenty minu:tes/)	
	0:29-0:31	Nerea: <i>A veure/ com es fa una taula/ vale/ ja ho tinc ja ho tinc</i> (let's see/ how do you do a table/ ok/ I already have it I have it)	

Movement Key	
Student sitting	●
Student standing up	█
Student with iPad	○
Trajectory of walk
Board with sounds	┌
Trajectory of movement	○.....
Toy kitchen	▴
Participant abbreviation	G= Gerika

4.6.1 Analysis: Language switching – Group A

The episode occurs at the first of the four sessions of the book of sounds' task project and during the third letter sound the students are working on, which is the /t/. The language-related episode is composed of one extract of thirty seconds. Nerea is the iPad manager and has just taken the iPad to illustrate the object for the letter sound.

Starting at 0:00 the group is organized in three different subgroups; Fabian and Nerea, who has the iPad; Sofia, Tatiana and Gerika and; Nuno and Curiel who are playing with the toy kitchen (spontaneous play)(movement)(participation framework: sub: subgroups). The three interaction subgroups are separated in the working space (figure 4.6.1). At 0:04 Gerika stands up from her subgroup and walks towards Nerea, crossing the carpeted area. Gerika directs herself to Nerea asking her “*I què faràs amb la T*” (“*and what are you going to do with T*”) (movement). At 0:07 Gerika, who is not given an answer from Nerea, asks again “*Què faràs amb la T Nerea*” (“*what are you going to do with T Nerea*”) (repetition). This second time, Gerika makes explicit to Nerea that she is directing her question to her by naming her and touching her head (figure 4.6.2a) (multimodal sign)(physicality). Sofia and Tatiana, both of whom had stayed in their subgroup when Gerika left (starting at 0:00), slowly turn their torsos and move to join the subgroup of Nerea, Fabian and Gerika (movement). Gerika then sits very close to Nerea (figure 4.6.2b).

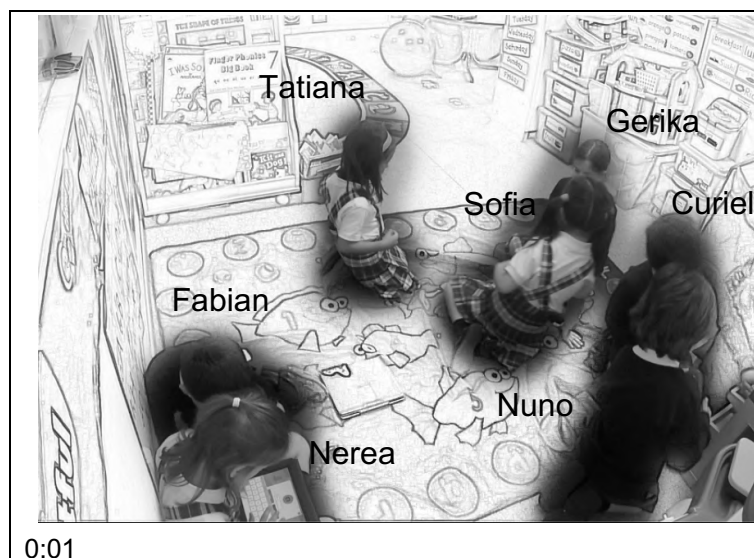


Figure 4.6.1) three interaction subgroups.

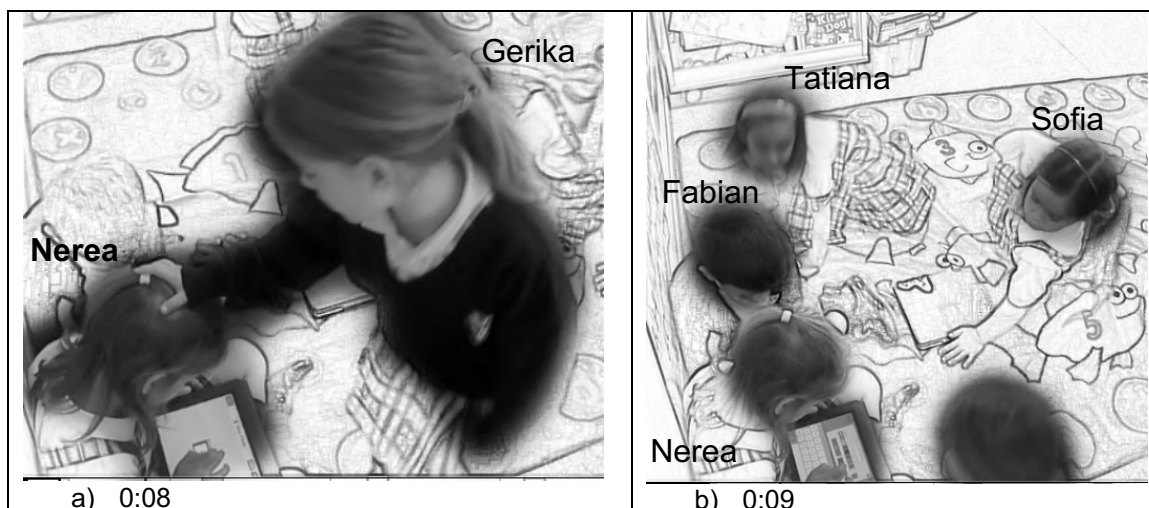


Figure 4.6.2) a) Gerika touching Nerea's head. b) Sofia, Tatiana, Gerika joining Nerea and Fabian's interaction subgroup.

At 0:10 Gerika still has not received an answer even after her two direct questions to Nerea. Gerika then asks a third question “*tete*”¹⁴ (“*tete*”) (vocabulary). This third time, Gerika then uses a single content word, pronounced with rising intonation, as a question. At 0:10, Sofia, Tatiana and Gerika have integrated into the subgroup of Fabian and Gerika (Figure 4.6.2b), hence only two interaction subgroups are active at that moment (participation framework: subgroups). At 0:11 Sofia, who has just joined the subgroup, directs herself to Nerea offering a *suggestion* for ‘t’, “*una taula*” (“*a table*”) and giving an answer, at the same time, to Gerika while positioning herself very close, in space, to Nerea thereby situating herself directly in front of her visual area (vocabulary) (figure 4.6.3). Up to this point, Nerea has not yet engaged with any of the prompts directed to her by Gerika.



Figure 4.6.3) Sofia getting close to Nerea

¹⁴ *Tete* is a nickname used for younger siblings by children, and while it is not used often children might be able to relate it. Here it is used as possible candidate delivered by Gerika.

At 0:13 Nerea raises her head, shifting her gaze from the iPad's screen (figure 4.6.3), and at 0:14, engaging with Sofia's suggestion, replies "table/ **vale**" "(table/ ok)" (agreement)(language use). Nerea accepts Sofia's answer but in her explicit acceptance of Sofia's suggestion ('ok') she switches the word to the target language, shifting from the Catalan '*taula*' offered by Sofia to the English 'table'. Both words begin with the letter sound /t/. Simultaneously, Nuno splits from his subgroup (he and Curiel were playing) and turns towards the other subgroup (movement) (participation framework: subgroups). At 0:15 Nuno is positioned between Sofia and Gerika and in front of Nerea (figure 4.6.4). Directing his gaze at Nerea, Nuno utters something that is mostly unintelligible "**oye** (hey) ****". Curiel then moves from his position towards the subgroup so that all the preschoolers are interacting in a whole group.



Figure 4.6.4) Nuno joining the subgroup

At 0:16 Nerea establishes direct eye contact with Nuno and with an open palm gesture says "table/" (figure 4.6.5a) (language use)(multimodal sign). Followed by a *repetition* "table/", at 0:17, that is joined and overlapped simultaneously by Sofia "table/" (figure 4.6.5b) (language use). The second *repetition* is more emphatic as both Nerea and Sofia say it at the same time with rising intonation and using open palm gestures to mark emphasis (multimodal sign). The whole-group interaction is organized in the space in an outer circle created by Tatiana, Fabian and Curiel through direct gaze, and an inner circle in which Nerea, Sofia and Nuno are positioned very close to each other. In the interaction gaze and position in space make the engagement evident (figure 4.6.5a) (participation framework: whole group).

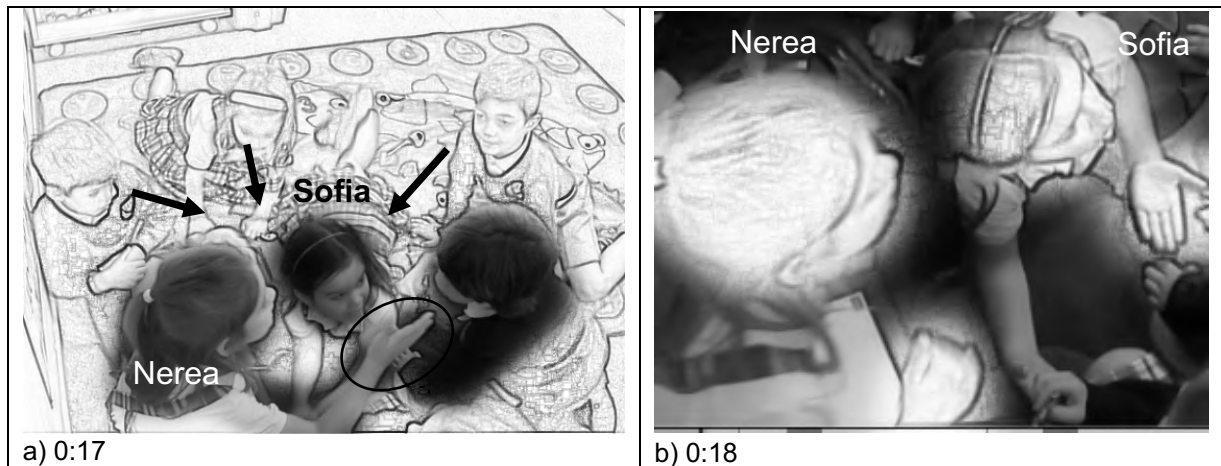


Figure 4.6.5) a) Nerea's open palm gesture. b) Nerea and Sofia's open palm gesture.

At 0:19, Gerika recycles her previous turn, and offers the following utterance to the group “*Però jo faria un tete*” (“*but I would do a tete*”), disaligning herself from the choice of table (disagreement). At 0:22 Sofia engages with the prompt Gerika has offered and replies “*tete/ bueno un un germà *****” (“*tete/ well a brother *****”). Sofia first makes a question ‘tete/’ and then answers herself using a hand gesture to mark the answer “(...) well a brother” (figure 4.6.6) (multimodal sign)(co-construction).

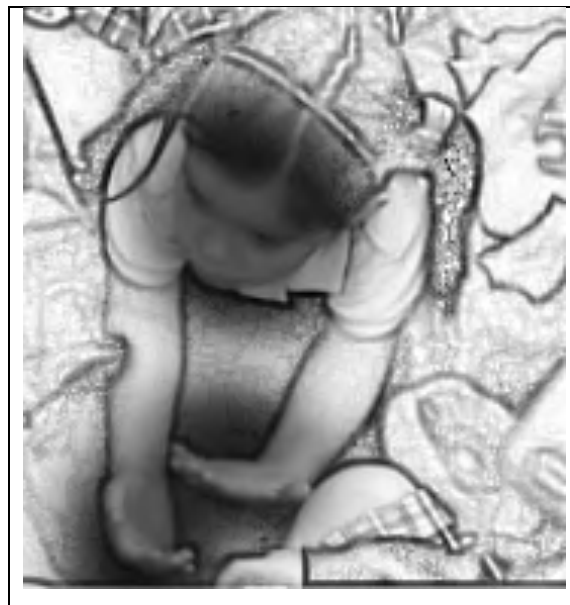


Figure 4.6.6) Sofia's hand gesture “*tete/ well a brother*”

At 0.24 Fabian encourages the group to continue and marks that they do not have much time left “*vinga que ens queden ens queden vint minu:tes*” (“*come on we have left we have left twenty minu:tes*”) (task-completion orientation: co-regulation). At 0:29 Nerea explains that she is planning on drawing a table by asking, rhetorically, how to

draw it “A veure/ com es fa una taula/ vale/ ja ho tinc ja ho tinc” (“let’s see how do you do a table/ ok/ I already have it”) (representability).

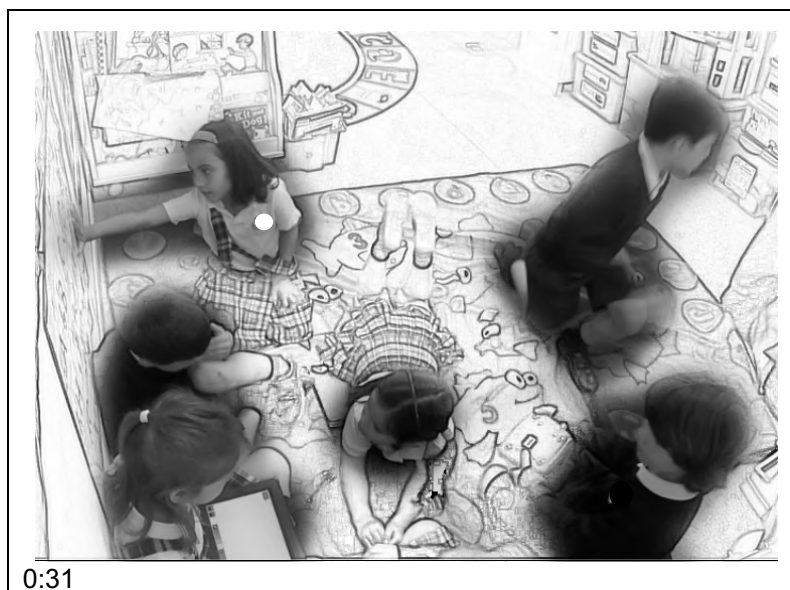


Figure 4.6.7: Whole group divided into subgroups.

At 0:29, the whole-group starts to divide and at 0:31 the participants are divided into subgroups again (figure 4.6.7).

4.6.2 Discussion

This language-related episode was selected because it displays a language exploration trigger which is a potentially transformative engagement and arises during the interaction. In this short episode the actions that are highlighted respond to: a) the use of a multiple modes to accomplish communicative interests and needs; b) co-construction of a concept by offering a synonym; c) preschoolers switching languages and using the target language strategically for the word to be included in the task; d) preschoolers self-motivated movement to join subgroups or the whole group triggered by prompts related to task completion.

The first key point is the use of semiotic resources to accomplish a communicative interest. At 0:04 Gerika directs a question to Nerea “**what are you doing with T**” but gets no reaction from Nerea. After that first attempt, she walks towards Nerea and Fabian who are sitting in a subgroup, and at a second attempt she gets very close to Nerea, and touches her head while repeating a question that is clearly directed to

her, “What are you going to do with T Nerea/” (figure 5.6.2a). This second time clearly represents a more complex attempt to accomplish her communicative aim in which touch and positioning are used. The first point to observe is that the preschooler asks a question and in not being answered she asks again but this time introduces the name of the person she is directing her question to while using touch and positioning in a multimodal sign. However, she still gets no answer from Nerea.

In a third attempt Gerika decides to offer an answer “tete/” pronounced as a question. With this utterance she offers ‘tete’ as a suggestion for the illustration. It can be argued that this is not an expected answer as it is not part of the school vocabulary but a colloquial term. This third attempt is complex in the selection of the wording and is a change in the communicative strategy. If in the two previous turns Gerika is directly asking Nerea, in this third attempt she offers an answer with the intonation of a question. It is an answer that is not transparent, given that it is not a word that can be easily said to be shared by all of the preschoolers. Gerika gets no answer from Nerea. It is also interesting to note, in relation to the less than transparent ‘tete’ suggestion that in turn 0:22, later in the interaction, Sofia co-constructs the meaning of ‘tete’ and makes it available to the group “tete/ well a brother”, hence, making evident that Sofia is able to co-construct the concept shared by Gerika, managing to offer a near synonym.

Another point worth highlighting is how Gerika has a communicative aim which is to ask what is being done for the letter /t/. Gerika changes and progressively makes more complex her request, prompted by the fact that she is being ignored by Nerea. Her meaning-making skills are visible in her three attempts and display how agentic she is as a meaning-maker. It also makes explicit that preschoolers can use multimodal signs (sign complexes) to communicate and to express emphasis by using semiotic resources such as position in space and touch. Thus, it can be seen how she asks the question through speech and then deploys touch to direct her question to Nerea specifically.

The second key point to note is the natural switch between Catalan and English. At 0:11, Sofia makes a suggestion for the letter sound /t/ available directly to Nerea with

the use of body posture and gaze, which at the same time is an answer to Gerika's insistent question; “*una taula*” (“*a table*”). Nerea does not engage immediately with Sofia's suggestion, yet at 0:14, Nerea switches languages and using English, the task's target language, accepts Sofia's suggestion by repeating the word in English ‘table’. Nerea marks the acceptance with a word in Catalan ‘*vale*’ (“*ok*”). A language switch is visible in these two speech turns, in which the language has not affected the action intended or the task's instruction. Hence, a dynamic and natural language switch is made visible; Sofia offers a suggestion in Catalan and, it having to be in English due to the task's instruction, is accepted by Nerea who switches it to English. It is relevant to observe how the use of Catalan did not imply a rejection from Nerea but simply a language switch. This puts on the table the agency of these multilingual preschoolers with the use of languages and the rich competence they have. And, showing that the language switch did not imply obstacles (figure 4.6.8).

0:11-0:11 Sofia: <i>Una taula</i>
0:14-0:15 Nerea: Table/ <i>vale</i>

Table 4.6.8: selection from the transduction (speech)

A third key point is the participation framework dynamics of the preschoolers during this interaction. Starting at 0:00 the preschoolers are organized in three different subgroups, separated in space but still in the same working space. One subgroup, Nerea and Fabian, is working on the letter sound with the iPad. Another subgroup is talking; Gerika, Sofia and Tatiana and the third subgroup is playing with the toy kitchen; Nuno and Curiel. The three subgroups make visible, through gaze, gesture and position in space, that they are engaged in the interaction with their subgroup (figure 4.6.1). However, at 0:05 Gerika spontaneously stands up and walks towards Nerea, crossing the carpeted area, while asking her about the letter sound she is doing. Triggered by the separation of one member of the subgroup (Gerika), the other two members of the threesome, Sofia and Tatiana, turn their bodies towards the iPad's interaction subgroup and join them (Nerea, Fabian and Gerika). At 0:12 these two groups regrouped in a new subgroup, so only two subgroups remain. All members participate either with gaze, body position or speech in their interaction subgroup.

At 0:14 when Nerea has accepted the suggestion from Sofia “a table/ ok”, Nuno separates from his subgroup and moves closer to the other subgroup so he is with Nerea, Gerika, Sofia, Fabian and Tatiana (figure 4.6.4). Nuno introduces himself into the interaction subgroup by positioning his body, gazing at Nerea and making a comment (unintelligible). As Nuno moves and forms part of this subgroup, Curiel, being left alone, moves in direction to them as well. Hence, at 0:17, the preschooler’s movement have formed a whole-group (figure 4.6.5a). It is worth comparing the initial subgrouping configuration and the whole group configuration at the end of the episode (Figure 4.6.9).

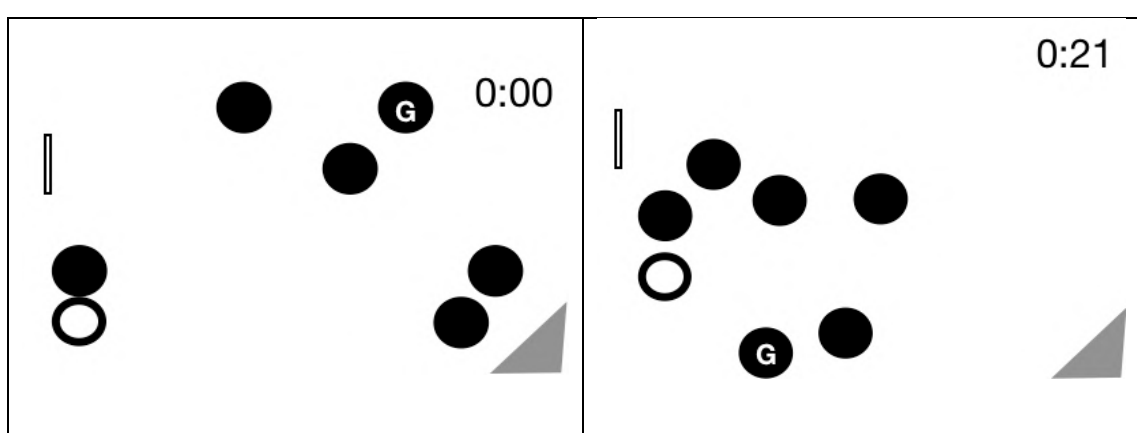


Figure 4.6.9: grouping configuration at beginning and end of the episode. G: Gerika.

At the beginning the preschoolers are in different subgroups and not all of them are working on the task (Nuno and Curiel are playing with the toy kitchen). The prompt related to language exploration, and to task-completion, triggers a reaction from them so that they organize themselves in a whole-group interaction. It is relevant to note that the division and merge of subgroups is natural and lively and seems to be part of the collaborative social order.










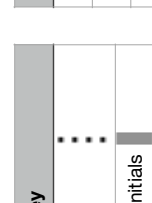

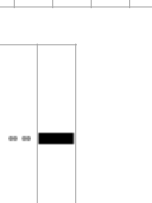


The preschoolers use their semiotic resources to communicate their adherence to a different subgroup: they move, use space, direct their gaze, use gesture to communicate and display to others their participation. It is also worth highlighting that the merge of all the subgroups into a whole-group seems to be triggered by their curiosity and interest to know which letter sound Nerea was working on. This demonstrates as well that there is group cohesion and an orientation to collaboration in which the interest in other’s illustration choices embody the collaborative social

order of the group. It can be argued that Gerika's curiosity triggered collaboration and discussion.

In conclusion, this language-related episode indicates that these preschoolers are agentic in switching languages efficiently, that they are able to change from different participation frameworks dynamically and that they are autonomous meaning-makers that use all the semiotic resources available to accomplish their communicative goals.

Synopsis: In this short language-related episode, the following relevant points are observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; self-motivated movement from **subgroups** to **whole group** to interact with peers (participation framework) generated by **movement** in the working space; **spontaneous play** and use of **physical contact** as communicative resource. The visible language exploration triggers are engagement with a **suggestion** that generates **disagreement** and **agreement, repetition** and the use of **multiple modes** (either multimodal signs or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); assessment of the chosen object's **representability, language switching** and **co-construction** of a concept.

4.7 EPISODE: “AH UN DIEZ PEQUEÑITO /T/ TINY ”

Episode 4.7 Language switching Group A				Gaze																	
Still	Detail	Time	Vocalization	Fa	Nu	So	Cu	Ta	Ge	Ne											
		0:00-0:07	Nuno: Yo hareré un\yo hareré\yo hareré un diez\ un diez\ + /t/ /t/ ten [risas] (I will do a\ I will\ I will do a ten\ /t/ /t/ ten) [laugh]	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:08-0:11	Sofia: Pero solo un ten no puedes hacer *** (but only a ten you cannot do ***) = /t/ /t/ /t/ ten	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:10-0:12	Nuno:	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:14-0:16	Sofia: /t/ /t/ /t/ /t/ /t/	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:16-0:20	Fabian: = Ah/ se puede hacer /t/ /t/ /t/ tiny + pequeñito (ah/ you can do a /t/ /t/ /t/ tiny + tiny)	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:20-0:22	Sofia: Ah/ un diez pequeñito:\ ++ /t/ /t/ /t/ tiny (ah/ a tiny te:n\ ++ /t/ /t/ /t/ tiny)	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:23-0:24	Fabian: =No, Puede ser tiny (no, it can be tiny)	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:23-0:28	Nuno: =Nor /t/ a /t/ /t/ /t/ igloo:	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:26-0:28	Fabian: (tiny is something very small)	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So
		0:28-0:30	Sofia: igloo/ haz la /t/ (igloo/ do the /t/)	So	So	Nu	So	Nu	So	So	So	Nu	So	Nu	So	Nu	So	Nu	So	Nu	So

Names Abbreviation Key	
Fabian	Fa
Nuno	Nu
Sofia	So
Curriel	Cu
Tatiana	Ta
Gerika	Ge
Nerea	Ne

Gaze Key	
Classroom/not defined	•••
Participant	■
Whiteboard	•••
iPad	■

4.7.1 Analysis: Language switching – Group A

The episode occurs at the first, of the four sessions, of the task project. It is part of the second sound the group is illustrating /a/. Gerika is the iPad manager and illustrator. The episode is composed of one extract of thirty seconds.



Starting at 0:00 Nuno declares “**Yo hareré* un\ yo hareré* yo hareré* un diez/ un diez**” (“*I will do a\ I will\ I will do a ten/ + /t/ /t/ ten*”) using his fingers to show 10 and laughing (figure 4.7.1) (multimodal sign)(self-task organization)(playfulness)(beginning sound). Nuno directs his gaze to Sofia who returns his gaze, indicating her engagement with Nuno, along with Curiel, Tatiana and Nerea who also look at Nuno. At 0:08, Sofia responds to Nuno’s prompt with a slight disalignment to his idea “**Pero solo un ten no puedes harer *****” (“*but only a ten you cannot do*”) (This instruction was not given by the teacher at any moment) (disagreement)(task-completion orientation)(language switch). Nuno does not engage with the comment on the restriction, instead in an overlapping turn, says “/t/ /t/ /t/ ten” (beginning sound) (repetition). In his utterance, which resembles a ‘thinking aloud’ sentence, Nuno highlights the isolated beginning sound of the word, followed by the complete word he has previously offered. At 0:14, Sofia repeats the letter sound /t/ several times while standing up next to the whiteboard in which the teacher wrote all the letter sounds to be illustrated in order (repetition).

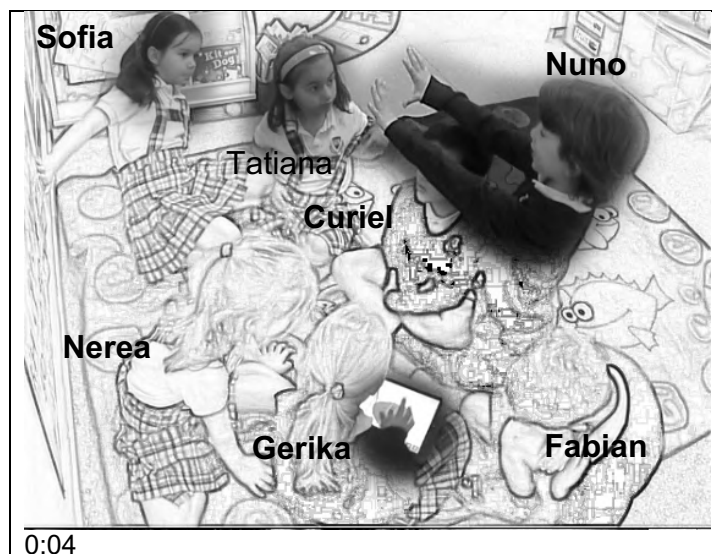


Figure 4.7.1) Nuno gesturing 10 with his fingers

At 0:16 Fabian proffers another option “Ah/ se puede hacer /t/ /t/ /t/ tiny + **pequeñito**” (“ah/ you can do a /t/ /t/ /t/ tiny + tiny”) and makes a gesture with his fingers to represent ‘tiny’ (figure 4.7.2a) (self-task organization)(co-construction)(vocabulary) (language switch)(multimodal sign). He directs his gaze and body posture to Sofia who is standing up. Gerika also engages with Fabian with her gaze, looking at him for a second. At 0:20, Sofia turns her gaze and body towards Nuno and using her index finger to point at him at 0:21, (figure 4.7.2b) generates a connection between Nuno’s previous idea and Fabian’s “Ah/ **un diez pequeñito**:\ ++ /t/ /t/ /t/ tiny” (“ah/ a tiny te:n \ ++ /t/ /t/ /t/ tiny”) (co-construction)(language switch)(movement). In doing so, Sofia offers a combination of both ideas, however she embodies both words and produces “Ah/ **un diez pequeñito**” (ah/ a tiny ten) followed, at 0:24, by a gesture signaling tiny with her fingers (figure 4.7.3a/b) (multimodal sign).

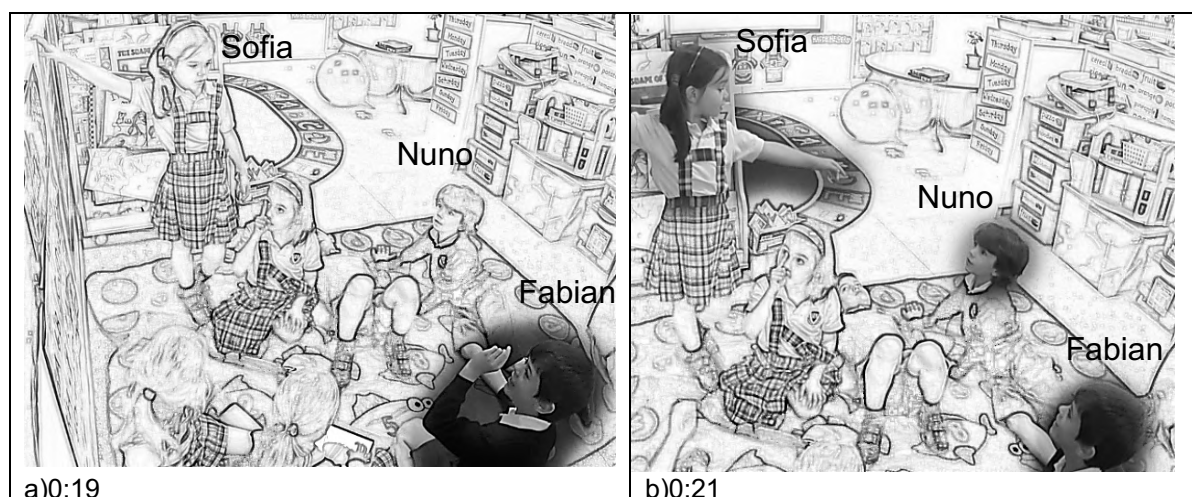


Figure 4.7.2) 1) Fabian’s tiny gesture with his fingers. b) Sofia pointing a at Nuno

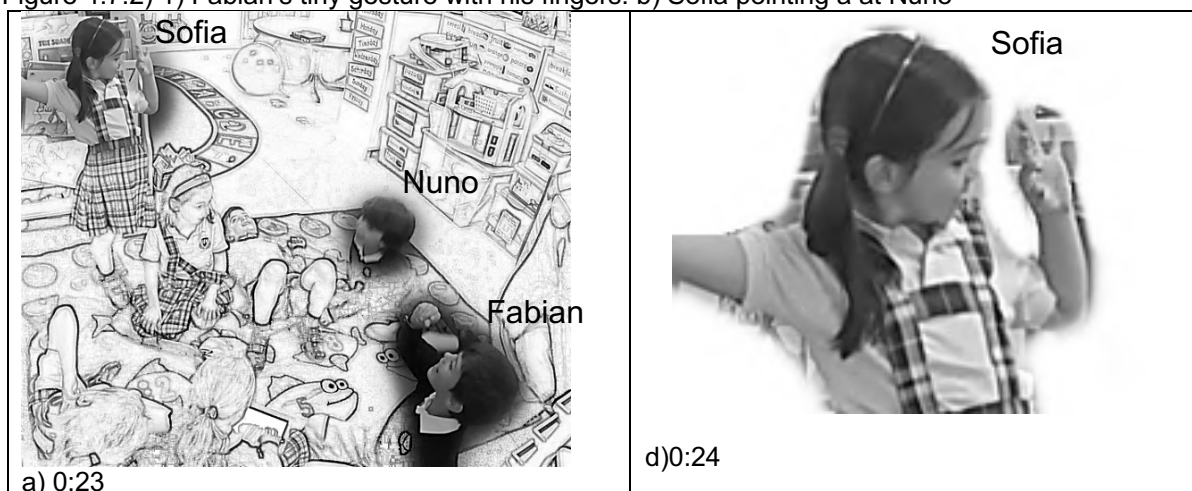


Figure 4.7.3) a) Interaction at 0:23 Sofia and Fabian gesturing tiny with their fingers. b) Sofia’s ‘tiny’ gesture at 0:24.

At 0:23, Fabian repeats his idea for a second time “**No, puede ser tiny**” (“no, it can be tiny”) using his fingers to make a gesture signaling tiny (figure 4.7.3a) (multimodal sign). Tatiana, aligning with him, makes a gesture with her fingers to signal something tiny (figure 4.7.4a) (multimodal turn). At 0:23 and overlapping Fabian’s last part of his speech turn, Nuno suggests a completely different idea, changing the letter sound and the object “**no/ /i/ a /i:/ /i/ /i/ igloo:**” (vocabulary)(disagreement)(language use)(beginning sound). Fabian, however, continues with his previous interest and overlapping Nuno’s last part of the speech expands on it with a description of the word he had suggested earlier “**tiny es algo pequeñito**” (“tiny is something very small”). He uses the fingers of both his hands to signal ‘tiny’, this time using a different gesture than in the two previous turns (0:19) (0:24) (co-construction)(repetition)(multimodal sign). Nerea engages with Fabian through gaze, Tatiana, at 0:28, engages as well with her gaze while making a gesture with her fingers to signal something tiny (figure 4.7.4b) (repetition)(multimodal turn). In contrast, Sofia and Nuno do not engage with Fabian and continue to look at each other. At 0:28, upon hearing Nuno’s new idea, Sofia accepts it, indicated by the repetition of the suggested word and an order to do it. “igloo/ **haz la /i/**” (“igloo/ do the /i/”). She finishes her expansion with the letter sound ‘i’, thus marking her agreement that the target letter sound should be changed (agreement)(beginning sound).



Figure 4.7.4) a) Tatiana’s ‘tiny’ gesture at 0:27. b) Tatiana’s ‘tiny’ gesture at 0:28

4.7.2 Discussion

In this short episode the actions that are highlighted respond to: a) preschoolers switching naturally across languages; b) the use of multimodal signs to accomplish communicative interests and needs, using gestures for additional precision in

meaning and c) preschoolers actively engaging in the interaction through silent modes (gaze, gesture and body orientation).

The first key point to be discussed is the switch across languages, in this case across Spanish and English and how this shift does not affect the meaning or the communication. It is relevant to highlight that the task instruction is to represent objects beginning with the given sounds, one object per each letter sound, in the target language. Thus, the translation of words to illustrate from English to Spanish rarely works (as often such begin by different sounds like *'pequeño'* and *'tiny'*). This demonstrates the competence and understanding that preschoolers have when switching across languages; the meaning and intention of the task completion is not lost even when the preschoolers suggest words in Spanish, *"un diez pequeñito"* (*"a tiny ten"*). The word does not match the sound they are illustrating (*diez* does not correspond to *'t'*) but it does match in English *"tiny ten"*.

A second significant point in this short episode is how energetic the interaction is. It starts at 0:00 when Nuno makes available to the group *"Yo haré* un\ yo haré*\ yo haré* un diez/ un diez"* (*I will do a\ I will I will do\ a ten/ a ten\ /t/ /t/ ten*). Nuno uses Spanish to communicate his idea, he presents the word *'diez'* (*ten*) and in the same speech turn translates it into English. The word in English matches the letter sound *'t'*, thus it is an appropriate suggestion. However, Sofia indicates that it is not a sufficient answer, so Fabian offers a suggestion: *'tiny'*. Almost all of Fabian's turn is in Spanish, although he strategically switches to English to say the word he is suggesting, followed by its translation to Spanish. Sofia engages with Fabian's suggestion and combines both options, at the same time offering a solution for the restriction she pointed out in her earlier turn, *"but only a ten you cannot do"* (*"pero solo un ten no puedes hacer"*). Building on Fabian's suggestion, Sofia offers to Nuno *"ah/ un diez pequeñito"* (*'ah/ a tiny ten'*). As can be observed in English both words begin with */t/* and can be used, however in Spanish the words do not match the aim of the task.

It is interesting to note that the preschoolers use their home language to negotiate the task but that it is not an obstacle for respecting the task instructions nor for

accomplishing the task. Clearly, in this extract the language switch does not affect the process of the task or the instructions' compliance, demonstrating the preschoolers' competence in language switching.

Furthermore, it is worth highlighting that, at 0:23, Nuno offers a different word '/i/ Igloo'. Sofia endorses this suggestion and replies "igloo/ **haz la /i/**" ("igloo/ do the /i/"). It is interesting that she accepts the new focus of the task by accepting the word suggestion, while highlighting the letter sound is different. This is evidence of the language competence of these preschoolers. Sofia accepts Nuno's new proposal and does not mark it as an incorrect answer, instead she construes it as an answer to a different letter sound. This also makes visible that Nuno is able to identify the beginning sound of a word and able to make it available by articulating the isolated beginning sound before it "/i/ /i/ igloo".

The next key point is how these preschoolers are competent in the use of semiotic resources to bring precision to the concepts they are trying to explain and work with (e.g 'tiny'). In the episode it can be observed that the concept "tiny" is brought out discursively four times, three by Fabian (0:16, 0:23, 0:26) and one by Sofia (0:20). However, at 0:23 Fabian disagrees with Sofia "**no, puede ser tiny**" ("*no, it can be tiny*") who, at that moment has accepted his idea "**ah se puede hacer /t/ /t/ /t/ tiny + pequeñito**" ("*ah/ you can do a /t/ /t/ /t/ tiny + tiny*"). The disagreement is barely visible in speech, however in gaze it is visible that it is a matter of precision. Furthermore, Tatiana engages as well and uses gesture to signal "tiny" which is an active interaction that remains silent but highly visible.

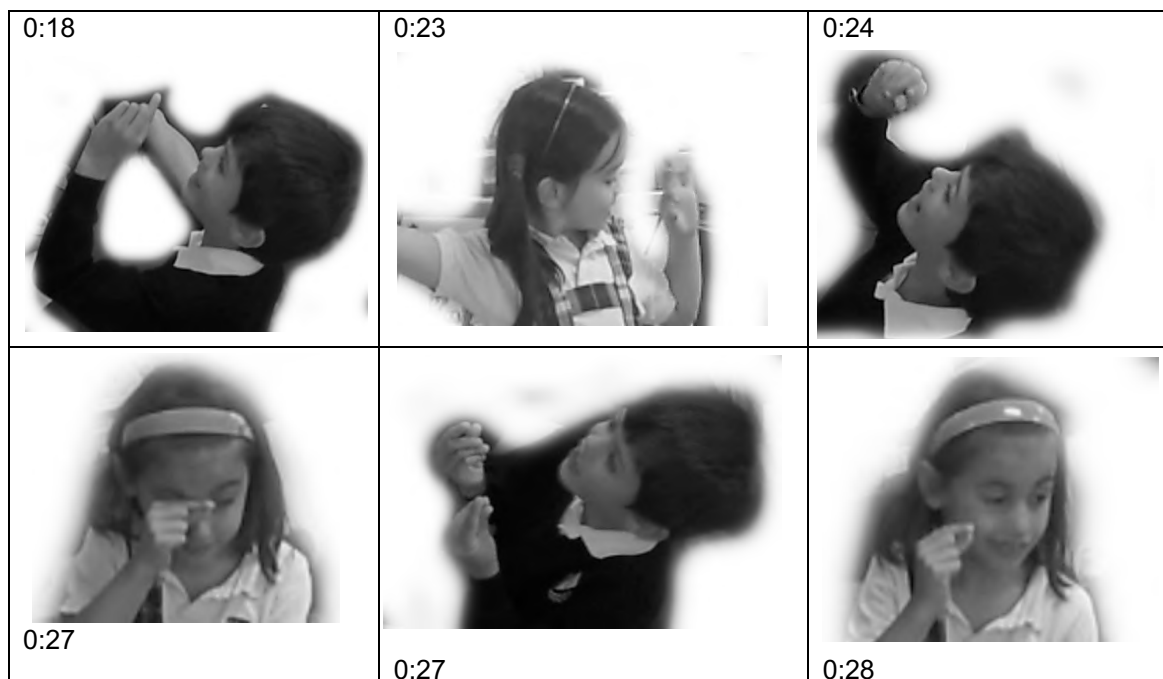


Figure 4.7.5: Close up of the gestures signaling the preciseness of tiny








As can be observed in figure 4.7.5, the preschoolers signal how small ‘tiny’ is for them. For instance, at 0:23, for Sofia, tiny is very small however for Tatiana, at 0:28, tiny is almost invisible as well as for Fabian at 0:27. Hence, the precision of the term is not achieved through speech but through gaze in a multimodal turn (multimodal sign in Fabian) that is rich and makes visible their competence as communicators. By looking at 0:23 and 0:27 the disagreement that Fabian expresses is visible; for him tiny is even smaller than for Sofia. Fabian observes the precision of tiny for Sofia, when she makes it available at 0:23, and he disagrees showing what for him is tiny at 0.24 and with a different gesture at 0.27. The screen captures make visible how relevant gesture is in their communication and that they are competent in using the semiotic resources they have available.

The final key point is also visible in figure 4.7.5. Tatiana, who is a silent participant is participating and engaging in the interaction very actively. However, throughout the episode she engages in the interaction through gaze, gesture, body orientation and body posture but not with speech, and seldom during the task process. If the gaze’s close-up is observed (figure 4.7.5) it is visible that she engages with Nuno’s and Fabian’s comments and that she follows the speech actively. It is also evident through her body posture that she is participative in the interaction hence making herself available and present in the interaction. In figure 4.7.5, we can see how she

not only re-makes meaning but how she engages through meaning-making. At 0:27 and 0:28 she is engaging with the discussion around the precision of 'tiny' and she represents, through gesture, the smallest, almost invisible, precision of 'tiny'. These gestures are equivalent to a speech turn and the position of her hands, in front of her face, mark that she is making the gesture available to the others. This underscores how a silent participant can actively engage in the interaction; in this case the participation is visible through a multimodal analysis. A key point is to acknowledge that while Tatiana decides not to use the mode of speech she participates very actively in making and remaking meaning. In sum, the preschoolers' multilingual competence is visible; switching across languages does not suppose an obstacle or indicate any deficiency; it contributes to the construction of rich interaction. The participant's competence is visible in the way in which they make and re-make meaning in the different languages. Their multimodal communication is made visible as well. In this episode we have shown that speech cannot reveal all of the communication taking place, as other modes carry key meaning in the interaction as well. Furthermore, through recognizing the multimodal capacity of communication that preschoolers have, we can see how apparently silent participants are active and engaged even if they demonstrate a preference to not use the speech mode.

Synopsis: In this short language-related episode the following features are observed: the **collaborative social order** and **co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** and **self-task organization**; self-motivated **body movement** as communicative resource and; **playful** attitude. The visible language exploration triggers are engagement with an illustration **idea** that generates **disagreement**, **co-construction** of the illustration idea (representability of a word), **repetition** and; the use of **multiple modes** (either in multimodal signs or multimodal turns) as a communicative resource for example as a resource to specify the preschoolers' understanding of the size of 'tiny'. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **co-construction** of illustration ideas (**representability**), **language switching**; **beginning sound** identification, **definition** of a concept and **vocabulary** suggestion.

4.8 EPISODE: “ES PENSARIA QUE NO HO SABEM FER EN ANGLÈS”

Episode 4.8 Language use implications - Group A			
Stills	Time	Vocalization	
	0:00-0:01	Fabian: Una vez *** una televisión en un igloo (Once *** a television in an igloo)	
	0:01-0:01:3	Nuno: eh/	
	0:01-0:02	Fabian: Una vez *** una televisión en un igloo (Once *** a television in an igloo)	
	0:03-0:07	Nerea: Però té que ser en anglès si no ens renyarien (but it has to be in English if not we will get told off)	
	0:07-0:07	Nuno: Ja/ (right/)	
	0:08- 0:25	Nerea: Si no es pensarien que que que ens agrada més el el el a tot el* equip ens agrada més el castellà o o o el català +++ Llavors tenim que fer algo en anglès *** ens renyarien. (if not they would think that that that we like more we we we we all the team we like more Spanish or or or Catalan +++ then we have to do something in English *** we would be told off)	
	0:26-0:27	Sofia: No/ no ens renyari:en (No/ no they would not tell us: off:)	
	0:27-0:28	Nerea: =Sí/ perquè es pensarien (yes/ because they would think that)	
	0:28-0:29	Sofia: =No:::/ (No:::/)	
	0:29-0:31	Nerea: =Es pensarien que ens agrada més el català i el castellà (They would think that we like more Catalan and Spanish)	
	0:31-0:33	Sofia: =Ja/ però això no passa re::s (right/ but it is ok nothing happens)	
	0:34- 0:36	Nerea: Bueno però també tenim *** (well but we also have ***)	
	0:36-0:37	Sofia: =No::: (no:::)	
	...		
	0:37-0:38	Nerea: think that *** =Perquè/ pensaria que *** (because/ she would think that ***)	
	0:38-0:44	Sofia: =No::: això s'enfadarà una mica perquè perquè aquesta classe és ingle:sa (No::: that she would be upset a bit because because because this class is in English)	
	0:46-0:54	Nerea: i a la mestra tindriem que fer *** perquè es pensaria que no ho sabem fer en anglès i además que que (and the teacher we would have to do *** and she would think that we don't know how to do it in English and besides that that)	
	0:55-1:02	Sofia: Ja ja sap que sabem anglès i que si ens agrada un altra idioma no passa res ++ no s'enfadarà (right she already knows that we know English and if we like another language nothing happens ++ she will not get upset)	

4.8.1 Analysis: Language use implications – Group A

The episode occurs at the first of the four sessions of the book of sounds' task project. The language-related episode consists of one extract of one minute and two seconds. Moments previous to the episode the preschoolers are talking about the objects they want to illustrate and sharing their ideas with the group, for instance "I will do a ten"; "ah a tiny ten"; " /i/ /i/ /i/ /i/ igloo" (episode 4.7). Starting at 0:00 the group is working on the second sound of the list of sounds, /a/, and the iPad manager and illustrator, Gerika, is drawing an apple. The group is sitting in a circle formation except for Sofia who is standing and facing the display on the wall (figure 4.8.1).

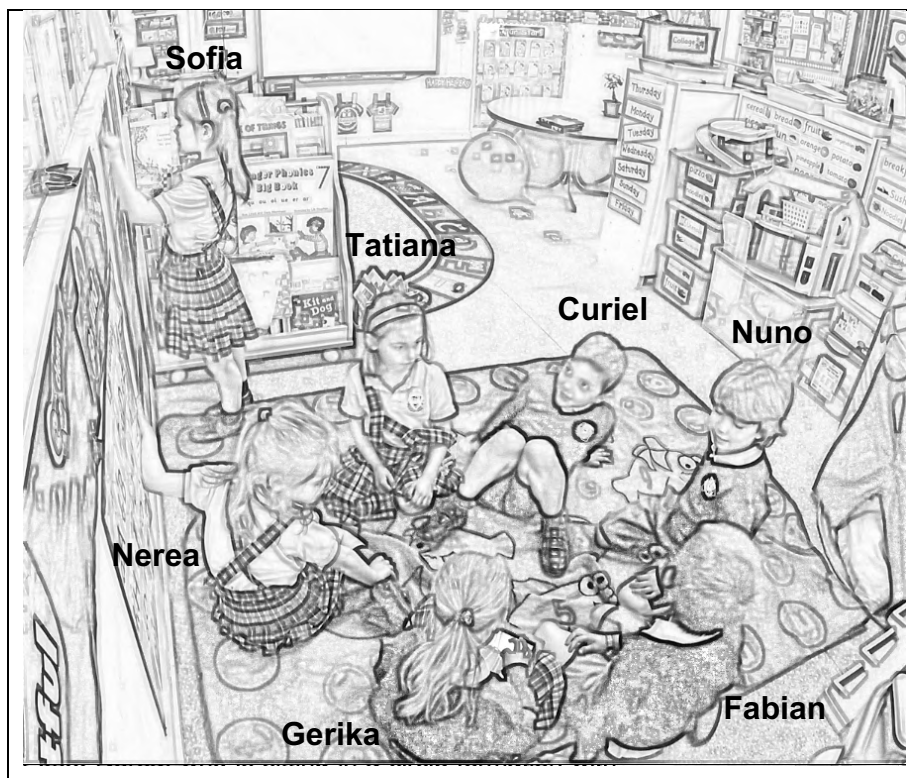


Figure 4.8.1) Group's participation framework (starting at 0:00)

Starting at 0:00, Fabian makes a comment about a television, “Una vez *** una televisión en un igloo” (Once *** a television in an igloo). Nuno seemingly requests a repetition “eh/” and at 0:01 Fabian repeats his turn **Una vez *** una televisión en un igloo** (Once *** a television in an igloo) (repetition). This comment seems to be interpreted by Nerea as a proposal of ‘televisor’ (television) to which she disagrees at 0:03, declaring “Però té que ser en anglès si no ens renyarien” (“but it has to be in

English if not we will get told off”). She is making reference to the language choice of the target word in relation to the language of the task (Collaborative social order: co-regulation)(target language use reflection). At 0:07 Nuno replies “**right/**” in response to Nerea’s comment, displaying his *agreement* with her and Sofia turns towards the group and sits down in the circle (figure 4.8.2a) (movement)(participation framework: subgroups). At 0:08, Nerea elaborates further her previous argument in relation to the use or not use of English in the task “**Si no es pensarien que que que ens agrada més el el el el a tot el* equip ens agrada més el castellà o o o o el català +++ Llavors tenim que fer algo en anglès *** ens renyarien.**” (*“if not they would think that that that we like more we we we we all the team we like more Spanish or or or or Catalan +++ then we have to do something in English *** we would be told off”*) (target language use reflection). The group maintains the circle formation and the interaction is oriented towards the whole group but then divides into three subgroups at 0:26 (figure 4.8.2b) (movement)(participation framework: subgroups).

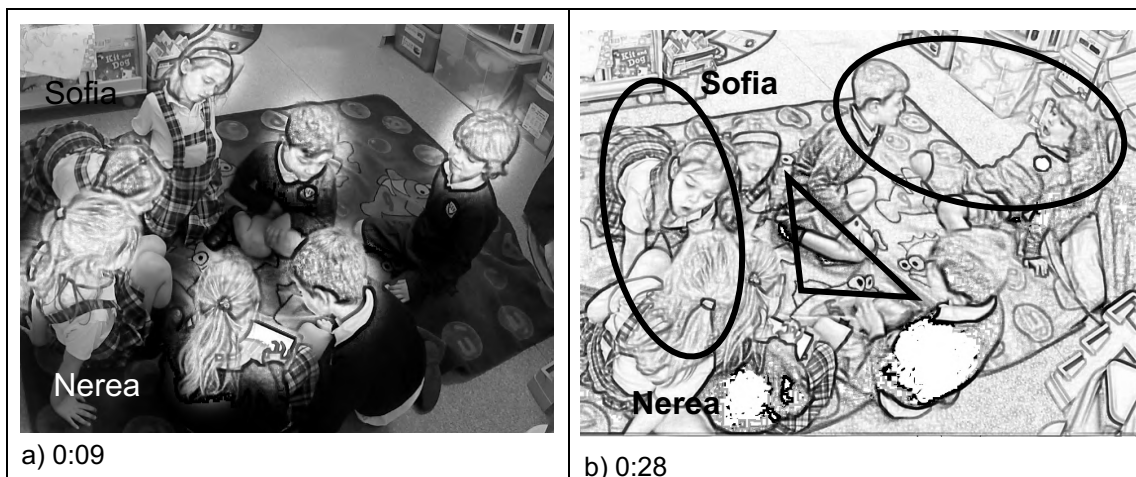


Figure 4.8.2) a) whole group interaction arrangement. b) creation of subgroups

At 0:26 Sofia responds to Nerea’s comments in explicit statement of disagreement “**No/ no ens renya:ri:en**” (*“no/ no they would not tell us: off:”*). In this turn, Sofia orients with her body, gaze, position in space and closeness to Nerea (Figure 4.8.2b). At 0:28 Nerea engages with Sofia’s comment and maintaining her position but orienting her gaze and torso to Sofia overlaps Nerea’s turn in order to support her previous argument “**=Sí/ perquè es pensarien**” (*“yes/ because they would think that”*) (disagreement)(multimodal turn). Sofia then interrupts Nerea, facing her and creating an interaction dyad between them both, with an emphasized “**No:::/**”. She embodies her

emphatic disagreement by elongating the vowel, exaggerating the articulation, using a rising intonation and getting very close to Nerea (face to face) (figure 4.8.4) (disagreement)(movement)(multimodal sign)(co-regulation).

In response, at 0:29, Nerea also overlaps Sofia and continues the turn that Sofia had interrupted her before “*Es pensarien que ens agrada més el català i el castellà*” (“*they would think that we like more Catalan and Spanish*”) (collaborative social order: task-completion orientation)(target language use reflection). This turn is a *repetition* with variation of the first part of Nerea’s previous turn at 0:08. At this point Tatiana displays her orientation to the discussion with her gaze and body posture, thereby forming a triangle with Nerea and Sofia (figure 4.8.3) (movement)(participation framework: subgroups).

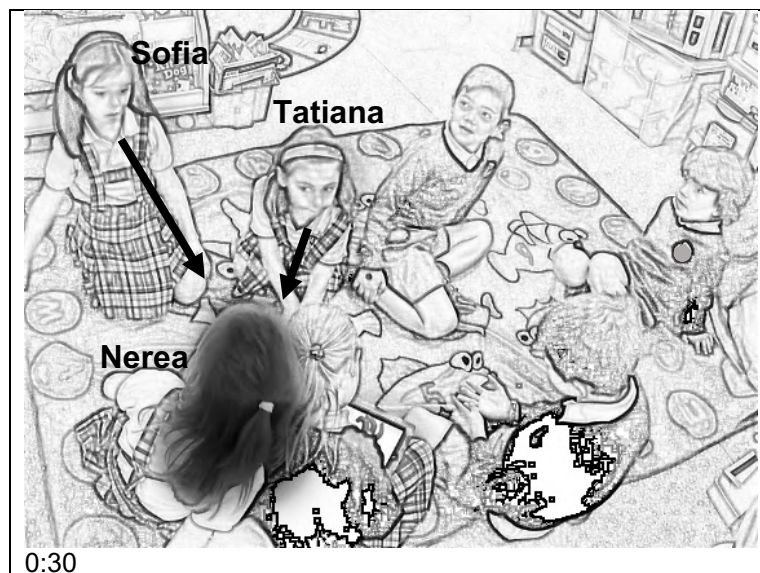


Figure 4.8.3) The group at 0:30, Tatiana joining the Sofia and Nerea’s interaction

At 0:31 Sofia interrupts again “*Ja/ però això no passa re::s*” (“*right/ but it is ok nothing happens*”), emphasizing her *disagreement* with a ‘no’ hand gesture (figure 4.8.4a) (multimodal turn) (disagreement). This is the fourth turn in an orchestration of overlapped turns between Sofia and Nerea. At 0:34, Nerea replies “*bueno però també tenim ****” (“*well but we also have ****”). At 0:36 Sofia interrupts Nerea once more, with an elongated “*no:::*” accompanied by face gesture and arm movement to emphasize her continued *disagreement* (figure 4.8.4b) (multimodal turn). Sofia’s

multimodal disagreement, at 0:28, 0:31, 0:36, escalates in intensity and changes in form as can be seen in figure 4.8.4.



Figure 4.8.4) Sofia's multimodal disagreement at a) 0:28; b) 0:31 and c) 0:37

At 0:37, Nerea interrupts Sofia “*Perquè/ pensaria que ****” (“*because/ she would think that*”) in an attempt to make her arguments explicit. At the same time, she extends her arm to emphasize her speech. Sofia reacts by trying to catch Nerea’s arm although Nerea moves it and Sofia is not able to touch her. Nerea’s speech is then interrupted by Sofia as she overlaps her (figure 4.8.6) (physicality attempt) (movement).



Figure 4.8.5) Sofia's attempt to grab Nereas' arm

At 0:38 Sofia (overlapping Nerea) offers a different argument to expand on why she *disagrees* with Nerea “No::: això s'enfadarà una mica perquè perquè perquè aquesta classe és **ingle:sa**” (“No::: that she would be upset a bit because because because this class is in English”) (disagreement)(classroom social order)(target language use reflection). However Sofia, *agrees* in this turn that the teacher “would be upset a bit” so the disagreement apparently related to how much would the teacher get upset (agreement)(classroom social order). Sofia points at herself when articulating “this” in reference to the English class (figure 4.8.5a). This is the third turn overlapped in a second orchestration of turns between Sofia and Nerea.

At 0:46 Nerea replies to Sofia “i a la mestra tindriem que fer *** perquè es pensaria que no ho sabem fer en anglès i ademés que que” (“and the teacher we would have to do **** and she would think that we don't know how to do it in English and besides that that”) (target language use reflection). In this turn Nerea further elaborates her stance offering another reason why the objects included in the task have to be in English (classroom social order)(co-regulation: task-completion orientation). To this argument, Sofia replies “Ja ja sap que sabem anglés i que si ens agrada un altra idioma no passa res ++ no s'enfadarà” (“right she already knows that we know English and if we like another language nothing happens ++ she will not get upset”). She supports the opposite view that the teacher already knows they know English (disagreement)(target language use reflection). During the last two turns Sofia maintains

the distance and the position from before, gesture and gaze is not as intense as at 0:37 or previous turns (Figure 4.8.6b).



Figure 4.8.6) Sofia's body posture and position from 0:42

4.8.2 Discussion

In this short episode the actions that are highlighted respond to: a) preschoolers' task-completion orientation and co-regulation; b) preschoolers discussing the implications of the use of English in the task; c) the perception of the preschoolers of the stance of the teacher in relation to their use of English. d) the use of multiple modes to accomplish communicative interests and needs; e) preschoolers self-motivated movement to join subgroups triggered by their engagement in the interaction.

In first place, it is relevant to observe that there is a clear task-completion orientation generated by Nerea at 0:03, triggered by her mistaken interpretation that another preschooler was suggesting a word in Spanish '*televisor*'. Nerea brings the tasks' instructions to the talk "but it has to be in English if not we will get told off". This is evident by the way in which Nerea explicitly advises the group that 'it has to be in English'. Nuno agrees with Nerea and gives her his support "right:". It is thus visible that there is a collaborative social order and thus co-regulation in the group and that preschoolers orient to the task's requirements: the use of English.

Another key element in this episode is the discussion around the use of English in relation to the preschooler's personal preferences of the available languages. At 0:08 Nerea offers an argument to support why the task has to be in English, explaining that if the task is not done in English the teacher will think that they do not like English and that they prefer Catalan or Spanish (the two other languages of instruction). Nerea repeats this argument throughout the discussion, maintaining it almost until the end (she offers a different argument at the end of the extract). It is relevant to note how Nerea connects the use of English with the personal preference of the language as if not used it means Catalan and Spanish are preferred over English. This foregrounds the notion of an emotional relationship with languages by explicitly highlighting that the use of a language may be related to a personal preference. Furthermore, it is interesting to note that every time Nerea brings the argument to the discussion she introduces it by saying 'they would think that' which appears four times in the extract. It seems that Nerea sees the emotional connection as important and a reason to use English but she does so remarking that if they do not use English *others* are going to *think* that they prefer Catalan or Spanish. In this sense, it is not, from her perspective, that they do not prefer English, but that *others* would *think* that. Nerea might be implying that they prefer English independently if they use it or not, although this is not possible to know. It is interesting to note that the preschoolers are aware that social values (or capital) can be attached to languages somewhat arbitrarily, rather than due to an intrinsic value of one language over another.

Another relevant aspect to highlight in this discussion is the perception of the preschoolers regarding the potential stance of the teacher in relation to the preschooler's use of English. At 0:38, Sofia agrees with Nerea, to a certain extent, that the teacher might get a 'bit' upset if they use Catalan or Spanish instead of English. However, Sofia distances herself from Nerea's argument: "they would think that that that we like more we we we we all the team we like more Spanish or or or or Catalan" hence disassociating her argument from an emotional relation or preference of the language to a more pedagogic relation; "No::: that she would be upset a bit because because because this class is in English". This is relevant in the sense that Sofia brings to the discussion the classroom social order and the class'

language social order while Nerea refers to the preference of the language. Sofia frames the need to use English and the possible disconformity of the teacher if that is unfulfilled, to the fact that the language choice occurs in the English class. Thus, for Sofia, the disconformity is related to them not accomplishing the class goal ‘because this class is in English’ not because it means not liking English.

Upon hearing this argument, Nerea replies to Sofia with an argument that is also framed by the classroom social order: the classroom is a place in which there are certain rules and structures. Nerea tells Sofia ‘she would think that we don’t know how to do it in English’. In this turn, Nerea highlights her perception on the teacher’s assessment of the task and the group, hence seemingly aware that they are expected to know English. It is not known whether the teacher made explicit this information to them, but through the turn Nerea displays that she knows the use of English for the task completion is an expectation of the teacher. At the same time Nerea distances herself from this expectation and places the accountability of this position fully on the teacher: ‘she would think’. To which Sofia replies ‘she already knows that we know English’. Sofia positions herself in a more neutral role, arguing that the use of Catalan or Spanish will not lead the teacher to think negatively regarding their competence in speaking English and that ‘she will not get upset’ if they use the other languages.

It is interesting, as well, how Sofia, at 0:55, recycles the emotional relationship of language use first expounded by Nerea “right she already knows that we know English and if we like another language nothing happens ++ she will not get upset”. This offers a different perspective from that of Nerea. Sofia proposes that the teacher knows they know English and hence liking other languages is accepted thus arguing that they would not be told off, or just a bit, if they use Spanish or Catalan. This complex net of disagreeing arguments shows how preschoolers have an opinion on the teacher’s stance in relation to the preschoolers’ use of English.

Another key element in this extract is the use of multimodal signs and how their use aids in the preschoolers’ orientation and creation of discussions. Also their use of

movement is self-motivated by their interest, in this case to join interaction subgroups.

Sofia engages with Nerea's prompt at 0:03, with an opposite view, and she initiates a discussion in which she marks emphasis with her tone of voice, hand gestures, proximity to others and direct gaze as well as with her movement to get closer to Nerea. This use of different modes and semiotic resources aids in creating a dyad between the pair which is separated from the whole group. Sofia displays her strong disagreement with Nerea through elongated speech to mark 'no' along with the use of all the modes mentioned above. These resources are deployed to orchestrate the discussion. For instance, in figure 4.8.7 it is visible how from a whole group interaction, Sofia's use of modes promotes the discussion between herself and Nerea. This aspect underscores the agency of the preschoolers to orchestrate discussions through the use of many different semiotic resources.



Figure 4.8.7) stills from the extract

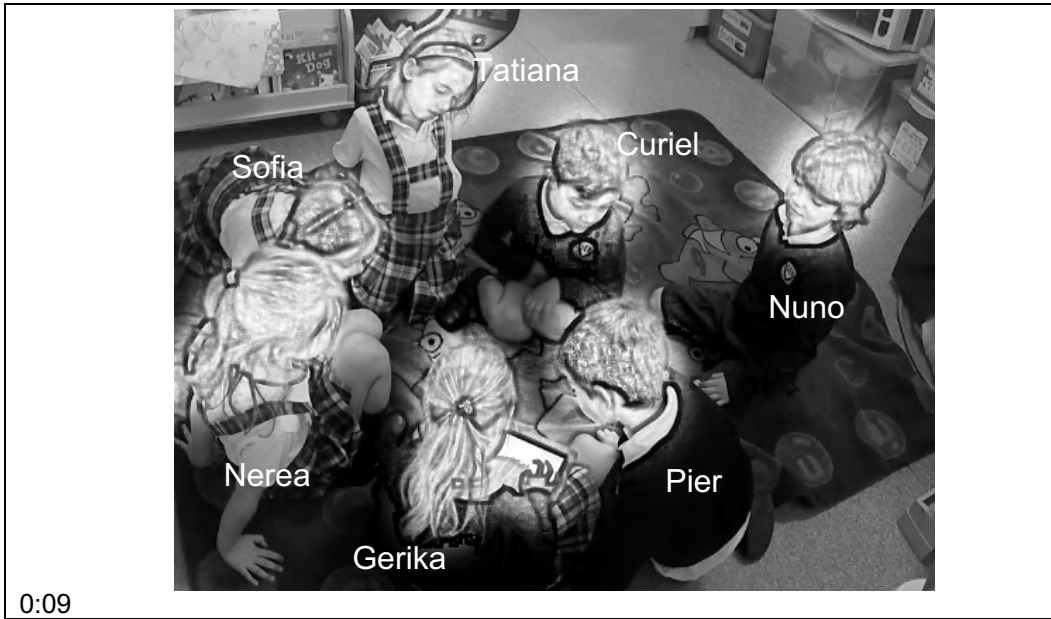
Nerea made her comment on the need to use English available to the group while they were all sitting in a circle formation. Her comment was directed to everyone and she did not establish direct eye contact with anyone in particular. Sofia, however, making use of gaze, gesture and position in space created a new interaction dyad in which she engaged in the discussion only with Nerea. This discussion was then joined by Tatiana, who did not participate with speech but did so with gaze, body posture and position in space, as she moved to get closer to the interaction, as shown in figure 4.8.8. Hence, the discussion was not closed to Nerea and Sofia and,

although both of them lead it through the use of speech, Tatiana engaged through silent modes. In this sense, the use of modes is relevant in the preschooler's interaction and provides evidence of the preschoolers' agency to create, design and engage in discussions based on their interests and perspectives on given topics.

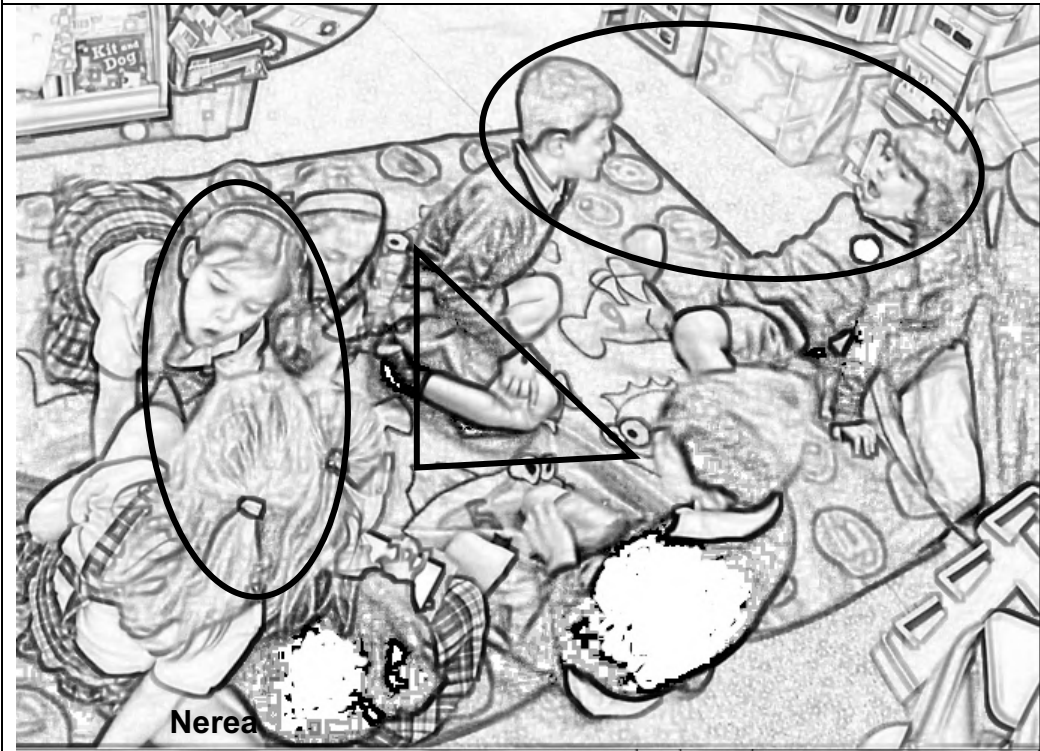


Figure 4.8.8) Sofia, Nerea and Tatiana in a triad.

It is also relevant to highlight the preschoolers' movement in the space, and how such movement is self-motivated. In figure 4.8.9, it is visible the amount of movement the preschoolers make during this short episode and the transduction gives a clear idea that such movement responds to the preschoolers' interest. Hence, during Nerea and Sofia's discussion it is visible how Sofia moves towards Nerea and how Tatiana moves, at a later moment, to engage in the interaction between Sofia and Nerea. It is also visible that the preschoolers that are not joining in this triad's interaction are interacting among themselves as seen in figure 4.8.9 (at 018).



0:09



0:28

Figure 4.8.9) preschoolers whole group circle formation at 0:09 and three different subgroups at 0:28

In conclusion, preschoolers are able to make available to others their perspectives on the language use implications. It is interesting to see how the language use is understood as having different dimensions: liking or not liking the language, language use as part of an emotional relation; knowing or not knowing the language; pertaining

to a particular social organization such as a language class (the classroom social order) and therefore task-oriented and; to the teacher's expectations.

Finally, it is interesting to observe how preschoolers are agentic in the design and orchestration of discussions and how they use various modes effectively for that purpose, including movement in the working area.

Synopsis: In this short language-related episode, we have discussed the relevance of: the **classroom social order** in relation to the target language use; the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; self-motivated movement from **whole group** to **subgroups** to interact with peers (participation framework) generated by **movement** in the working space and; the attempt of use of **physical contact** as communicative resource. The visible language exploration triggers are engagement with a **comment** not related to the task understood as a **suggestion** that generates **disagreement** and **agreement, reflection on the use of the target language, repetition** and the use of **multiple modes (either in multimodal signs or multimodal turns)** as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related point evident is the **reflection on the language use**: English lessons require the use of English; English use reflects we know English; English use reflects we like English.

4.9 EPISODE: “PERO ESA NO ES LA /I/”

Gaze Key		Movement Key	
Classroom	...	Rocks body	
iPad		Sits back	
Someone/ group	...	Sits up/normal	
Eye contact		Leans towards iPad	

Episode 4.9 Beginning sound discussion - Group A																	
Skills	Time	Vocalization	Time					Movement									
			Fabian	Nuno	Sofia	Curriel	Tatiana	Fabian	Nuno	Sofia	Curriel	Tatiana					
	0:00-0:09	Fabian: No. M E l de igloo /a:/ + E:/ffiel Tower haced la torre ffil (No/ M E l of igloo /a:/ + E:/ffiel Tower do the Eiffel Tower)															
	0:08-0:09	Nuno: S/ (hombre) no:::/ (What/ man' no:::/)															
	0:09-0:12	Fabian: Pero empieza por // + mira E:/ffiel Tower (but it begins with // look + E:/ffiel tower)															
	0:12-0:14	Sofia: =No:::/: (no:::/:)															
	0:12-0:08-0:13	Nuno: =Va:/le (ok?)															
	0:13-0:16	Fabian: Si mira /a::/ (yes look/ a::/)															
	0:17-0:19	Nuno: Vale hago la /a:::/ (lunny voice) (ok I will do the /a:::/)															
	0:19-0:21	Sofia: =/a/ comienzo con la a::/ (a/ it begins with a::/)															
	0:21-0:22	Fabian: No + /a:/ (no + /a:/)															
	0:23-0:25	Sofia: Pero esa no es la // (but that's not //)															
	0:25-0:27	Nuno: =/a:::/ // (Eiffel tower)															
	0:27-0:27.3	Curriel: = (laughs)															
	0:28-0:30	Sofia: // Eiffel tower															
	0:29-0:30	Fabian: No + mejor no (no + better no)															
	0:31-0:32	Nuno: S:/ si si si (yes/ yes yes yes)															
	0:34-0:41	Sofia: No: \ porque (1.5) tiene de ser (2) tiene de ser con que suene //no /a:/ (no::/ because (2) it has to (1.5) it has to be that it sounds // no /a:/)															
	0:37-0:38	Fabian: =he dicho que haga un i:/gloo\ (I told him to do an i:/gloo)															
	0:42-0:44	Nuno: No: \ va a ser el Eiffel Tower (No: \ it is going to be an Eiffel Tower (funny voice)															

4.9.1 Analysis: Beginning sound discussion – Group A



The episode occurs at the first of the four sessions of the book of sounds' task project. It is the first part of a longer episode (refer to episode 4.10 for the second part). This language-related episode is composed of one extract of forty-four seconds and a single turn, that happens forty-six seconds after the episode, it is included given its relevance to the episode (included in the analysis not in the transduction). The episode shows preschoolers discussing if a word begins with /i/ or not.

Between 0:00-0:09 Fabian articulates three letter names and makes an illustration *suggestion* for 'i' "No/ M E I de Igloo /aɪ/ /aɪ/ + Ei:/ffel Tower **haced la torre Iffel**" ("No/ M E I of Igloo /aɪ/ /aɪ/ Ei:/ffel Tower **do the Eiffel Tower**") (figure 4.9.1a) (beginning sound)(language switch). With this utterance, Fabian is suggesting to Nuno, the iPad manager, to illustrate the Eiffel tower for the letter sound /i/ Nuno is working on at this point (task-completion orientation: co-regulation). At 0:08 Nuno engages with Fabian's suggestion, without establishing eye contact with him, with a disalignment to his suggestion "Sí/ hombre\ no:::/" ("what/ man\ no:::/"). At 0:09 Fabian responds to Nuno with an argument supporting his suggestion "Pero empieza por /i/ + mira Ei:/ffel Tower" ("but it begins with /i/ look + Ei:/ffel tower") exaggerating the articulation of 'i' in Eiffel tower (multimodal sign)(beginning sound)(language-test)(language switch). Nuno and Fabian establish eye contact by turning their torsos towards each other. At 0.12, and overlapping Fabian's last word, Sofia engages with both Nuno and Fabian and utters "no:::/:" with a rising-falling intonation and elongating the vowel. With this, she makes her *disagreement* with Fabian's *suggestion* explicit (task-completion orientation: co-regulation). At 0:12 Nuno changes his previous stance on the use of Eiffel Tower for /i/ and accepts Fabian's suggestion "Va:/le" ("ok:/") (figure 4.9.1b). At 0:13 Fabian repeats his previous argument with reformulation "Sí mira /a:/ɪ:::/" ("yes look/ /a:/ɪ:::/") elongating the /i/ sound (multimodal sign)(beginning sound; language-test).

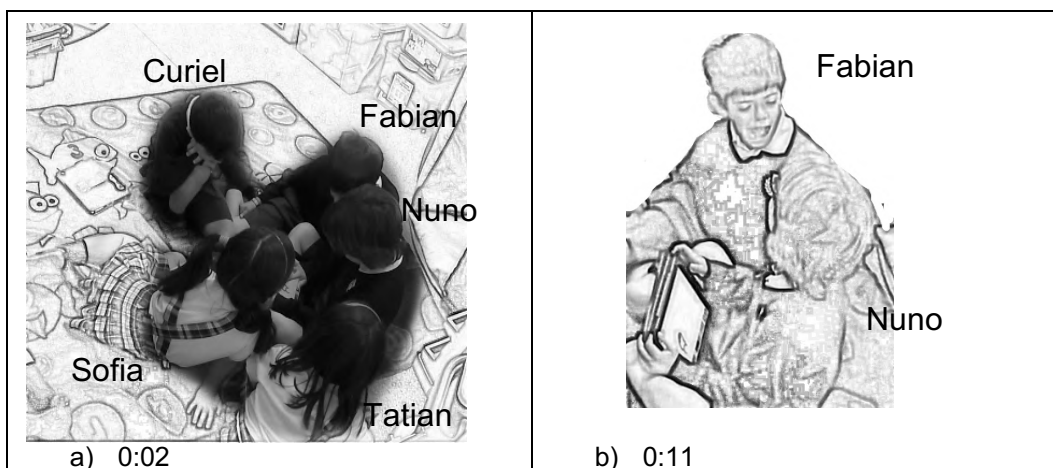


Figure 4.9.1) a) Participation framework at 0:02. b) Nuno and Fabian eye contact at 0:11

At 0:17, Nuno engages with Fabian's turn and with a funny voice once more agrees "**Vale hago la /ah:::/**" ("ok I will do the /ah:::/") ('ah' pronounced in a funny voice as if the beginning of Eiffel Tower) *agreeing*, for the second time, to Fabian's suggestion (an Eiffel Tower for /a/). At 0:19 Sofia again expresses her *disagreement* with Nuno's choice offering an argument to support her argument "**/a/ comienza con la /a:::/**" ("**a/ it begins with a:::/**") (task-completion orientation: co-regulation)(beginning sound). At 0:21 Fabian engages with Sofia and replies "**no + /aɪ/ /aɪ/**", articulating the sound with an exaggerated articulation gesture, *disagreeing* with Sofia's argument against his option, (figure 4.9.2a) (multimodal sign)(beginning sound; language-test). At 0:23 Sofia engages with Fabian reformulating her previous argument to support her *disagreement* "**Pero esa no es la /i/ *****" ("**but that's not /i/ *****") (beginning sound). During an unintelligible part of Sofia's argument Nuno overlaps her and makes available "**/aɪ:::/ /i:::/Eiffel tower**" exaggerating the articulation of the /i/ (figure 4.9.2b) (beginning sound; language-test).

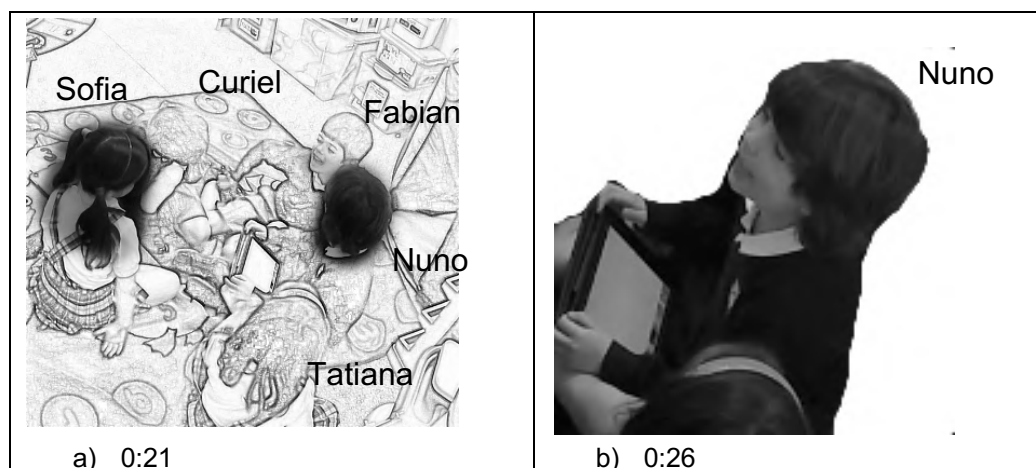


Figure 4.9.2) a) Fabian's exaggerated /aɪ/ at 0:21. b) Nuno's exaggerated /i/ at 0:26

At 0:27 Curiel, who has been a silent participant, turns his head towards Sofia and then back to the iPad and laughs (engagement: gaze). At 0:28 Sofia offers “/i/ Eiffel tower” (beginning sound)(language-test) as a possible answer and at 0:29 Fabian answers Sofia with “No + mejor no” (“no + better no”) (task-completion orientation: co-regulation) in what could be interpreted as an acceptance of Sofia’s argument that Eiffel tower does not begin with ‘i’. At 0:31 Nuno shows *disagreement* with Fabian’s last turn and change of opinion “Sí:/ sí sí sí\” (“yes:/ yes yes yes\”). At 0:34 Sofia offers a more elaborate argument to support her *disagreement* “No::\ porque (1.5) tiene de* ser (2) tiene de ser con que suene /i/ no /ai:/ ” (“no::\ because (2) it has to (1.5) It has to be that it sounds /i/ not /ai:/”) (task-completion orientation: co-regulation) (beginning sound). During her argument, Sofia establishes eye contact with Fabian (figure 4.9.3).

At 0:37, Fabian overlaps Sofia and remarks that he had previously suggested a different word for illustration “he dicho que haga un i:/gloo\” (“I told him to do an i:/gloo\”) (figure 4.9.3) (task-completion orientation: co-regulation)(language switch). At 0:42, Nuno responds, in a cartoonish voice, to Fabian’s comment and makes it clear that he intends to do the opposite of Sofia and Fabian’s suggestion, “No::\ va a ser el Eiffel To:wer” (“No::\ it is going to be an Eiffel To:wer”).

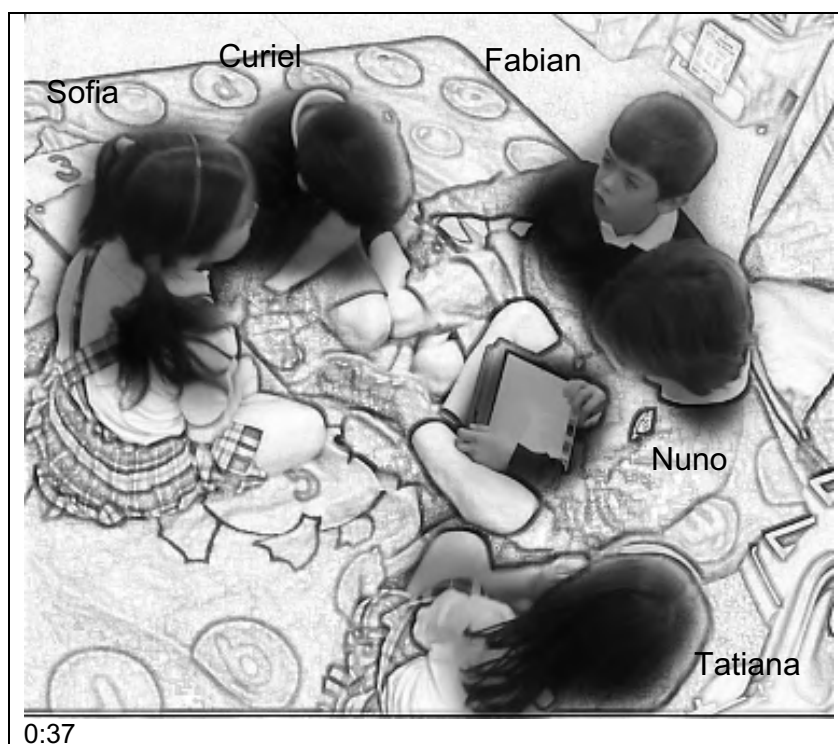


Figure 4.9.3) Nuno articulating ‘i:/gloo\, Sofia establishing eye contact with Fabian

Forty-six seconds later, at 1:30 (in an isolated turn after the previous sequence), Nuno looks at Gerika and with a mocking tone says “i/::gloo:: i/::gloo:\:” making reference to the illustration on the iPad (figure 4.9.4) (task-completion orientation: co-regulation) (language switch). The illustration presented was a drawing of an igloo (figure 4.9.5).

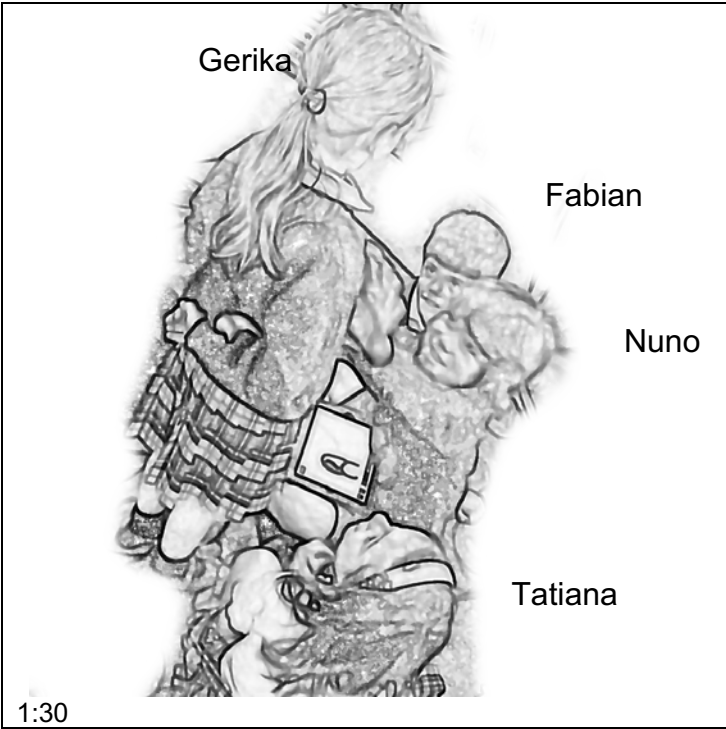


Figure 4.9.4) Nuno's mocking gesture “i/::gloo:: i/::gloo:\:”



Figure 4.9.5) screen capture of the final drawing of /i/ done by Nuno, a green igloo (green as it “hangs from a tree”) (A screen capture as the original illustration was lost during the task process as the preschoolers eliminated, by mistake, some of the pages during one of the sessions)

4.9.2 Discussion

In this short episode the actions that are highlighted respond to: a) preschoolers negotiating whether a word begins or not with a letter sound; b) preschoolers using language-tests to support their agreement/disagreement with a word suggestion; c) code switching and; d) co-regulation and task-completion orientation.

The first to note is that starting at 0:00, Fabian is sitting in a circle formation next to Nuno (figure 4.9.1), and Fabian suggests “(...) /aɪ/ /aɪ/ Ei:ffel Tower **do the Eiffel Tower**”. Nuno engages with Fabian’s suggestion and shows explicit disagreement “**what/ man\ no::/**”. At 0:09 then Fabian offers an argument to support his suggestion and at 0.12 Sofia voices disagreement with Fabian’s suggestion by saying “**no::/**”. Sofia’s reply is emphasized through a vowel elongation and rising and falling intonation. Nuno then changes his opinion and, in an overlapping turn with Sofia, agrees, suddenly, with Fabian’s word suggestion by saying “**ok:/**”. This sudden agreement seems to respond to a playful or mocking attitude directed towards Sofia’s opposition. The discussion continues and Sofia and Fabian both propose arguments to favor their stance, so *agreeing* or *disagreeing* on the use of ‘Eiffel Tower’ for an object beginning with the sound /i/. At 0.29 Fabian seems to change his stance and states “**no + better no**” in relation to his previous suggestion of ‘Eiffel Tower’ for /i/. Thus, either by *co-regulation* or convinced by Sofia’s arguments he changes his opinion. However, Nuno disagrees with Fabian’s change, and continues supporting his previous suggestion, “**yes:/ yes yes yes**”. Nuno’s use of *repetition* accentuates his continued argument for using ‘Eiffel Tower’ as an object beginning with /i/. At 0:37 Fabian seems to distance himself from Nuno’s proposal by saying “**I told him to do an i:/gloo**” thus displaying accountability by referring to something he had told Nuno to do earlier. Nuno responds four seconds later and emphatically displays his intention is still to do an ‘Eiffel Tower’ “**No::\ it is going to be an Eiffel To:wer**”. Nuno uses a negation which clearly marks his rejection to doing an igloo and he also clearly enunciates that he is going to do the ‘Eiffel tower’. However, he uses a playful voice which frames his comment as playful or mocking. However, At 1:30, forty-six seconds after Nuno’s declaration “**No::\ it is going to be an Eiffel To:wer**” whilst being confronted by Gerika (figure 4.9.4) Nuno establishes eye contact with her and in a mocking tone tells her “**i:/:gloo:: i:/:gloo:\::**”.

In the first place, it is important to note the language exploration trigger. The episode begins with a suggestion made by Fabian and a rejection of the suggestion by Nuno. However, the language exploration actually begins when Sofia voices disagreement with Fabian's suggestion to Nuno, which then is followed by a complex and rich orchestration of agreements, disagreements and arguments to support or reject Fabian's suggestion, carried out between Sofia, Fabian and Nuno. This interaction is in itself a potential language transformative engagement.

In the second place, it is evident that Nuno, adopts a mocking role as he first disagrees with Fabian's suggestion but in hearing Sofia's rejection to Fabian's suggestion accepts and maintains his decision even after Fabian discards it. It is relevant to observe that at the end of the episode and when the illustration has been finished, Nuno, the iPad manager, shows to a classmate, with a clear mocking gesture and intonation, that in fact he illustrated an 'igloo'. This demonstrates that he maintained his first decision of drawing an igloo. Thus, the use of humor is displayed by Nuno in this episode, this display, in a way, maintains the language-related interaction between Sofia, Fabian and Nuno alive as the choice agreement and disagreement orchestration is sustained, seemingly, because Nuno makes believe the others his illustration choice for 'i' is Eiffel Tower.

The discussion around the aptness of Fabian's suggestion 'Eiffel Tower' for the letter sound /i/ is significant to this episode. Fabian suggests "No/ M E I of Igloo /aɪ/ /aɪ/ Ei:/ffel Tower **do the Eiffel Tower**" which triggers Nuno's rejection "What/ man\ no:::". Although Nuno does not provide an explanation of why he rejects the suggestion Fabian offers a *multimodal* language-test to prove that it begins with /i/ "**but it begins with /i/ look** + Ei:/ffel tower" exaggerating the articulation of /i/ (figure 4.9.2a). He uses speech and gesture to prove his point. Immediately afterwards Fabian receives Sofia's rejection, so he tries to prove the same point but with a slight different strategy: he articulates the isolated beginning sound (which is a diphthong) stressing the /i/ by articulating it with a rising intonation and elongation "**yes look/ /a:/ɪ::/**". What can be seen here is that the disagreement triggered language exploration and thus a potentially transformative engagement in which Fabian is using his knowledge and skills to prove his point and validate his suggestion. The arguments and the

presentation of his arguments makes evident that he has identified, although incorrectly, the beginning sound of the word 'Eiffel Tower'. And although his suggestion is not correct, it is interesting to observe how he manages to find the isolated sound /i/ in the diphthong. Furthermore, it is relevant to observe how Nuno and Sofia engage with his suggestion and reject it. Sofia's second turn, at 0:19, shows that she first disagrees with a simple explicit 'no' offering no counterargument and that at her second turn she offers a more elaborate argument by changing her communicative strategy. Sofia's second turn **"/a/ it begins with a:/:\"** makes visible that she has engaged with Fabian and has assessed his answer and identified the correct (according to her) beginning sound of his word suggestion. Hence, up to this point Fabian and Sofia have both provided evidence that they have identified the beginning sound, correctly or incorrectly, of the suggested 'Eiffel Tower'. This makes visible that the disagreement with the suggestion triggered language exploration and a potentially transformative engagement.

At 0:21 Fabian continues disagreeing and offering arguments to Sofia to prove his point **"no + /aɪ/ /aɪ\"**. This turn is very similar to his previous but appears as a clarification. Sofia then offers a different argument to support her rejection of Fabian's previous turn **"but that's not /i/\"**. She offers a new argument in which instead of signaling the beginning sound 'a' as previously she makes clear that /ai/ is not /i/, thus going from what the beginning sound is, /a/ to what it is not /i/.

Nuno then engages with both Fabian and Sofia by displaying his support for Fabian's 'Eiffel Tower' suggestion **"/aɪ:/:/ /i/:Eiffel Tower\"**. To account for his position, he uses the strategy of placing the letter sound to be illustrated, 'i', at the beginning of the word. This turn, at first, seems to be accepted by Sofia and Fabian, given that Sofia repeats it **"/i/ Eiffel tower\"**. Furthermore, Nuno changes his opinion in his next suggestion **"no + better no\"** indicating his change in stance on the use of 'Eiffel Tower' for 'i'. It is not possible to know, but this change in stance could have been triggered by Nuno's strategy of placing the 'i' before the word, by hearing Sofia's and Nuno's arguments or by the co-regulation. Sofia with her disagreement showed a clear orientation towards task-completion and thus a co-regulation stance enacted within the collaborative social order. Furthermore, it is worth highlighting that at the

end of the episode Sofia offers a more elaborate and persuasive turn “no::\ **because (2) it has to (1.5) It has to be that it sounds /i/ not /aɪ:/**” in which she seems to transform her previous argument to a) make it more elaborate and b) recognize that ‘Eiffel Tower’ begins with /aɪ/ and not with /a/ as in her previous turns. It is not possible to know if she recognizes it is a diphthong, but we can see that at 0:19 she claims it begins with /a/ and at 0:34 she claims it begins with /ai/. It is possible that either Fabian’s arguments, in which he shows the presence of /i/ in the word; Nuno’s strategy of placing the /i/ before the word or Sofia’s various attempts to persuade Nuno and Fabian contributed to this change. It is evident, that the disagreement triggered a discussion in which the preschoolers had to identify the beginning sound of the word, analyze their classmate’s argument and offer arguments to support their own positions.




It is also worth highlighting the strategic use of the target language during the episode. The target language is used to refer to the objects suggested for the book of sounds, so we have ‘Eiffel Tower’ and ‘igloo’, as well as in the pronunciation of the isolated digraph /ai/. It is relevant to point out not only that the use of the target language is usually employed to refer to the candidate objects but that at Fabian’s first suggestion he offers the object’s name in Spanish. This is interesting because Nuno considers the suggestion and then rejects it, although in Spanish it does begin with /i/ (*torre Iffel*) and then in Fabian’s reply to Nuno to support the suggestion he switches to English. It is also relevant that after Fabian’s first use of ‘Eiffel Tower’, Sofia and Nuno use it in English as well. This demonstrates that although the target language exploration is done in the home language of the preschoolers (using the home language to explore the target language), the use of the target language is strategic in that it is used for the words that are going to be included in the task.

This language-related episode also shows how the preschoolers explore the language in the discussion and how in hearing others they are able to change their points of view whether by a sense of co-regulation or by being persuaded by the others’ arguments. It is beyond the scope of this research to know if the three of them learnt that Eiffel Tower begins with a diphthong, and not with /i/, but it is visible that they engage in a discussion and are potentially transformed during the discussion by

a) finding ways to prove their points; b) using different strategies to signal the beginning sound; c) hearing different points of view and; d) changing their opinions. It has also been visible how Nuno uses a make-believe strategy, in a playful attitude that affects to some extent the language exploration engagement and shows how preschoolers are agentic in using different strategies to support their points of view. Furthermore, the use of the target language is also seen as strategic and the use of the home language is not seen as an obstacle for target language exploration.

Synopsis: In this short language-related episode, we have observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; engagement with a **suggestion** that generates **disagreement** and **agreement**, and use of **multiple modes** (either in multimodal sign or turns), as the trigger for language exploration and; **beginning sound**, language-test and **code switching** as the language features explored and thus displaying the potentially transformative language-related points.

4.10 EPISODE: “SI NO ES DIRIA ISTIR IFFEL”

Time in Seconds	Vocalization	Skills	Gaze											iPad (touch)	Gaze Key		
			Nu	Ge	So	Cu	Fa	Ne	Ta								
1:41	Fabian: [Vocal aspiration noise of surprise]																
1:42	Fabian: <i>Va a hacer la /aɪ.fel' tau.ə:/ Va a hacer la /toɾe rfeɪ/</i> ((He) is going to do the /aɪ.fel' tau.ə:/ (He) is going to do the /toɾe rfeɪ/)																
1:43																	
1:44																	
1:45																	
1:46	Gerika: [Vocal aspiration noise of surprise]																
1:47																	
1:48	Gerika: <i>Pues Sofia **** (So Sofia ****)</i>																
1:49																	
1:50																	
1:51																	
1:52	Curtiel: /aɪ/																
1:53																	
1:54																	
1:55																	
1:56	Nerea: <i>/ɪstr rfeɪ/ si no es diria /ɪstr rfeɪ/</i> . (/ɪstr rfeɪ/ if not it will be called /ɪstr rfeɪ/)																
1:57																	
1:58																	
1:59																	
2min																	
2:01																	
2:02	Gerika: <i>No/ porque la /toɾe rfeɪ/ comienza por la /aɪ/ (No/ because the /toɾe rfeɪ/ begins with /aɪ/)</i>																
2:03																	
2:04																	
2:05																	
2:06																	
2:07																	

Participant's names Key	
Nuno	Nu
Gerika	Ge
Sofia	So
Curtiel	Cu
Fabian	Fa
Nerea	Ne
Tatiana	Ta

Gaze Key	
iPad	
Participant	
Classroom (no fixed point)	
No information	
iPad Screen touch 1 participant	
iPad Screen touch 1 participant	

4.10.1 Analysis: Beginning sound language-test - Group A

The episode occurs at the first of the four sessions of the book of sounds' task. It is the second part of a longer episode (refer to extract 4.9) that occurs one minute and forty seconds before this extract (the time has been maintained in the transduction to situate the episode). The extract occurs during the fourth sound the group is illustrating: /i/. Nuno is the iPad manager and illustrator. Due to the camera recording angle Tatiana remains hidden during this extract. The episode is composed of one extract of twenty-seven seconds.



At 1:40 the group is divided in two subgroups, Gerika, Sofia and Nerea who are standing up and, Curiel, Fabian, Tatiana and Nuno, the iPad manager, who are sitting down in a circle formation (figure 4.10.1a) (participation framework: subgroups). At 1:41 Fabian makes a vocal aspiration of surprise while gazing at the other subgroup. At 1:42 Fabian states “**Va a hacer la /aɪ.fəl 'taʊ.ə/ Va a hacer la /tore ɪfəl/**” (“(He) is going to do the /aɪ.fəl 'taʊ.ə/ (He) is going to do the /tore ɪfəl/”) (Eiffel tower in English and then in Spanish) (playfulness)(language switch). At 1:45 Sofia, Gerika and Nerea gaze, from a standing position, at Fabian. Curiel Tatiana and Nuno are looking at Gerika and Sofia and then the two subgroups merge in one (figure 4.10.1b) (participation framework: whole-group). At 1:46 Gerika makes a surprise vocal aspiration noise similar to Fabian’s at 1:41 and Sofia opens her mouth in a surprise gesture as well as Fabian who opens his mouth in a similar way (figure 4.10.1b) (repetition)(multimodal sign).

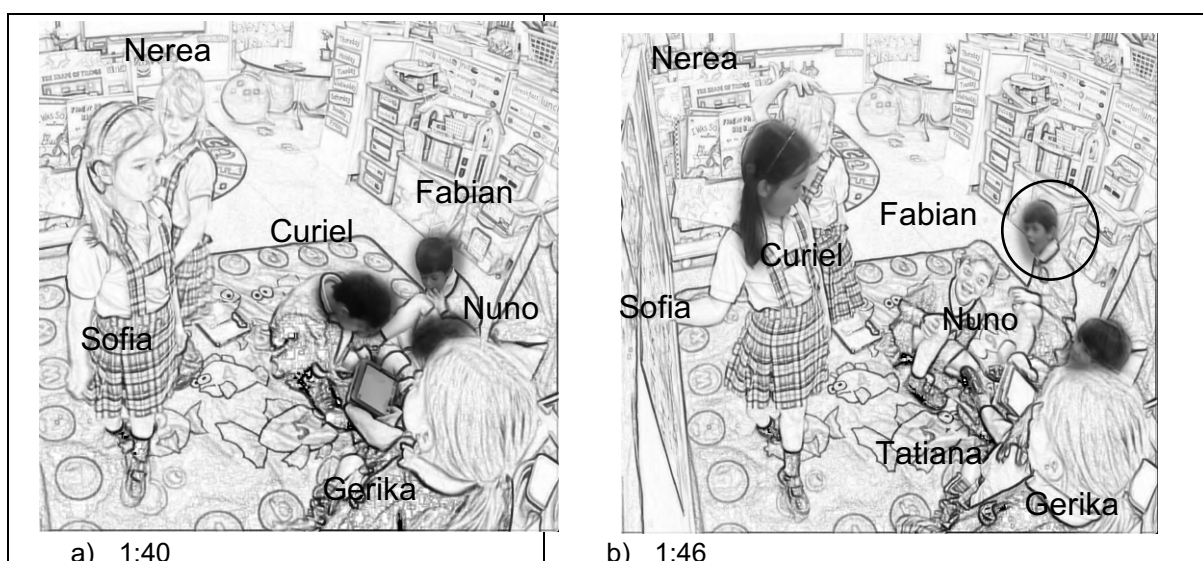


Figure 4.10.1) a) subgroups 1:40. b) whole-group 1:46 *Tatiana is behind Gerika

At 1:48 Gerika, Sofia and Nerea get closer together, making a circle formation (movement). Gerika, directing herself to Sofia, utters “Pues Sofia ****” (“So Sofia ****”). Her turn is overlapped by Sofia who engages with Fabian’s comment “No\ *perque comença amb la /aɪ/ /aɪ/ i i i té de ser amb la /i/* (“No\ because it begins with /aɪ/ /aɪ/ and, and and (it) has to be with /i/”). Sofia uses a gesture while articulating ‘/aɪ/ /aɪ/’. She opens her arms and waves them (figure 4.10.2) (beginning sound) (disagreement)(multimodal sign)(task-completion orientation).

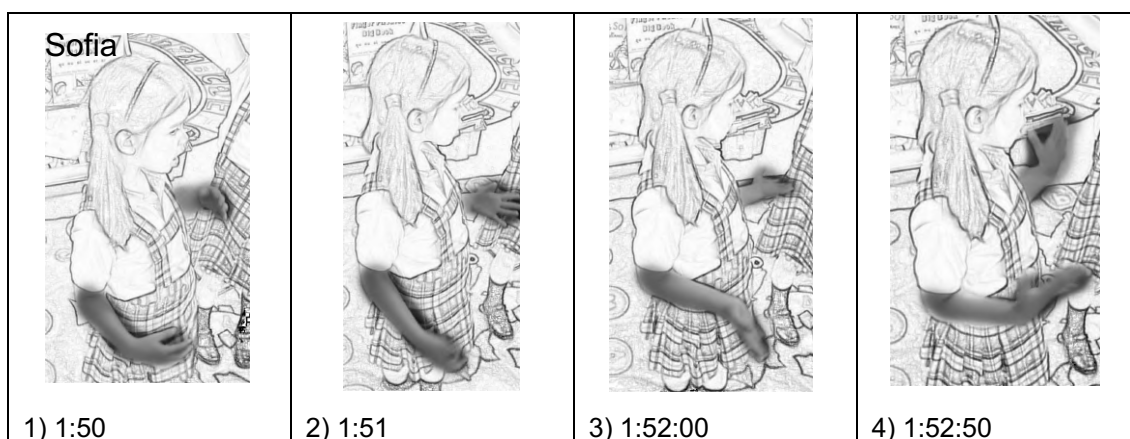


Figure 4.10.2) Sofia’s gestures

At 1:52, and overlapping Sofia, Curiel utters to the group “/aɪ/”, seemingly responding to Sofia’s comment (repetition). At 1:54 the whole group divides and returns to the original formation of two subgroups, as seen at the beginning of the episode. At 1:56 Nerea expands on Sofia’s comment, explaining “/ɪstrɪ ɪfəl/ *si no es diria /ɪstrɪ ɪfəl/* (“/ɪstrɪ ɪfəl/ if not it will be called /ɪstrɪ ɪfəl/”). She uses a similar gesture to that of Sofia but it is more static, while directing herself to Sofia with both torso and gaze (figure 4.10.3) (agreement)(language-test)(co-construction)(multimodal sign)(repetition) (approximation).



Figure 4.10.3) Nerea’s gestures at 1:58

At 2:02, after two seconds of silence, Gerika turns and joins the subgroup made up of Nuno, Curiel, Fabian and Tatiana. Gerika kneels down and offers to the subgroup “No/ porque la /tore ɪfəl/ comienza por la /aɪ/” (“No/ because the /tore ɪfəl/ begins with /aɪ/”) (disagreement)(repetition)(movement).

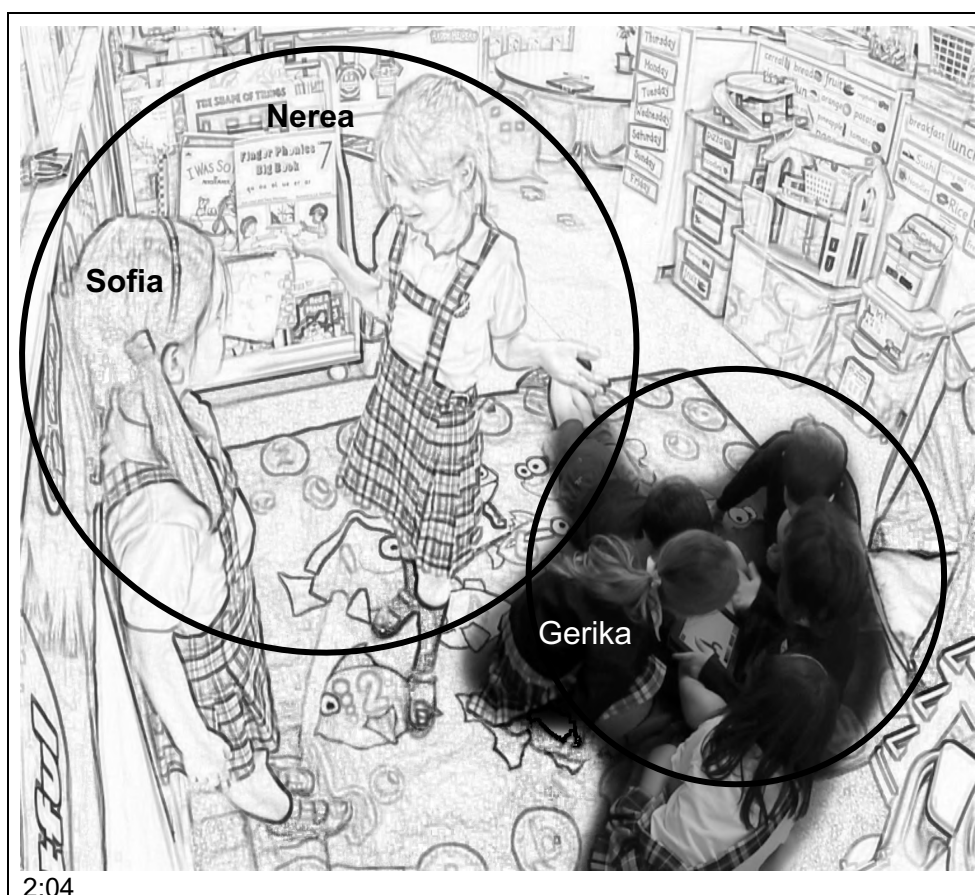


Figure 4.10.4) subgroups at 2:04

At 2:04 Sofia and Nerea form a dyad, gazing at each other and with their body oriented to each other (figure 4.10.4) (participation framework: dyad). Nerea, at 2:04 directing herself to Sofia repeats partially what she had said before “si no es diria /ɪstɪr ɪfəl/” (“If not it will be called /ɪstɪr ɪfəl/”), using the same gestures as in turn 1:56 and offering a reformulation of her previous comment (repetition)(multimodal sign)(disagreement).

4.10.2 Discussion

In this short episode the actions that are highlighted respond to: a) task-completion orientation displayed through disagreement with a word choice; b) language-test used as an argument to support disagreement and rejection of word choice; c)

preschoolers self-motivated movement to join subgroups or the whole group, triggered by prompts related to task completion.

The first point to note is that a language exploration trigger can be identified in relation to the recognition of the letter sound /i/ at the beginning position of a word. The group is working on /i/ and the discussion begins when one of the participants, Fabian, sitting next to the iPad manager, makes a vocal aspiration noise of surprise at 1:41, marking attention requirement. The guttural aspiration is a prelude for Fabian's next speech turn in which he emphasizes surprise regarding the choice of Nuno's word for /i/. At 1:42, Fabian with a playful attitude makes explicit to the group that the chosen word, by Nuno, for /i/ is 'Eiffel Tower': "(He) is going to do the /aɪ.fəl 'taʊ.ə/ (He) is going to do the /tore ifəl/". Fabian's comment is directed to the preschoolers standing up. Curiel joins in in the interaction by orienting his gaze to that subgroup. At 1.45 both subgroups join to create a whole-group interaction and the display of gaze towards each other is very salient. Gerika replies to Fabian's comment by displaying a clear aspiration sound of surprise and Sofia aligns to that surprise by displaying an open mouth signaling surprise (figure 4.10.1b). Fabian imitates Sofia's mute surprise gesture.

At 1:48 Sofia makes the cause of her surprise explicit, verbally pinpointing Nuno's choice while using arm gestures to intensify her point "No\ because it begins with /aɪ/ /aɪ/ and, and and (it) has to be with /i/" (figure 4.10.2). At this turn Sofia's disagreement with the choice of Nuno is displayed by arguing that the beginning sound in Eiffel Tower is /aɪ/ and not /i/ which is the letter sound that Nuno is in charge of. Sofia's comment is salient as it not only displays her analysis, it also shows an orientation towards successful task completion and a co-regulation stance. Although, it cannot be said if Nuno has understood and accepted Sofia's point Nerea, Gerika and Curiel react to Sofia's comment. Curiel repeats the beginning sound that Sofia claims Eiffel Tower begins with and Fabian, Gerika and Nerea all turn to gaze at Sofia. Hence at 1:52, Curiel repeats the isolated diphthong /aɪ/ providing embodied proof that he has heard Sofia's comment although, it is not evident whether he agrees or disagrees. At 1:56 Nerea makes explicit, after a long pause of three seconds, her agreement with Sofia by arguing how the word should be pronounced

in case it began with /i/ “/ɪstɪr ɪfəl/ if not it will be called /ɪstɪr ɪfəl/”. Nerea uses a similar arm gesture as the gesture Sofia used to show intensity when producing her argument, so we see Nerea’s use of repetition and co-construction of the multimodal sign (figure 4.10.4) to align with Sofia’s argument. In this speech turn Nerea accepts Sofia’s explanation and elaborates it further to prove that Nuno’s choice is wrong by modifying it to be correct. In this way Nerea does an action to prove Nuno is wrong; she reformulates the word to make it begin with /i/ “/ɪstɪr ɪfəl/” and although her reformulation is not correct, she has co-constructed Sofia’s disagreement argument.

At 2:02 Gerika turns to the subgroup sitting down and faces Nuno and the iPad. She indicates to Nuno that his choice is not correct by using Sofia’s previous argument “No because the /tɔrɪ ɪfəl/ begins with /aɪ/”. Gerika displays that she has accepted Sofia’s and Nerea’s comments as she turns to the iPad manager at that moment and speaks directly to him, explaining how his choice is not possible by picking up the previous explanations. At the same time, she shows an orientation towards the successful completion of the task by making an effort to avoid the use of an erroneous word and thus takes a co-regulation stance. At 2:04, in the dyad between Nerea and Sofia, Nerea repeats to Sofia that “Eiffel Tower” is not a correct answer using her previous argument and the same display of intensity through the use of arm gestures “if not it will be called /ɪstɪr ɪfəl/”.

The orientation of some members to engage in the interaction in order to make explicit their point of view in whether Eiffel Tower is a correct or incorrect word choice for the letter sound /i/ shows a clear sign of language exploration trigger and thus is a potential transformative engagement. The sole fact of reacting towards the word choice is in itself a trigger displaying orientation towards language exploration in which the participant makes explicit her disagreement while making available to the rest of the group her knowledge on the matter. By engaging in the interaction, the participants are potentially being transformed at different levels. There is evidence of this in the reaction of Nerea and Gerika. Nerea accepts Sofia’s disagreement and offers a sound (phoneme) test to prove Sofia’s point, thus validating both her and Sofia’s disagreement and creating an alliance. Although previously Sofia only displayed disagreement, her comment triggered Nerea’s action to prove with a test

that 'Eiffel Tower' was not a word beginning with /i/. Gerika reacts differently, she orients towards the iPad manager and uses a different resource to persuade Nuno from using 'Eiffel Tower' as the word. Gerika clearly directs herself to Nuno sharing her disagreement with his choice.

It is worth noting how collaboration and co-regulation arises when there is a point of disagreement and how participants engage in the interaction agentively to express their stand on the matter. It also shows the relevance of this collaborative task and its impact on the collaborative social order created and enacted through the participants' engagement. The task allowed all its participants to share their point of view even if they were not the iPad managers or directly working in the subgroup that had the iPad.

Furthermore, it can be observed in the transduction (last column), that the visual interaction is a salient feature. Preschoolers' gaze is directed to classmates in a very energetic orchestration of gaze orientation. It can be noted that the preschoolers' organization is divided in two interaction subgroups, three learners standing up and a group of four learners sitting down with their gaze oriented towards the iPad screen activity. This organization remains the same although with slight variations during the discussion. From 1:40 to 1:45 there are two subgroups; Sofia, Nerea and Gerika as one and Nuno, Curiel, Tatiana and Fabian as another. From 1:45 to 1:54 the subgroups merge in a whole-group formation. At 1:54 the whole-group divides, again, in two subgroups: Sofia and Nerea as one subgroup and Nuno, Curiel, Tatiana, Fabian and Gerika, who kneels down and joins in, in the second subgroup. Hence, it is visible that although some preschoolers are standing, and some are sitting down the interaction is natural and energetic and, in this extract, predominantly managed through gaze. It is also visible that Gerika decides to engage in the other subgroup, at 1:54, and that she does so fluidly and encounters no resistance from any member.

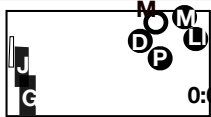


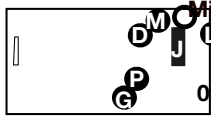

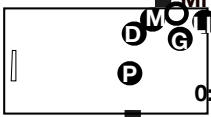
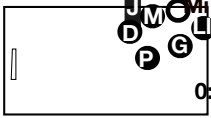

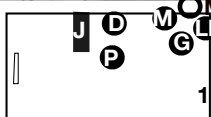
If the previous episode (refer to episode 4.9) is taken into account, it is demonstrable that although Nuno pretends to Sofia that his word choice is 'Eiffel Tower', he reveals to Gerika that he is in fact illustrating an igloo before this episode takes place. Nuno's pretense creates an interaction that elicits the need for Sofia to maintain over





time her disagreement with him using 'Eiffel Tower' for the letter sound /i/ and to offer arguments to support her position repeatedly. His farce also provides the underlying reason for Nerea and Gerika to engage in this second part and thus the potentially transformative engagement involves more preschoolers than before.

In general, in this short extract we have seen that the engagement in a language exploration trigger was originated in a disagreement. It has also been visible how the orchestration of modes is rich and the participation framework lively as the preschoolers interact with different subgroups in a natural way during the twenty-seven seconds.

Synopsis: In this short language-related episode, we have observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** by rejecting a preschooler's choice for not complying with the task rules; self-motivated movement from **subgroups** to interact with peers (participation framework) generated by **movement** in the working space and **body movement** and **playful attitude**. The visible language exploration triggers are engagement with a **choice** that generates **disagreement** and **agreement, repetition** and the use of **multiple modes** (either in multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language switch, beginning sound** identification, **approximation** (attempt to change the beginning sound of word), **language-test** to support a word choice rejection and **co-construction of an argument**.

4.11 EPISODE: “HIPPOPOTAMUS”

Episode 4.11 Task organization Group B		
Stills	Time	Vocalization
 0:00	0:00-0:03	Lluvia: <i>Quién la /i/// Qué la /i// (who the /i// who the /i//)</i>
 0:02	0:03-0:04	Miguel: <i>Yo/ (me/)</i>
	0:03-0:09	Pier: = Eeny/ meeny miny mo catch the tiger by the toe if it screams
	0:09-0:10	Maia: <i>Para:\ (sto:p\)</i>
 0:11	0:10-0:10:50	Jan: <i>Toca la pantalla (touch the screen)</i>
	0:11-0:12	Diana: <i>Jo soc /h:/ /h:/ /h:/ (I am /h:/ /h:/ /h:/ /h:/)</i>
	0:12-0:13	Jan: <i>A Miguel/ (to Miguel/)</i>
	0:13-0:14	Lluvia: <i>Ay:/</i>
	0:14-0:15	Jan: <i>Qué/ (what/)</i>
 0:28	0:17- 0:20	Maia: <i>/i:// po: po:</i>
	0:19-0:20	Miguel: =ni:/p pot/
	0:23-0:25	Jan: <i>No yo soy la /p/ yo soy la /p/ (no I am /p/ I am /p/)</i>
	0:24-0:25	Lluvia: =hipopótamo (hippopotamus)
 0:31	0:26-0:28	Jan: <i>hipopótamo no/ estas haciendo la /i/ (hippopotamus no/ you are doing /i/)</i>
	0:28- 0:32	Maia: <i>No pero ella está haciendo la /i:// hi:popótamus (no but she is doing / i:/ ippopotamus)</i>
 0:39	0:32-0:34	Jan: <i>Ah sí hipopotamus sí (ah yes ippopotamus yes)</i>
	0:34-0:36	Miguel: <i>Voy a hacer hipópotamo/ (I'm going to do hippopotamus/)</i>
	0:36-0:38	Diana: <i>Pas:ta yo voy a hacer pasta. (pas:ta I'm going to do pasta)</i>
 0:43	0:38-0:39	Jan: =dibuja una patata (draw a potato)
	0:39-0:42	Maia: <i>No tu no puedes hacer pasta:/ (no you can not do pasta:/)</i>
	0:42-0:44	Jan: =No porque yo voy a hacer la /p/ + lo dije yo (no because I'm going to do /p/ + I said it)
 0:53	0:48-0:51	Diana: <i>Yo nat/ net/ (I nat/ net/)</i>
	0:51-0:53	Pier: <i>No/ yo lo dije a qué sí/ Jan/ (no/ I said it didn't I/ Jan/)</i>
	1:00-1:01	Diana: <i>Cat/</i>
 1:00	1:01-1:01:30	Jan: <i>Qué/ (what/)</i>
	1:02-1:03	Diana: <i>Yo voy a hacer cat (I'm going to do a cat)</i>
	1:04-1:06	Diana: <i>Voy a hacer cat (I'm going to do cat)</i>

Stills Key	
Working space	
Sitting preschooler	
Standing preschoolers	
iPad Manager	

Name abbreviations	
J	Jan
G	Gerika
P	Pier
LI	Lluvia
M	Maia
Mi	Miguel
D	Diana

4.11.1 Analysis: Task organization – Group B

The episode occurs at the first of the four sessions of the book of sounds' task project. The language-related episode is composed of one extract of one minute and three seconds. Miguel is the iPad manager and he is illustrating 'i'.



Between 0:00 and 0:03 Lluvia formulates a question to the group, “**Quién la /i/**” (“*who the /i/*”) **Quién la /i/**” (“*who the /i/*”). The rather cryptic question refers to who is the person in charge of the following letter sound to be illustrated (task-completion orientation). The group is sitting in a circle formation, except for Jan and Genaro who are standing up, with their backs to the group. They are facing and engaging with the Catalan ABC Poster (figure 4.11.1).

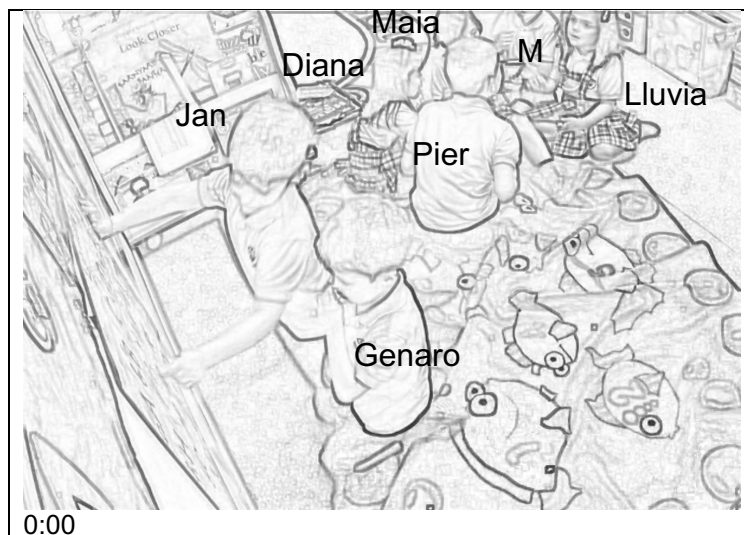


Figure 4.11.1) whole group: Jan and Genaro's dyad and the sitting group (M= Miguel)

At 0:03 Miguel, who is sitting next to Lluvia replies “**Yo!**” (“*me!*”). Triggered by Lluvia's question, Pier (overlapping Miguel at 0:03) seems to refer to the letter sound to be illustrated by chanting the rhyme “Eeny meeny miny mo catch the tiger by the toe”. The chant begins with the letter sound /i/ (beginning sound). Between 0:09 and 0:10 Maia and Lluvia have a short scuffle over the iPad: Maia is still finishing her illustration and Lluvia tries to take the iPad away from her to give it to Miguel (physical contact)(co-regulation). Maia tells Lluvia “**Para:!**” (“*stop:!*”) (disagreement). At 0:12 Maia hands the iPad to Miguel (who claimed to be the next at 0:03) (task-completion orientation: co-regulation). At 0:10, Jan, who has moved from in front of the ABC

poster to next to the sitting group, makes a comment “**toca la pantalla**” (“*touch the screen*”) making reference to an action needed to change the digital page of the book.

At 0:11, Diana announces to the group “**Jo soc /h:/ /h:/ /h:/**” (“*I am /h:/ /h:/ /h:/*”) and uses the articulation gesture that has been previously taught with the letter sound /h/ (in the phonics method used with the class, each phoneme is introduced with the letter sound and a gesture) (Figure 4.11.2).

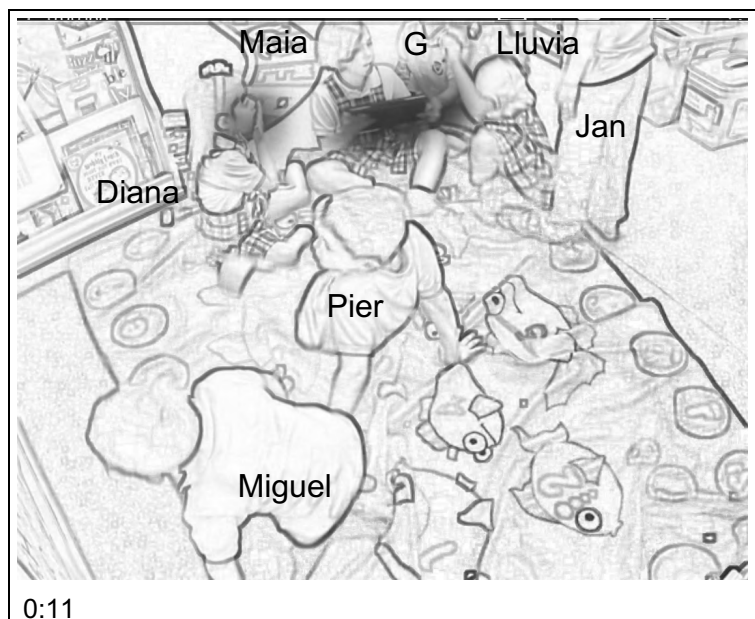


Figure 4.11.2) Maia hands in the iPad to Miguel and Diana articulates and gesticulates /h/ (G: Genaro)

At 0:12, as Maia hands the iPad to Miguel, Jan makes the comment “**A Miguel**” (“*to Miguel*”) identifying who the iPad has to be handed to (co-regulation). At 0:13 Lluvia complains about Jan’s proximity to her “**Ay!**” (“*Ay!*”) (physical contact). At 0:14 Jan replies to Lluvia while looking at her “**qué!**” (“*what!*”) seemingly not being aware of what is bothering Lluvia.

At 0:17 Maia starts articulating slowly and syllable by syllable the word hippopotamus “/i:// po: po:”. Her pronunciation begins with /i/ (she utters the word with a silent h) but is stopped at the repetition of the second syllable by Miguel with an overlapping turn. Miguel interrupts Maia’s turn with “ni:/ pot/”. At 0:23, Jan reacts to Miguel’s previous turn *disagreeing* with the choice “**No yo soy la /p/ yo soy la /p/**” (“*no I am /p/ I am /p/*”)

making explicit that he is in charge of the letter sound /p/, as apparently he only heard 'pot' in Miguel's turn (self-task organization)(co-regulation). At 0:24 Lluvia overlaps Jan, correcting him "**hipopótamo**" (*hippopotamus*) (in Spanish the beginning sound of hippopotamus is /i/) (beginning sound)(co-regulation). Lluvia's correction elicits a turn from Jan who addresses Miguel with a more elaborate explanation: "**hipopótamo no/ estas haciendo la /i/**" (*hippopotamus no/ you are doing /i/*). His elaboration emphasizes the contradiction between the word chosen 'hippopotamus' (which is mispronounced in English by the preschoolers beginning with /i/ and not /h/) and /i/ as a beginning sound (beginning sound)(disagreement). Jan himself pronounces 'hippopotamus' in Spanish with 'i'. At 0:28 Maia responds to Jan's turn, replying "**No pero ella* está haciendo la /i:// hi:popótamus***" (*no but she* is doing /i:/ (h)hippopotamus**) (co-regulation)(disagreement)(beginning sound). Maia elongates and emphasizes with a rising intonation the /i:/ and points with her index fingers at her mouth identifying the sound /i/ with the lip articulation (multimodal sign) (language-test)(beginning sound).



Figure 4.11.3) Maia identifying the letter sound /i/ with her lip articulation and finger pointing

At 0:32 Jan reacts to Maia's comment and agrees with her "**Ah sí hipopotamus sí**" (*ah yes hippopotamus yes*). Miguel, at 0:34 announces what he is going to illustrate "**voy a hacer hipópotamo**" (*I'm going to do a hippopotamus*), although the intonation is similar to that of a question, indicating some doubt (self-task organization).

At 0:36 Diana declares to the group "**Pas:ta yo voy a hacer pasta**" (*pas:ta I'm going to do pasta*). Her body position is oriented to the whole group that is now in a seated circle formation (movement). Jan, at 0:38, who is standing opposite to Diana and

facing her, engages with Diana's previous turn saying "**dibuja una patata**" (*"draw a potato"*), offering her a different suggestion with the same beginning sound (collaborative social order: co-regulation)(suggestion)(beginning sound). Maia reacts to Diana's turn at 0:39 and turning towards her and establishing eye contact with her tells her "**No tu no puedes hacer pasta:!**" (*"No you cannot do pasta:!"*) (collaborative social order: co-regulation)(task-completion orientation)(disagreement). Jan immediately intervenes in the interaction and walking towards Diana says "**No porque yo voy a hacer la /p/ + lo dije yo**" (*"No because I'm going to do /p/ + I said it"*) *agreeing* with Maia and *disagreeing* with Diana (self-task organization). At 0:48. Diana accepts both Maia's and Jan's comments and announces "**Yo nat/ net!**" (*"I nat/ net!"*) (agreement)(task-completion orientation: co-regulation)(self-task organization). At 0:51, Pier engages with Diana's turn and directing himself to her tells her "**No/ yo lo dije a qué sí/ Jan!**" (*"No/ I said it didn't I Jan!"*) seeking Jan's support (collaborative social order: co-regulation)(self-task organization). Diana receives a rejection of her choice for the second time. At 1:00 Jan moves, walking around the circle and standing in front of Diana (movement). At 1:00 Diana offers her third choice "cat" gazing at Jan. Jan *engages* with Diana asking her "**what!**" and Diana rephrases her previous turn "**I'm going to do a cat**" (task-completion orientation: co-regulation)(self-task organization: self-regulation)(repetition). Thus at 1:02 Diana turns her body to the working circle and says directly to them, "**Yo voy a hacer cat**" (*"I'm going to do cat"*) (task-completion orientation: co-regulation)(self-task organization: self-regulation) (repetition). At 1:04 Diana repeats her previous comment "**voy a hacer cat**" (*"(I'm) going to do cat"*) (Figure 4.11.4a) (task-completion orientation: co-regulation)(self-task organization: self-regulation) (repetition). Pier does a summersault on the carpet (figure 4.11.4b) (play).

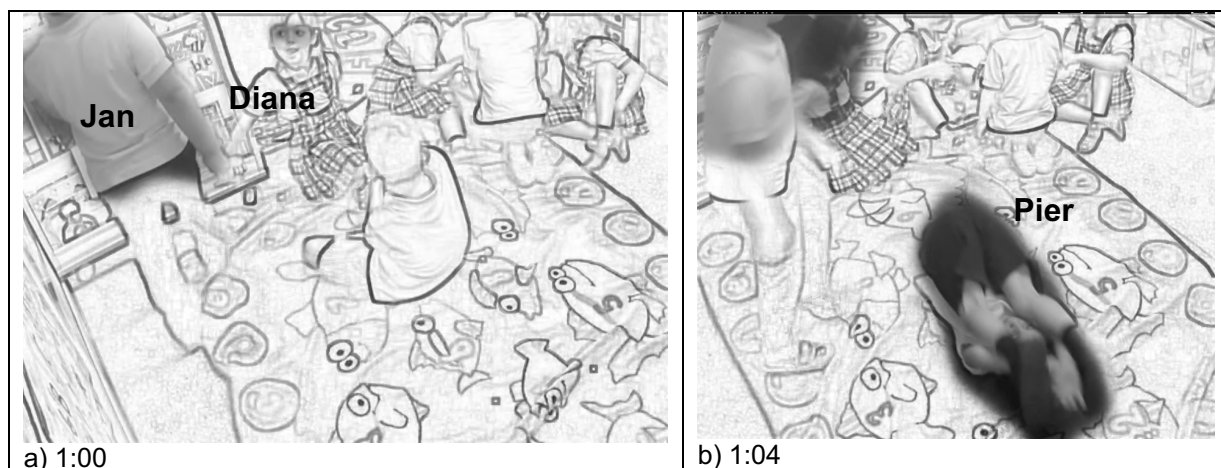


Figure 4.11.4) Diana facing Jan at 1:00 and facing the group at 1:04. Pier's somersault

4.11.2 Discussion

In this short episode the actions that are highlighted respond to: a) task-completion orientation and self-task organization through the negotiation of the letter sounds distribution; b) self-motivated movement that attends to the preschoolers' interests; c) spontaneous play that does not interfere with the task-completion.

The first feature to note is how agentic the preschoolers are in organizing themselves to accomplish the completion of the task. This foregrounds the collaborative social order and the co-regulation stance. In the first turn that starts at 0:00 Lluvia asks “**who the /i/ who the /i/**”. At the moment of asking, the previous sound is still being illustrated by Maia. Lluvia asks her question to everyone and by so doing she generates a negotiation around the organization of the next illustration and iPad-management turns. For example, Diana makes explicit four choices for letter sounds; at 0:11 /h/; at 0:36 /p/; at 0:48 /n/ and; at 1:00 /c/. Her first choice is ignored by the group, her second and third choice rejected by some preschoolers as they had already claimed them, and her last choice is apparently accepted; in any case it is not explicitly rejected as the others were. Thus, triggered by both Lluvia's general question and Diana's self-task organization orientation, Jan announces that he will be in charge of /p/ and Pier declares that he will be in charge of /n/. Hence, (the group has already done /s/; /a/ and; Maia is finishing /t/) Miguel is assigned /i/; Jan is to do /p/; Biel is to do /n/ and Diana is to do /c/. This is all known and negotiated in the interaction and triggered by Lluvia's question and by the preschooler's collaborative social order enactment.

At the same time, in relation to language exploration, the distribution of responsibility for illustrating the sounds triggers language exploration. At 0:19, Miguel has the iPad and is illustrating the hippopotamus for /i/. He articulates “ni:/p pot/” which seems an attempt to articulate the word hippopotamus elongating syllable by syllable, as Maia did in the previous turn “/i:// po: po:”. However, Miguel's last syllable is ‘pot’ an object which is part of the phonics vocabulary of the preschoolers and therefore recognizable as a potential target word. Presumably, Jan reacts to this and proclaims “**no I am /p/ I am /p/**” perhaps interpreting Miguel's word choice as ‘pot’. Lluvia's turn latches to Jan's, saying “**hippopotamus**” and serves as a clarification of Miguel's

choice ('i' and not 'p') and his previous utterance. Jan's reaction to Lluvia's comment is "hippopotamus no/ you are doing /i/" The word hippopotamus is pronounced in Spanish, so beginning with 'i'. It appears that Jan knows that in English the word begins with /h/, hence, his comment. At 0:28, Maia reacts to Jan's comment and gazing at him offers a clarification on the selection of the word "no but she* is doing /i/ ippopotamus*". Maia uses the task cue and articulates the isolated letter sound first, accompanied by both her index fingers pointing at her lips and the exaggerated articulation of /i/ followed by the word "ippopotamus" in Spanish but with the English 'mus' ending. Thus, Maia offers a multimodal language-test to show Jan that 'ippopotamus' does begin with 'i' (although this is not correct). Jan, who in his previous turn made available that 'hippopotamus' was not possible for /i/ now agrees upon hearing Maia's point "ah yes ippopotamus yes". It is unknown why Jan changed his stance, but we can observe in the interaction that Maia articulates the beginning sound and points at her lips to show that the word does contain /i/ as the beginning sound. Hence, it is evident that this language trigger in which Maia uses these multimodal resources, speech, gesticulation and pointing, along with her language knowledge arise during the distribution and organization of the task and potentially transform Jan's point of view who then agrees with Maia. Although, there is an interference of pronunciation, in the word 'hippopotamus' (it is pronounced with 'i' as the beginning sound as in Spanish) the key point is that during the interaction one preschooler exhibited to the others that something was not correct (hippopotamus for 'i') and that another preschooler was able to offer a solid argument (showing /i/ as the beginning sound through a multimodal language-test) that convinced another participant to change his point of view.

Furthermore, Diana who attempts 3 times and succeeds in the fourth to select a letter sound for her generates language exploration triggers as well. At 0:36 she declares to the group her intention to draw pasta: "pas:ta I'm going to do pasta". Diana does not explicitly explain the beginning sound she has chosen however in the next three turns it is visible through Maia and Jan's reaction to her comment that they are able to identify the beginning sound of 'pasta'. Jan at 0.38 offers her another word beginning with /p/ "draw a potato". Maia at 0:39 comments to her that she cannot do pasta. And, Jan, at 0.42, in his second turn provides Diana with the reason why she

cannot do it “no because I’m going to do /p/ + I said it”. Hence, through this negotiation of task participation Maia and Jan are exploring the language by identifying the beginning sound of the word chosen by Diana. The same happens at 0:48, Diana who seems to accept that she cannot do /p/ in offering a third choice makes available “I nat/ net/” and receives a negative by Pier “No/ I said it didn’t I/ Jan”. It is thus visible how the preschoolers, Jan, Maia, Diana and Pier, not only engage with their classmates, they are potentially transformed by the negotiation as they do show agreement or disagreement or alternatives to the choices. We are able to see in the interaction that they can identify the beginning sound of the word choices, or identify the objects suggested by Diana in order to agree or disagree.

Another key point, that appears in this extract is that movement in the working space and spontaneous play do not seem to interfere with the task-completion orientation. In the transduction it is visible how energetic the movement of Jan and Genaro is across the space, and at 1:04 it is possible to observe Pier doing a somersault on the carpet (figure 4.11.4b). However, despite how active Jan, Genaro and Pier are, they still engage in the interaction in a comparable way as Maia and Diana, who remain sitting in the circle formation. This aspect is not strictly related to language exploration but makes evident that movement and playful actions are not an interference in this episode with the engagement of the rest of the task or even with language exploration.

In general, in this episode we can observe the way in which the preschoolers engage with language exploration triggers during the task organization. They have to identify the beginning sounds of their classmates’ choices in order to be able to reply to them during the interaction. We can also see how the preschoolers, even when showing a playful attitude and moving energetically across the space, still participate actively in the interaction. Furthermore, preschoolers in this episode appear as agentic in the organization of the task and task-completion orientation appears to trigger language exploration.

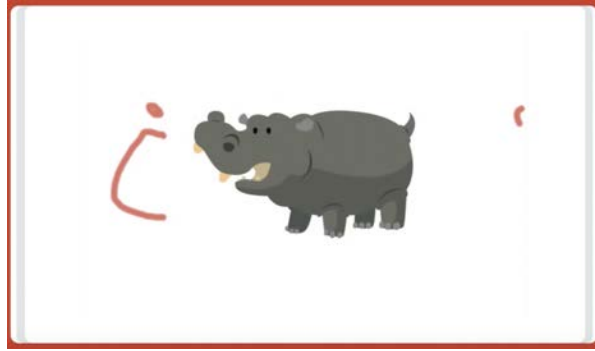


Figure 4.11.5) Final illustration for 'i' (the hippopotamus is a digital sticker)

Synopsis: In this short language-related episode we have focused on: the **collaborative social order** and **co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** through negotiation of the letter sounds distribution, and **self-task orientation** through displays of letters-sounds preferences; self-motivated movement from interaction with peers or with classroom resources (participation framework) generated by **movement** in the working space; and; **spontaneous play**. The visible language exploration triggers are engagement with an organization **question** that generates negotiation of the letter sounds distribution and **disagreement** and **agreement**, **repetition** and the use of **multiple modes** (either in multimodal signs or multimodal turns) as a communicative resource. The explored language features, aspects and actions which are potentially transformative language-related points are; object suggestion (**vocabulary**); **repetition**; **language switching** and **language-tests** offered to support language-related opinions.

4.12 EPISODE: “ESO PARA CAZAR”

Episode 4.12 Illustration idea co-construction Group B		Time		Vocalization		Time		Gaze							Time		Movement	
Stills	Time					Maia	Miguel	Lluvia	Genaro	Pier	Jan	Diana						
	0:24																	
	0:26		0:23-0:24		Jan: una hormiga (an ant)													
	0:28		0:26-0:27		Pier: yo /n/ (me /n/)													
	0:30		0:27-0:28		Miguel: =negra/ (black/)													
	0:32		0:27-0:36		Pier: net haré una red, una una red esa eso para cazar s/ (net I'll do a net a red those that for catching s/)													
	0:34																	
	0:36		0:36-0:37		Jan: =vales/ mariposas (ok/ butterflies)													
	0:40		0:37-0:43		Jan: es así que, te la enseño Pier porque yo las estoy dibujando Pier *** it is like this do I show it to you Pier because I am drawing them Pier ***													
	0:42																	
	0:44		0:44-0:48		Pier: es así, así y es haces also así (it is like this like this and is you do something like this)													
	0:46																	
	0:48		0:48-1:09		Jan: no exactamente así, lo tienes que hacer conmigo, del lado *** del cuadro hay que hacer esto mira un palo así y después bajas como *** y después haces así y después *** y después *** (not exactly like that you have to do it with me, from side to side of box you have to do this look a line like this and then down like *** and then you do like this *** and then ***)													
	0:50																	
	0:52																	
	0:54																	
	0:56																	
	0:58																	
	1min																	

Gaze Key	
Classroom
iPad
Someone/ group
Eye contact

Movement Key	
Student sitting	●
Student standing up	■
Student with iPad	○
Trajectory of walk
Board with sounds

Participants' names Key	
Maia	Mai
Miguel	Mi
Lluvia	Lu
Genaro	Ge
Diana	Di
Jan	J
Pier	P

4.12.1 Analysis: Illustration idea co-construction – Group B



The episode occurs at the first of the four sessions of the task project. Previous to the extract presented, there is a discussion around the object the preschoolers are going to choose for the letter sounds (figure 4.12.1). At 0:23 the preschoolers are sitting in a circle formation except for Jan, who is standing up but displays engagement with the interaction through gaze, Jan makes a comment about the object being illustrated “**una hormiga**” (“*an ant*”). At 0:26 Pier, who is sitting with the seated group, turns his torso and looking at Jan, the only participant not sitting, tells him “**yo /n/**” (“*me /n/*”) (self-task organization).



Figure 4.12.1) Preschoolers formation at 0:26. (P: Pier and J: Jan)

Pier, who had been previously interacting with the sitting group, in turning his torso and gazing to Jan creates a dyad between him and Jan (participation framework: subgroups). At 0:27, after a short pause, Pier continues with his previous turn while still looking at Jan, thus making Jan complicit with his declaration of the object he is planning to illustrate for the letter sound ‘n’: “**net haré una net, una una rac esa eso para caza:r s/**” (“*net, I’ll do a net a a rac those that for catching s/*”) (language use) (description). In articulating ‘net’ Pier makes a gesture to mimic the use of a net (multimodal sign). In articulating ‘s/’ Pier makes a gesture to signal a request to Jan to help him complete his turn. Pier needs help to recall what nets are used to catch (butterflies) (figure 4.12.2) (co-construction). At 0:36, Jan interrupts Pier, offering the word “**vale/ mariposas**” (“*ok/ butterflies*”) (co-construction).



Figure 4.12.2). Gestures made by Pier 0:34 and 0:35 imitating the use of a net, 0:36 making a gesture to request Jan to help complete his turn

At 0:37 (4.12.3a), Pier turns his torso and faces the iPad and returns to a position with his back to Jan thus dissolving the dyad (participation framework: subgroups). Jan then approaches Pier and kneels down and touches his arm (0:41) (Figure 4.12.3b). At 0:41 Pier turns his torso towards Jan who continues his turn *“es así que, te la enseño Pier porque yo las estoy dibujando Pier ***”* (*“it is like this do I show it to you Pier because I am drawing them Pier *****”*) (participation framework: subgroups) (illustration idea co-construction)(physicality)(task-completion orientation) (description).

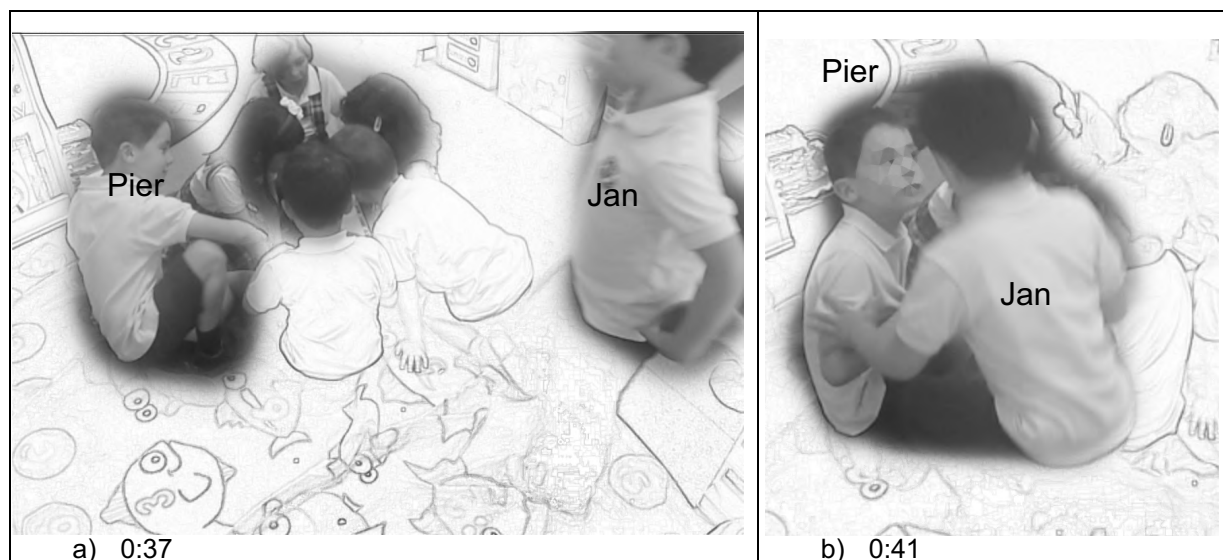


Figure 4.12.3) Pier and Jan’s dyad

At 0:44, Pier provides an embodied reply to Jan’s previous turn, demonstrating to Jan how he is going to illustrate the ‘net’ by drawing a net in the air (figure 4.12.4) and saying *“es así, así y es haces also así”* (*“it is like this like this and is you do*

something like this) (multimodal turn: description)(collaborative social order)(illustration idea co-construction).

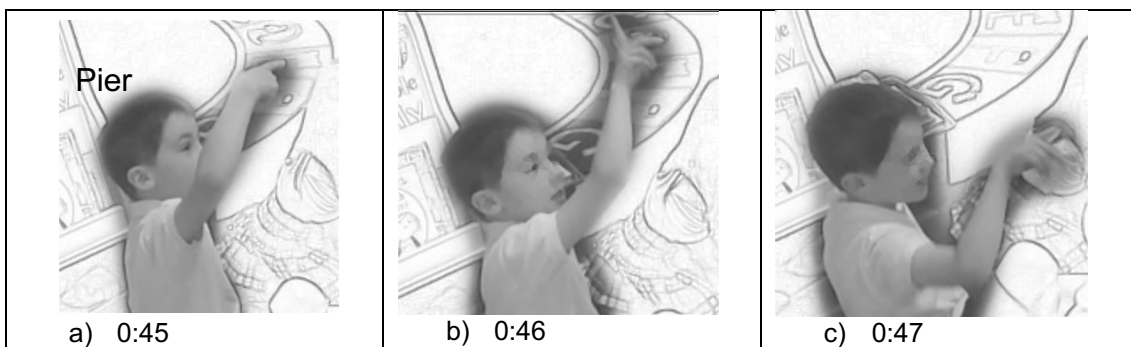


Figure 4.12.4) Piers' gestures drawing a net on the air.

At 0:48 Jan indicates to Pier that he *disagrees* to a certain extent “**no exactamente así, lo tienes que hacer conmigo, del lado *** del cuadro hay que hacer esto mira un palo así y después bajas como *** y después haces así y después *** y después *****” (“*not exactly like that you have to do it with me from side to side of the box you have to do this look a line like this and then down like *** then you do like this *** and then ****”). Jan also uses gestures to mimic how to draw the net (figure 4.12.5) (multimodal turn: description) (co-construction) (collaborative social order) (illustration idea co-construction).

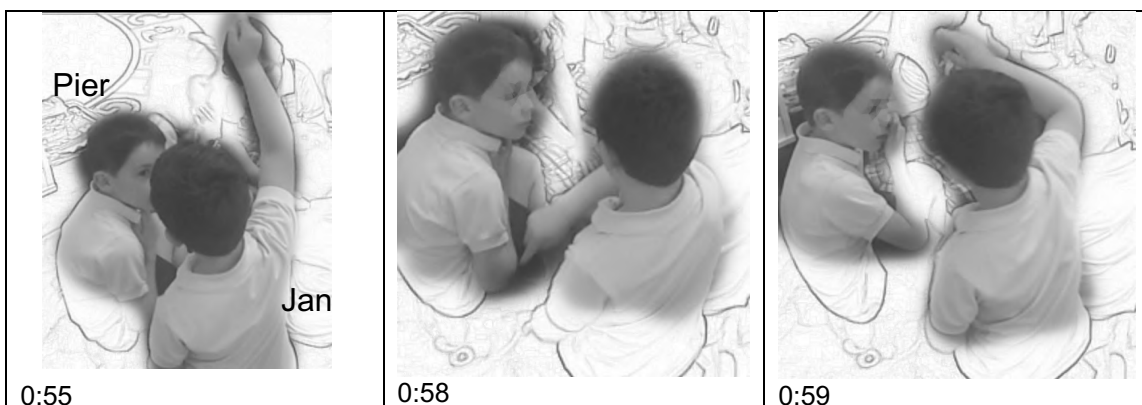


Figure 4.12.5) Jan's gestures drawing a net on the air.

4.12.2 Discussion

In this short episode the actions that are highlighted respond to: a) the evaluation of another's comprehension; b) the use of multimodal descriptions to accomplish communicative interests and needs; c) the use of physical contact to accomplish communicative needs and; d) preschoolers self-motivated movement to join different subgroups.

The first notable aspect of this episode is how Pier displays to Jan his intention to illustrate the letter sound 'n': "*net I'll do a net a a rac those that for catching s*" and then uses a gesture to mimic using a net (see figure 4.12.2). Pier does not seem to be satisfied with his verbal description "*net I'll do a net a a rac*" and right after 'rac' 'rac' seems to be a self-made translation of *raqueta* (raquet) in Spanish) he offers a description of the use of the net although he is unable to complete the concept "*those that for catching s*". To solve the communicative obstacle of not finding the word butterfly (what nets are designed to catch), he articulates an 's' with a marked rising intonation jointly with a snapping gesture, providing an opening for the taking of the turn for Jan to complete the description. Jan does so, adding the missing word "*ok butterfly*" in Spanish. Pier, upon realizing that Jan has comprehended his description turns his torso to reincorporate his position to the whole group while giving his back to Jan. Thus, Pier is seen using multimodal resources to interact and to accomplish his description intention.

In this action, we can observe how Pier makes explicit to Jan his idea for the letter sound '/n/' and how he verifies Jan's comprehension. Pier uses different strategies to make sure there is comprehension from Jan. The first strategy is to offer the English word 'net' "*net I'll do a net*" followed by offering another word for a similar object 'rac' "*una una rac*" which seems to be meaning a racket (rackets and nets are visually similar and are both objects taught to the preschoolers as part of the phonics vocabulary). The third and fourth strategy is to offer a description of the action "*that for catching*" and to mimic the action (he uses both strategies simultaneously in a multimodal sign). Pier's obstacle becomes a language exploration trigger in which Pier, in wanting to verify that Jan comprehends what a 'net' is, has to first offer the word in the target language 'net' then find a similar object 'rac', thirdly offer a mimic and fourthly a description of the object's utility. Pier demonstrates that he is aware that it is not only about making meaning available to others but to making sure that the other is understanding what was intended by him.

The second aspect to highlight is how agentic Pier is in finding different strategies to make sure his communicative interest is accomplished. In the same line, Jan's completion of Pier's description proves that he has been able to understand the

message as Pier intended and that he has accepted the multimodal cue, the 's' and snapping fingers, in order to complete Pier's turn.

The third aspect to note is the lively use of gesture. This is visible in how Pier at 0:27 makes the gesture of drawing a net and in wanting to verify Jan's comprehension he makes the gesture of mimicking the action of using a net. Furthermore, when unable to find the word 'butterfly' he uses a snapping gesture to open the floor for Jan to complete his description. It appears that gesture is as eloquent as his words in this turn, hence, demonstrating that Pier is an agentic multimodal communicator who is able to show a) how to draw a net; b) how to use a net and; c) how to use gestures to give the turn to someone else and to request help in completing his utterance.

In the same line, Jan uses gesture, body posture and touch to communicate effectively. For example, after Pier verifies that Jan has comprehended his meaning, shown by Jan completing Pier's turn with 'butterfly', Pier turns his torso and joins the whole working group again, giving his back to Jan at 0:36. Jan, at 0:37, then uses different modes to catch Pier's attention again; he approaches Pier and kneels down, very close to him, facing him and gently pulling Pier's arm, managing to reactivate the dyad interaction again by using gesture, position in space and proximity. He is successful as demonstrated by the way in which Pier then engages with Jan in his second turn (0:44).

In Pier's second turn, he engages with Jan and shows him how he is going to draw the net and immediately after joins the whole working group again, at 0:48, turning his back to Jan for the second time. Jan politely disagrees with Pier who is not facing him "*not exactly like that you have to (...)*". Jan, in seeing that he does not have Pier's attention, insists a second time but now taps on Pier's shoulder to regain his gaze (figure 4.12.6). At 0:54, Pier half turns his torso and engages with Jan who is drawing in the air a net and describing the drawing steps. Thus, Jan demonstrates how he is agentic in using gestures, body posture, proximity and touch to reactivate the interaction dyad. This short but energetic interaction shows that these preschoolers make use of different modes in interaction and that they do so to overcome obstacles in interaction.

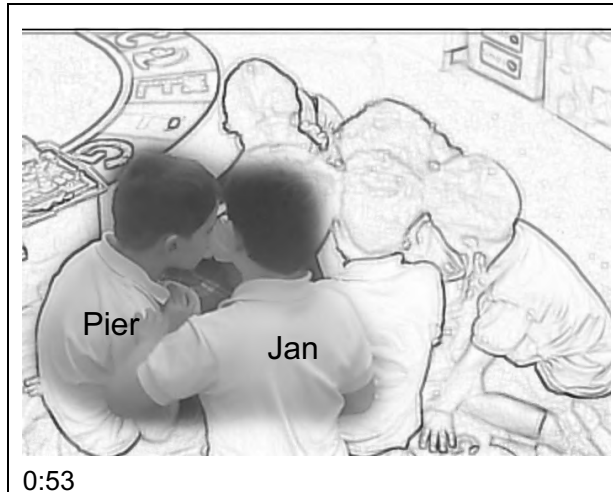


Figure 4.12.6) Jan gently tapping Pier's shoulder

The fourth related aspect to note are the participation framework changes that occur during the interaction. In this extract Pier's participation is conveyed through his torso posture and gaze, displaying his engagement either with the whole (sitting) group or in a dyad just with Jan. This is visible in figure 4.12.7: during the interaction Pier disengages from his interaction dyad with Jan three times, at 0:37 0:48 and 0:55, and turns to engage with the whole group. It is visible in the way in which Jan, uses gaze, touch and body posture to reengage Pier in the dyad with him every time he disengages.

These changes in the participation framework show that preschoolers are agentic and that through the use of multiple modes they manage to pursue their communitive interests. In terms of language exploration in this episode the collaborative stance of the preschoolers seems to trigger language exploration, by negotiating and co-constructing the illustration of the object selected for the task. Jan and Pier in collaborating and negotiating, how to draw a net, engage in potentially transformative engagements generated by Pier's interest in communicating his illustration idea and by Jan's engagement with Pier's idea-sharing.

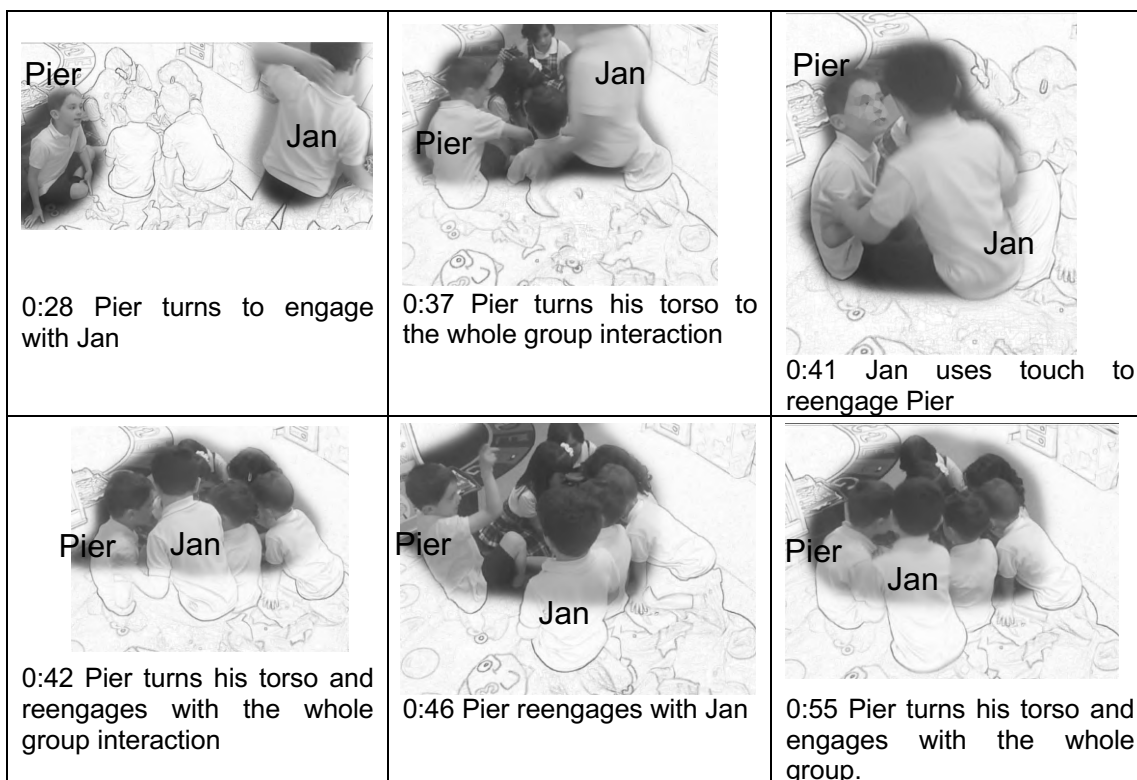


Figure 4.12.7) Jan and Pier's movement

It is worth noting that the iPad manager does not move during this short episode and that except for Pier and Jan, the rest of the group is sitting in a whole group formation around the iPad manager and are all mutually oriented to the iPad's screen. Hence, in this short extract the iPad manager stays in place and is mostly constrained to a sitting position during the management of the iPad. However, the rest of the group, as can be seen with Jan and Pier are not constrained in their movements. Jan is seen moving and standing very actively during the episode although he stays on task and is actively engaged (figure 4.12.7). This seems to demonstrate that movement does not affect negatively the participation of Jan in the task. Furthermore, Jan's and Pier's separation from the main group is oriented towards task completion and shows the co-regulation and collaborative social order enacted in and through the dyadic interaction.

In summary, in this extract we have seen how a preschooler verifies the comprehension of his message by another participant, using various multimodal strategies to make and clarify his meaning. He is agentic in the use of diverse modes in interaction. Language exploration has been visibly triggered by an obstacle

encountered by Pier and by Jan and Pier's mutual interest to show one another how to draw a net. There is evidence in this episode that these preschoolers are able to use gestures effectively to accommodate their interests. It has also been visible how natural the participation framework changes are and how a preschooler is able to use different modes to reactivate the participation framework to fulfill his communicative interests.

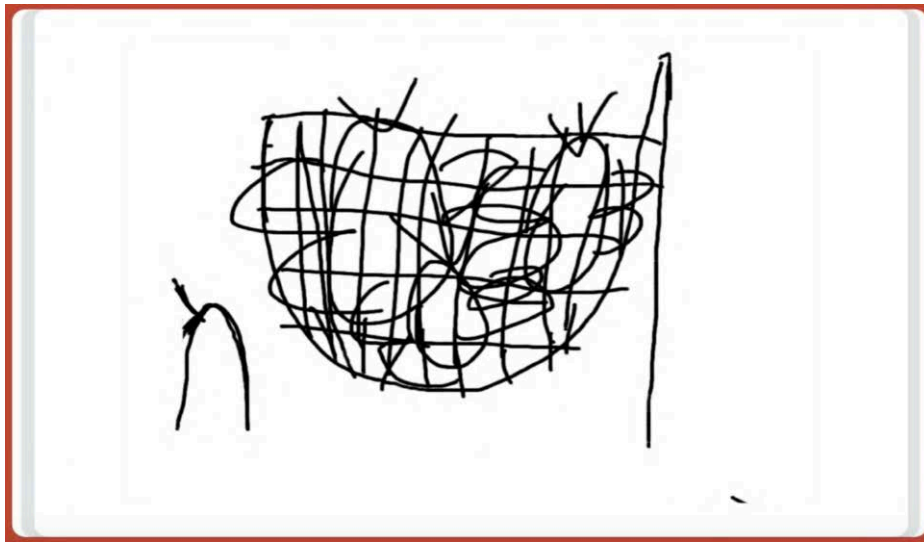

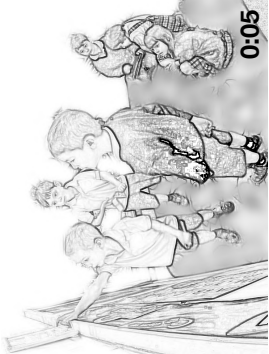



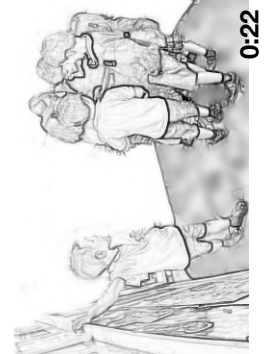


Figure 4.12.8) Slide of the letter sound /n/ illustration, a net with 3 butterflies in it.

Synopsis: In this short language-related episode, the following elements are visible: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; self-motivated **movement** around the working space and body orientation to join different grouping or peers (participation framework); **spontaneous play** and; use of **physical contact** as communicative resource. The language exploration triggers visible are engagement with the object selection of a classmate that generates **co-construction** of the illustration idea and; the use of **multiple modes** as a communicative resource in a description. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are: **co-construction** of a chosen object's illustration idea (exploration of **representability**); **description** of ideas and; **language switching**.

4.13 EPISODE: "WHAT IS MEN?"

Episode 4.13 Vocabulary- Group B		Stills	Time	Vocalization
 0:01	 0:05	0:00-0:01	Pier: Yo esta/ (me this one/) Lluvia: No (no)	
 0:12	 0:15	0:02-0:04	Pier: Ja:n/ la M no esta/ (Ja:n M is not there/) Jan: Si/ (yes/) Pier: Ah sí sí sí (ah yes yes yes)	
 0:19	 0:22	0:05-0:05:20	Pier: Pero/ ya vamos por esta fila/ (but/ we are in this row/) Maia: Yo la/ Qui fa la D/ (me the/ who is doing D/)	
		0:06-0:07	Miguel: Yo ésta/ (me this one/) Lluvia: mi::monkey	
		0:08-0:10	Jan: me:n Gerano: Yo la /o// (me /o//) Lluvia: o monkey/ (or monkey/)	
		0:10-0:13	Maia: Yo haré la L/ la L/ (I will do L the L)	
		0:13-0:13:50	Jan: Estoy haciendo la *** (half laugh) (I'm doing the ***+ (half laugh)	
		0:14-0:14:40	Lluvia: un monkey/ Qué es me:n/ (a monkey/ what is me:n/) Genaro: No:/	
		0:15-0:15:30	Jan: es hombre (+ 1 seg) son dos hombres o muchos (is man (+1 seg) it is two men or many)	
		0:15-0:16		
		0:16-0:17		
		0:17-0:19		
		0:20-0:22		
		0:23-0:25		
		0:25-0:25:30		
		0:26-0:32		

4.13.1 Analysis: Vocabulary - Group B

The episode occurs during the second of the four sessions of the book of sounds' task project. The episode is composed of one extract of thirty-two seconds.



Starting at 0:00 there are three subgroups working in parallel. Pier and Miguel are standing, facing and interacting with the letter sounds' whiteboard (an individual whiteboard in which the teacher wrote all the letter sounds in order and that is displayed in the working space). Lluvia is sitting and Genaro is standing facing her. Jan, Maia and Diana are sitting on the carpet in another subgroup (Figure 4.13.1). Jan is the iPad manager and is illustrating the letter sound 'm' (participation framework: subgroups).



Figure 4.13.1) Three interaction subgroups.

At 0:02 Pier directs himself to Jan and states “**Ja:n/ la M no está/**” (“*Ja:n M is not there/*”). Pier is referring to the letter ‘m’ which is not on the whiteboard. This referencing is displayed through his gaze and gesticulations towards the letters on the whiteboard (task-completion orientation)(grapheme identification). At 0:05, Jan responds to Pier while facing the whiteboard seemingly *disagreeing* with him “**sí/**” (“*yes/*”) (figure 4.13.2a). Simultaneously, at 0:05, Diana makes available “**Yo butterfly/**” (“*Me butterfly*”) in reference to the letter sound she wants to illustrate.

Diana’s turn does not elicit any response by the other preschoolers. All of them, except Maia who is engaging with the iPad’s screen, are facing the whiteboard and paying attention to Pier’s and Jan’s turns (there is no information about Lluvia as Genaro stands between her and the camera). The whole-group orients towards the letter sounds’ whiteboard 0:06 (Figure 4.13.2b) (participation framework: whole-group).

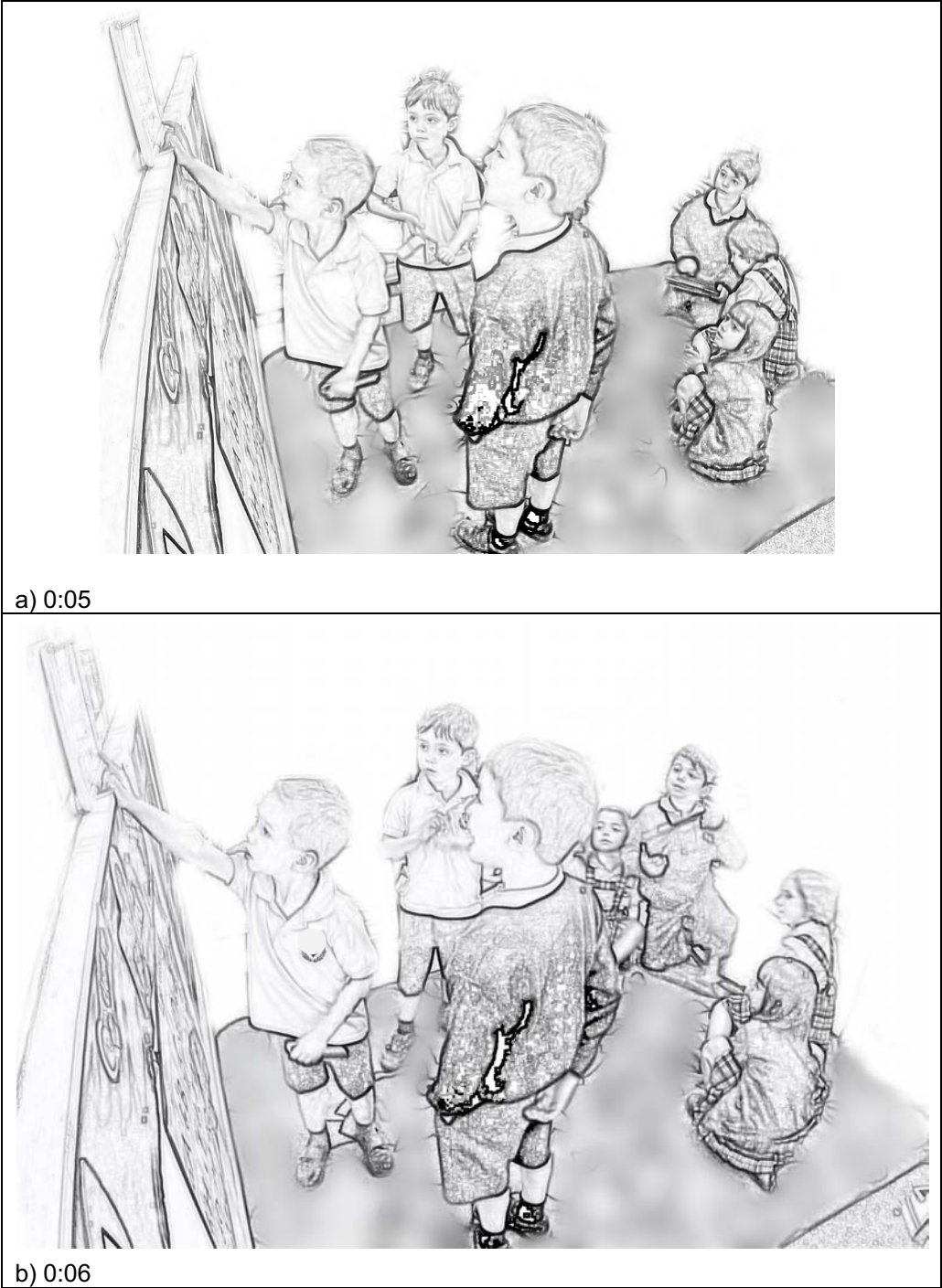


Figure 4.13.2) Preschoolers engagement at 0:05 and 0:06

At 0:06, Pier responds to Jan's previous affirmative reply, *agreeing* with him "Ah sí sí sí" ("ah yes yes yes") just as he finds the lettersound 'm' on the whiteboard. At 0:08 Pier remarks that they are not referencing the correct row of letters "Pero/ ya vamos por esta fila/" ("but/ we are in this row/") in relation to the arrangement of the letter sounds on the whiteboard (all the letter sounds are written on 4 rows on the whiteboard). He does not face nor direct his statement to anyone in particular.

At 0:10 Maia announces "Yo la/ Qui fa la D/" ("me the/ who is doing D/") (task-completion orientation: co-regulation)(self-task organization: self-regulation). At 0:13 Miguel responds to the previous question ("who is doing D") and answers by pointing at a letter sound on the whiteboard: "Yo ésta/" ("me this one") (multimodal sign)(task-completion orientation: co-regulation)(self-task organization: self-regulation). At 0:12 the preschoolers are in a semi-circle formation all oriented towards the whiteboard through body posture and/or gaze; Diana is the only preschooler sitting down (although in the semi-circle formation as well) (figure 4.13.3) (participation framework: whole-group).

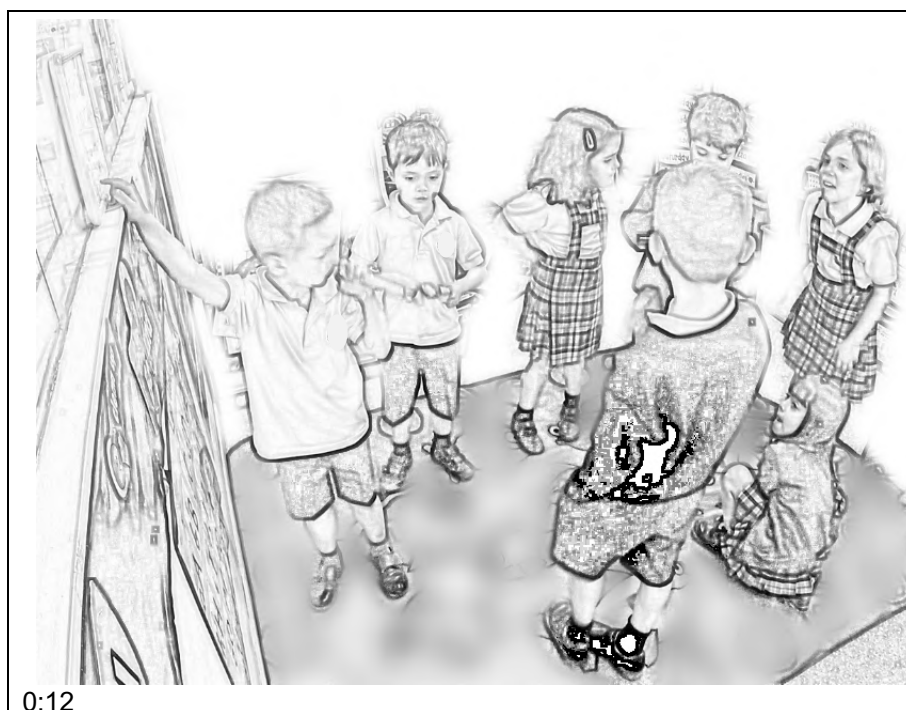


Figure 4.13.3) Preschoolers formation at 0:12

At 0:14 Lluvia provides, in English, a word for the letter sound Jan is illustrating (m) by repeating the task cue (saying the isolated beginning sound and then the word).

She elongates the beginning sound “m::monkey” (beginning sound)(vocabulary). At 0:15, Jan replies to Lluvia with the English word “me:n” (vocabulary). At 0:15, immediately after Jan’s turn, Genaro reveals to the group the letter sound he plans on illustrating “Yo la /o/” (“me /o/”) (self-task organization). At 0:16 Lluvia insists on her previous *suggestion* by repeating “o monkey” (“or monkey”). At 0:16 the working group moves into a more closed circle although Miguel stays outside of the group facing the whiteboard (participation framework: whole-group). Maia, at 0:17, playfully jumps and runs around the circle (figure 4.13.4) half singing “Yo haré la L/ la L/” (“I will do L the L”) (play)(self-task organization: self-regulation).

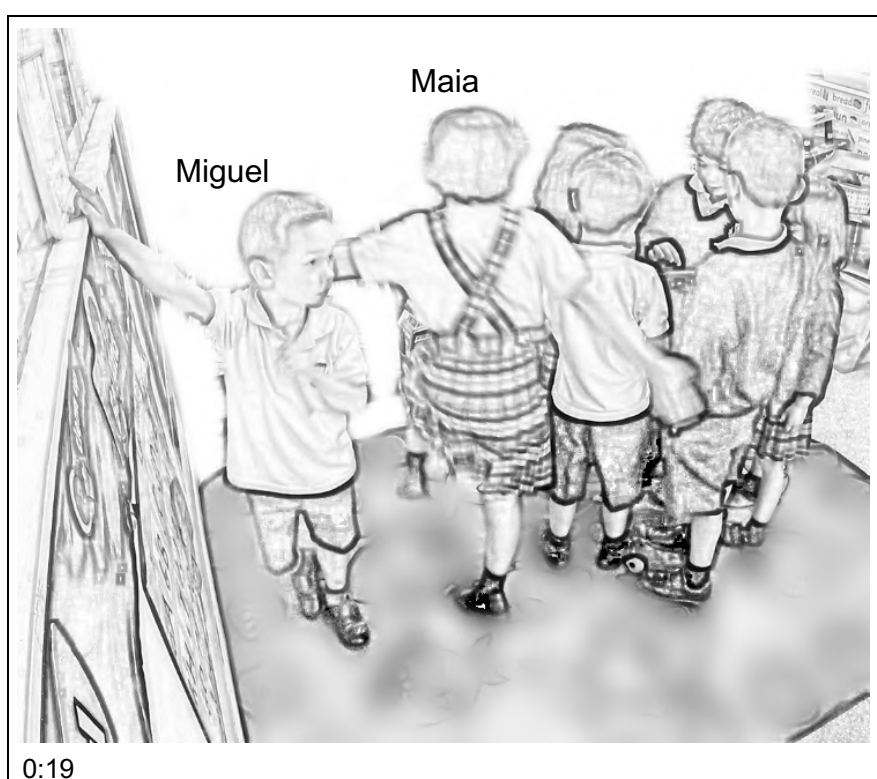


Figure 4.13.4) working circle, Maia jumping around and Miguel pointing at the whiteboard

The working group maintains the compact circle formation and at 0:20 Jan explains what he is doing “Estoy haciendo la *** (half laugh)” (“I’m doing the *** (half laugh)” with a half laugh at the end of his turn (hence unintelligible the last part of the turn) (task-completion orientation: co-regulation). At 0:23 Lluvia insists on her previous turn, for the third time, repeating “un monkey/ Qué es me:n/” (“a monkey/ what is m:en”) asking, as well, for the meaning of Jan’s choice (vocabulary question). At 0:25 Genaro makes available “no./” There is no visible display about whom this utterance is directed to. At 0:26 Jan replies to Lluvia’s question with the answer “es hombre (+ 1

seg) **son dos hombres o muchos**” (“*is man (+ 1 seg) it is two or many*”) (definition). The closed circle formation is maintained from 0:16 until the end of the episode, except Miguel who stays in front of the whiteboard and out of the circle (figure 4.13.5) (task-completion orientation: co-regulation)(participation framework: co-regulation).

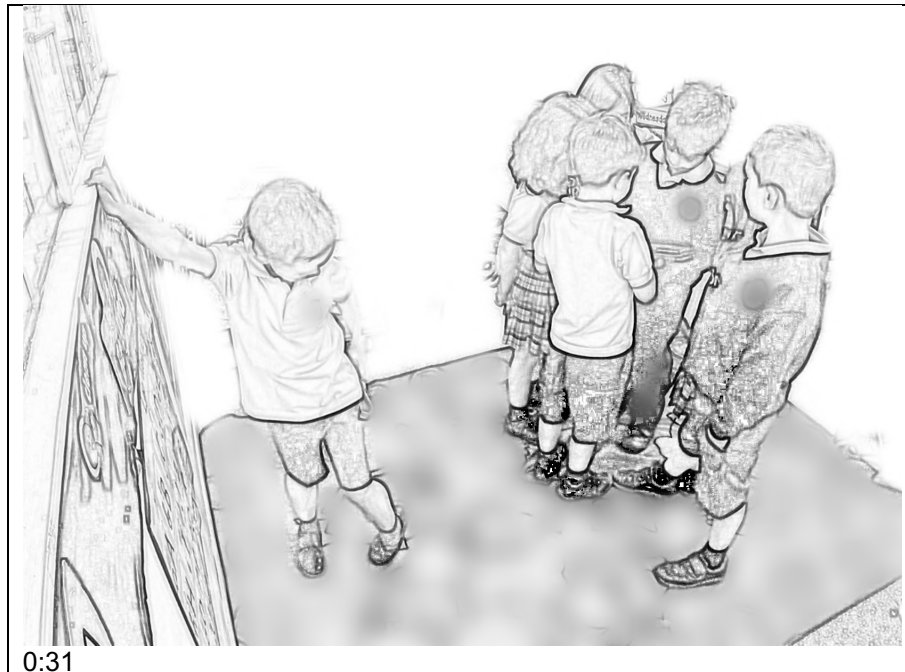


Figure 4.13.5) preschoolers' formation at 0:31 end of episode.

4.13.2 Discussion

In this short episode the actions that are highlighted respond to: a) a preschooler asking about an unknown word and obtaining a correct answer; b) a preschooler identifying the letter (grapheme) with the sound (phoneme) and; c) preschoolers organizing themselves in different subgroups to attend to their interests and needs.

The first feature to highlight is a potential transformation that takes place as a direct question from a preschooler, Lluvia, to another preschooler, Jan, about the object he has decided to illustrate. In the episode, the group is aware that Jan is the illustrator of /m/. This is evidenced by Pier's utterance directed to Jan at 0:02 "**Ja:n M is not there/**" in which he warns Jan that the letter sound he is illustrating is not on the whiteboard. Additionally, At 0:14, Lluvia offers a suggestion to the group, "m::monkey", providing an option of another target word beginning with the letter sound 'm'. Lluvia makes it explicit that the word begins with /m/ by articulating it with

a rising intonation and elongating the isolated beginning sound before the word itself. Jan, in turn, engages with Lluvia and without offering an explanation replies “me:n”, referring to the object he is drawing. This is seemingly a disagreement with Lluvia’s suggestion. At 0:16 Lluvia, however, disregards Jan’s reply and offers her suggestion for a second time “or monkey”. This second time, Lluvia includes ‘or’ making it evident that she is aware that ‘men’ is the chosen word by Jan and highlighting her suggestion as an option. Two turns after Lluvia, Jan makes a comment which is not directed to Lluvia, so Lluvia’s suggestion does not have any uptake or comment by any of the preschoolers. At 0.23 Lluvia offers for the third time “a monkey/ what is m:en/”. In this turn, Lluvia not only repeats her suggestion she asks, as well, the meaning of men, referring to Jan’s word choice. Jan responds to Lluvia’s question with a definition as an answer “is man (+1seg) it is two men or many”. Jan first offers the word in singular, in Spanish, and after a second of pause he clarifies, in Spanish, that it is 2 or many. This answer demonstrates that Jan is able to offer an answer that shows that he is aware that men is the same as man but in its plural “two men or many”. There is no evidence as to whether Lluvia learnt the word or not, however. It is visible and relevant to note that the task provided a space that generated a vocabulary doubt and triggered language exploration in the form of asking about the meaning of the word and receiving an answer. Jan in his act of answering had to make available the definition of men. In doing so, he first offers a simple answer and then reformulates and expands it, pointing to a potential transformative engagement for both Lluvia and Jan.

The second key point to highlight is the identification and relating of graphemes (letter) with phonemes (sound). The language exploration trigger is visible in Pier’s turn at 0.02. Pier, in assessing the whiteboard with the sounds, detects that ‘m’, the letter sound that Jan is illustrating, is not on the whiteboard. The sole act of detecting the absence or presence of a letter sound on the whiteboard, whether correctly or incorrectly, is evidence of the action of identifying and relating letters to sounds.

At 0:02, Pier directs himself to Jan and tells him “Ja:n M is not there/”. This interest to share this discovery can be seen as an enactment of the collaborative social order, derived from their interaction with the letter sounds’ whiteboard that contains all the

letter sounds that need to be included. Presumably the preschoolers have understood the task to mean if a letter sound is not there it should not be included.

Jan engages with Pier and replies “yes/”, disagreeing with Pier who reexamines the whiteboard and agrees with Jan that M is in the list “ah yes yes yes”. This turn is also evidence of the action of identifying and relating letters to sounds. In doing this, the use of the whiteboard as a cue to have all the letter sounds that the preschoolers need to include is made visible. This also underscores how the visual aide can act as a trigger for language exploration. It is distinguishable in Pier’s comment during a self-motivated action which is most likely oriented to task-completion, in which he assesses the graphemes on the whiteboard and identifies them with their phoneme. It also demonstrates that he is able to match (or at least try) some phonemes with their graphemes.

It is evident, through the screen captures that at different points all the preschoolers engage through gaze with the whiteboard in which the teacher wrote all the lettersounds in order (which she placed on the wall) (figure 4.13.2). Soon after Pier announces that a letter sound is missing all the preschoolers engage with the whiteboard; their interest is elicited through what Pier has said. Thus a potential transformation engagement with the letter sounds’ whiteboard is triggered by a classmate’s comment on the absence of a letter sound.

The third point to highlight is the participation framework and how preschoolers move around the working space to join different subgroups or the whole-group according to their interests. As seen starting at 0:00 (figure 4.13.1) at the beginning of the episode there are three different subgroups interacting. Then, two turns after Pier shares with the group that the letter sound ‘m’ is not on the whiteboard, the preschoolers move and organize themselves in a whole-group formation around the whiteboard. The participation framework transforms in thirty-two seconds from only three members standing and three different subgroups to all preschoolers standing up in a semicircle formation facing the whiteboard, then to a later very closed standing circle formation. This transformation is generated by the preschoolers’ movement in the working space. The only preschooler who does not participate in the movement is Miguel.

The rest of the group's movement demonstrates how what seems as an obstacle brought to their attention by a member of the group "Ja:n M is not there" transforms the interaction. This makes visible that preschoolers' participation framework is dynamic and lively and that it changes very rapidly and naturally through the use of movement. It is also interesting to note that in all these changes there are no rejections to any preschooler to join an interaction group.

In general, it has been visible how during this short language-related episode the preschoolers engage with what their classmates are doing or what they are planning to do for the task as well as with what they themselves are intending to do, all achieved in a self-regulation and co-regulation stance. Their self and co-regulation is amply evidenced through the way in which they engage with a task resource, the whiteboard used for the teacher to display the letter sounds order. It is also visible in the way in which Pier pairs graphemes with the phonemes and in the way in which a preschooler, when she does not know the meaning of 'men' requests more information. She receives a correct answer from her classmate who, in a co-regulation stance, makes an effort to find a suitable answer. All of this is achieved through a participation framework that throughout the episode is active, energetic and naturally transformed through self-motivated movement in space.

Synopsis: In this short language-related episode we can observe: the **collaborative social order** and **co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** and **self-task organization**; self-motivated movement from **subgroups** to **whole group** to interact with peers (participation framework) generated by **movement** in the working space and **spontaneous play**. The visible language exploration triggers are engagement with **suggestions, comments** or **selection** of letter sounds that generates **selection and proposition of a letter sound** and to a limited degree **disagreement, agreement, repetition** and the use of **multiple modes** (either in multimodal signs or multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points are; object suggestion (**vocabulary**); **grapheme identification, language switching, question about a word's meaning** and a **description**.

4.14 EPISODE: “PERO EMPIEZA POR LA F”

Episode 4.14 Beginning sound -Group B					
		Stills	Time	Vocalization	Vocalization (overlaps)
0:00			0:00-0:02	Teacher: what do you need/	
0:02			0:02-0:05	Lluvia: /o/ /o/ /o/ /o/	
0:04			0:03-0:05	Jan: =something begin	
0:06			0:05-0:07	Teacher: /o// ++ that's something ***	
0:08			0:05-0:06	Maia: =all/	
0:10			0:07-0:07:40	Maia: all/	
0:12			0:08-0:12	Teacher: a:l: + ah: + try another word + try a book or something\	
0:14			0:13-0:13:40	Pier: o::	
0:16			0:14-0:19	Diana: box/ box/ / box/	0:14-0:21 Lluvia: e:/ e:/ mire:/u/ mire:/u/ aquí hay algo que comienza por la /o/ (he:/ he:/ loo:k/ loo:k/ here there is something that begins with /o/)
0:18			0:14-0:15	Maia: =Yo te voy diciendo (I'm going to be telling you)	
0:20			0:19-0:20	Genaro: box/	
0:22			0:19:0:20	Pier: =box/	
0:24			0:19-0:20	Diana: =box/	
0:26			0:22-0:23	Pier: b:o::x	
0:28			0:22-0:23	Jan: =esa no (not that one)	
0:30			0:23-0:24	Maia: =no (no)	
0:32			0:24-0:28	Maia: ya pero comienza por la /b/ (reading to herself) offer offer (hum but it begins with /b/ (reading to herself) offer offer)	
0:34					
0:36			0:28-0:30	Genaro: Offer F	
0:38			0:28-0:34	Pier: =O:r:n: orn orn orn orn/ (*oven) (pronounced /orn/)	
0:40			0:35-0:37	Lluvia: a ver voy a mirar un libro (let me see I'm going to look at a book)	
0:42			0:37-0:39	Pier: orn o:rn	
0:44			0:40-0:42	Genaro: orm cómo quieres que **** (orm *arm how do you want me to ***)	
0:46			0:42-0:43	Jan: =rápido lentorro (quick slow-ish)	
0:48			0:44-0:48	Pier: Un horno, sí, puedes poner a veces en la cocina (An oven, yes, you can put it sometimes in the kitchen)	
0:50			0:48-0:54	Jan: Pero Pier (1s) estas estas diciendo todo en español que empieza por la /o/ y que en inglés no empieza: (But Pier (1s) you are, you are saying everything in Spanish that begins with /o/ and that in English does not begin:)	
0:52					
0:54					
0:56			0:54-0:57	Pier: o:r:n o:rns or:n	0:56-0:57 Diana: bo::x/ ++ box:/
0:58			0:57-0:59	Jan: =ASÍ NO SE DICE/ (IT IS NOT SAID LIKE THAT/)	
1min					
1:02			0:59-1:01	Maia: Aquí pone /or// (here it has /or//)	
1:04			1:02-1:03	Pier: for	
1:06			1:04-1:04:30	Genaro: for/	
1:08			1:05-1:05:30	Genaro: fo:r/	
1:10			1:05-1:06	Pier: =fo:r/ for/	
1:12			1:07-1:09	Jan: PERO EMPIEZA por la F/ (BUT IT BEGINS with F/)	

4.14.1 Analysis: Beginning sound discussion - Group B

The episode occurs in the second of the four sessions of the book of sounds' task project. The language-related episode is composed of one extract of one minute and ten seconds. This episode is the first part of a longer episode (refer to episode 4.15). This extract presents preschoolers as agentic in finding a word for the letter sound /o/. Their agency is visible in the ways in which they use different strategies, including two suggested by the teacher. The extract also shows the negotiation of the chosen word, including a preschooler advocating against words that do not begin with letter sound /o/.



From 0:00 to 0:02, the teacher who is in the working space, asks the preschoolers “what do you need?” (task-completion orientation). Genaro is the iPad manager. At 0:02 Lluvia replies with the isolated letter sound “/o/ /o/ /o/ /o/” to the teacher’s question. At 0:03 Jan elaborates and *co-constructs* Lluvia’s turn by clarifying “something begin”, leaving the sentence unfinished. At 0:05, the teacher replies to both Lluvia and Jan’s comments with “/o// + + that’s something ***”. Simultaneously, Lluvia silently articulates /o/ with an exaggerated ‘o’ articulation gesture pointing at her lips (Figure 4.14.1). At 0:5, Maia, directing her gaze towards the teacher, overlaps the teacher suggesting the word “all” (Figure 4.14.1) (vocabulary)(language use). The teacher reacts to Maia’s turn and leaves her sentence unfinished at 0:07. At 0:07, Maia *repeats* her *suggestion* “all/” (language use).

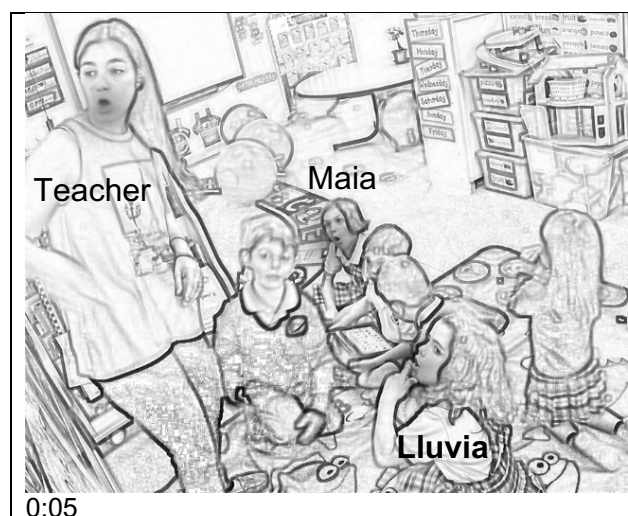


Figure 4.14.1) the teacher, Maia and Lluvia articulating the letter sound /o/

At 0:08 the teacher evaluates (a:ll: + ah: +) and *repeats* Maia’s suggestion elongating the letter sound /o/ and articulating it with exaggeration “a:ll: + ah: + try another word + try a book or something\”. The teacher makes an open palm gesture and gazes at an indefinite point, during the short pause while saying “+ ah”, providing an implicit evaluation of Maia’s suggestion (multimodal sign). In Parallel, Lluvia again silently articulates the sound /o/ pointing at her lips and exaggerating the lips position. At 0:08 the teacher and Lluvia are articulating the letter sound /o/ (figure 4.14.2) (multimodal sign).



Figure 4.14.2) the teacher evaluating ‘all’ for /o/. Lluvia silently articulating /o/.

At 0:12 the teacher is not in the working space, Lluvia is sitting down on the carpet observing the posters on the wall (figure 4.14.3a). At 0:13 Pier articulates the letter sound “o:::” elongating it. At 0:14 Diana has a book in her hands and *suggests* to the group “bo:x/ box/ box/” elongating the letter sound /o/ the first time (vocabulary)(task-completion orientation). At 0:14 Lluvia, standing up and walking towards the wall poster (a poster of classroom rules “offer help”), and overlapping the next turns of the preschoolers (Maia, Genaro Pier and Diana) says “e:y/ e:y/ mire:u/ mire:u/ aquí hay algo que comienza por la /o/” (“he:i/ he:i/ loo:k/ loo:k/ here there is something that begins with /o/”) (task-completion orientation)(movement). Lluvia stands in front of the poster and gazes at the working group, none of whom are paying attention to her (Figure 4.14.3b).

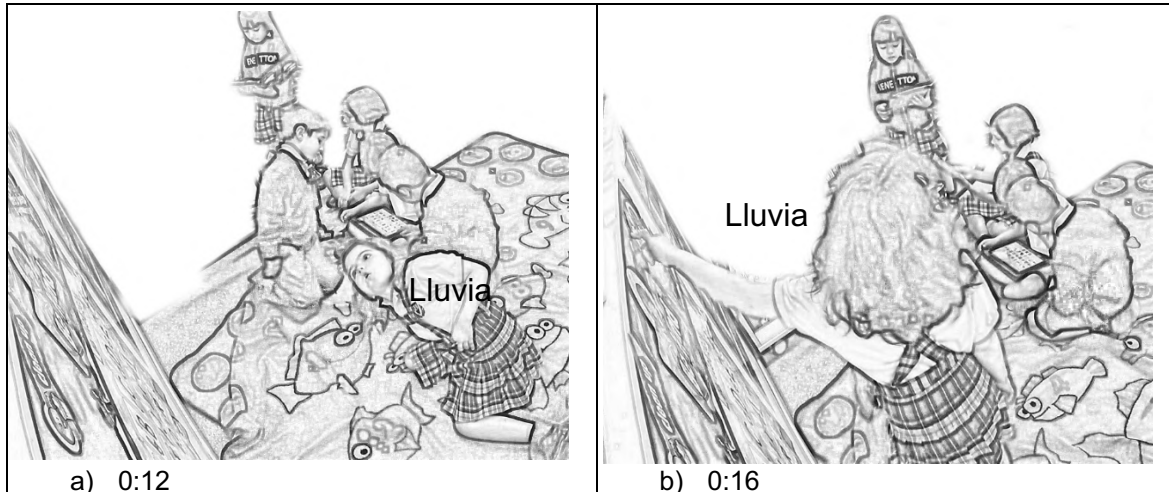


Figure 4.14.3) a) Lluvia gazing at the poster on wall. b) Lluvia pointing at the poster on the wall and gazing at her peers.

At 0:14, Maia with a book in her lap, says “**Yo te voy diciendo**” (“I’m going to be telling you”) (who she is talking to is not clear). At 0:19, Genaro the iPad manager, accepts Diana’s suggestion and repeats it with a rising intonation “box/”. At 0:19 Genaro, Pier and Diana orchestrate a *repetition* chain of the word “box/” overlapping each other’s seemingly *agreeing* with Diana’s suggestion by repeating “box/” once each one. At 0:22 Pier *repeats* for the second time the word “b:o::x” this time elongating each phoneme. At 0:23 Pier, Genaro and Maia *engage* with Lluvia and orient their torsos and gaze at the poster she is pointing at (figure 4.14.4).

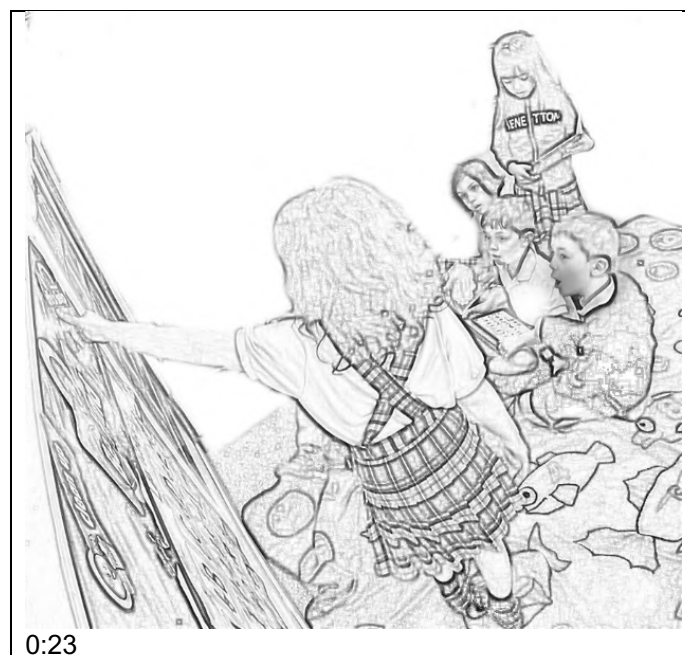


Figure 4.14.4) Pier, Genaro and Maia engaging with Lluvia’s pointing at the poster.

At 0:22, and overlapping Pier, Jan *disagrees* with Genaro, Pier and Diana’s previous turn’s suggestion (box) saying “*esa no*” (“*not that one*”). At 0:23 Maia agrees and supports Jan’s comment “*no*”. At 0:24 Maia offers an explanation for her stance “*ya pero comienza por la /b/*” (“*hum but it begins with /b/*”). Maia is elaborating on the fact that the suggestion does not begin with the letter sound Genaro needs to illustrate (task-completion orientation). In the same turn, Maia reads in a very soft voice “offer offer” which is the word on the poster that Lluvia is pointing at. At 0:28 Genaro engages with the word on the poster as well and reads “offer F” emphasizing the letter F (letter name)(task-completion orientation). Lluvia’s suggestion is no longer engaged with or commented on.

At 0:28 and overlapping Genaro’s reading, Pier provides another suggestion: “o:r:n orn orn orn orn orn/” The word is an incorrect translation of oven from Spanish ‘horno’ (silent h) or Catalan ‘forn’. He has taken out the last vowel to pronounce it with an English intonation (approximation)(vocabulary). Pier engages with gaze and body posture, orienting his torso, to Genaro in a dyadic interaction (figure 4.14.5) (participation framework: dyad).

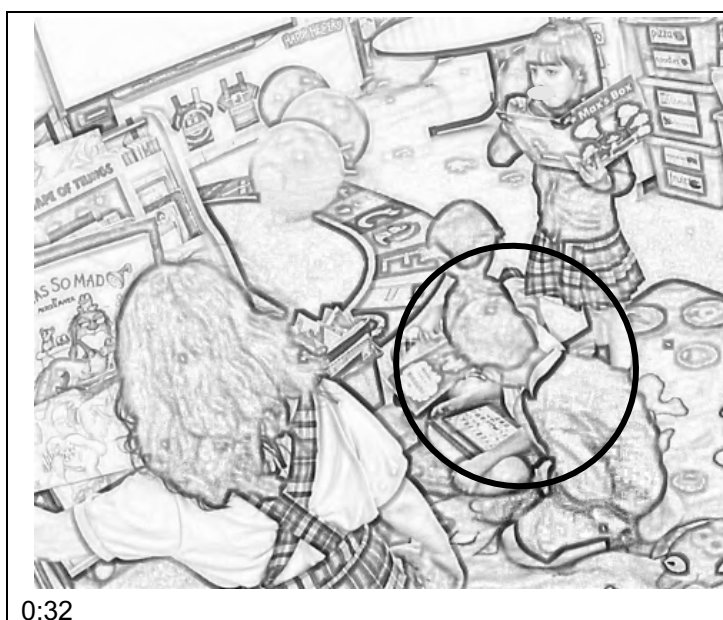


Figure 4.14.5) Pier and Genaro’s dyad.

At 0:35 Lluvia has not received any orientation towards her suggestion and comments to the group in general “*a ver voy a mirar un libro*” (“*let me see I’m going to look at a book*”), thus following the suggestion made by the teacher at 0:08 (task-

completion orientation). Lluvia walks towards the library to get a book (movement). At 0:37 Pier repeats his previous turn and suggestion “or:n or:n”. At 0:40, Genaro engages with Pier, in a dyad, and gazing at him and showing his arm to him says “orm cómo quieres que ****” (“orm, how do you want me to do ****”). The gesture made by Genaro shows that he has interpreted Pier’s suggestion as ‘arm’ which is pronounced by Genaro himself as ‘orm’ (figure 4.14.6) (multimodal sign)(participation framework: dyad).

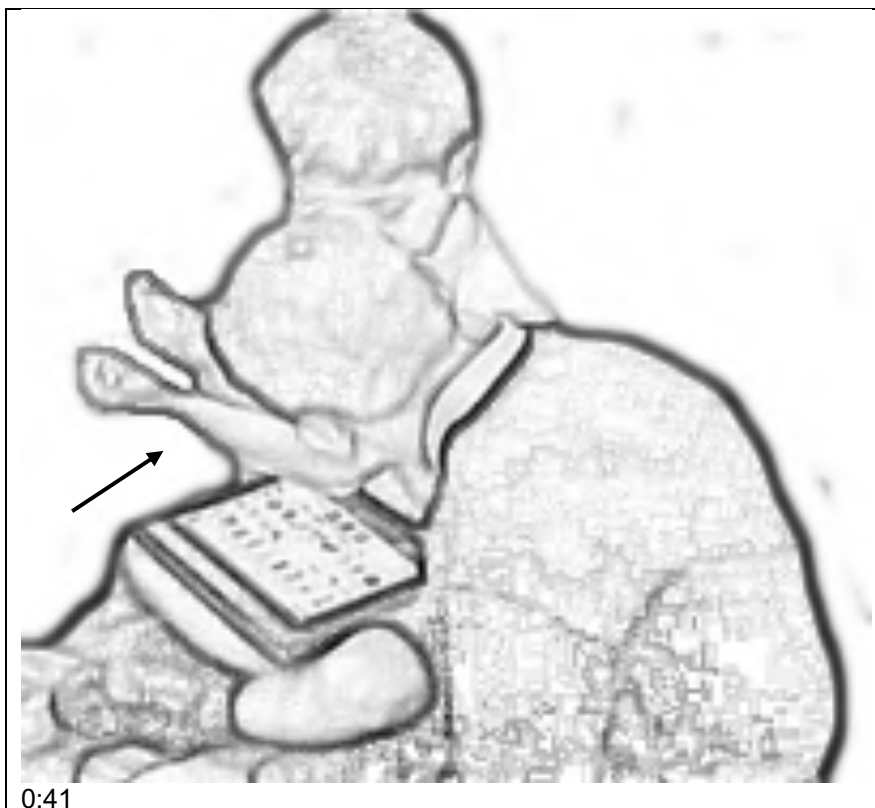


Figure 4.14.6) Genaro showing his arm to Pier while questioning him “orm how do you want me to ****”

At 0:42, Jan spurs on Genaro, the iPad manager, “rápido lentorro” (“quick slow-ish”), making reference to his work pace (task-completion orientation: co-regulation). At 0:44 Pier continues to insist on his suggestion, expanding with a description in Spanish of the object “Un horno, sí, puedes poner a veces en la cocina” (“an oven yes you can put it sometimes in the kitchen”) (description). At 0:48 Jan moves closer to Pier and directs his speech directly to Pier, disagreeing with his suggestion. He includes the reasoning for his disalignment “Pero Pier (1s) estas estas diciendo todo en español que empieza por la /o/ y que en inglés no empieza:” (“but Pier (1seg) you are you are saying everything in Spanish that begins with /o/ and that in English does not

begin::) (task-completion orientation: co-regulation)(beginning sound)(movement). At 0:54 Pier offers the same suggestion for the third time “o:r:n o:rns or:n” elongating the sounds (repetition). Pier, Genaro and Jan are sitting close together in a triad but the three other participants are not interacting between them (figure 4.14.7). At the same time, while still not facing nor engaging with Pier, Genaro or Jan, Diana repeats her first *suggestion* (at 0:14) “bo::x/ ++ box:!” (repetition)(language use)(task-completion orientation).



Figure 4.14.7) Pier, Jan and Genaro in a triad.

At 0:57 Jan in a rising intonation, shouts, “**ASÍ NO SE DICE!**” (“it is not said like that”) in reference to Pier’s suggestion ‘orn’. Jan distances himself a bit from the triad and uses an open palm gesture for emphasis (figure 4.14.8) (movement) (multimodal sign).

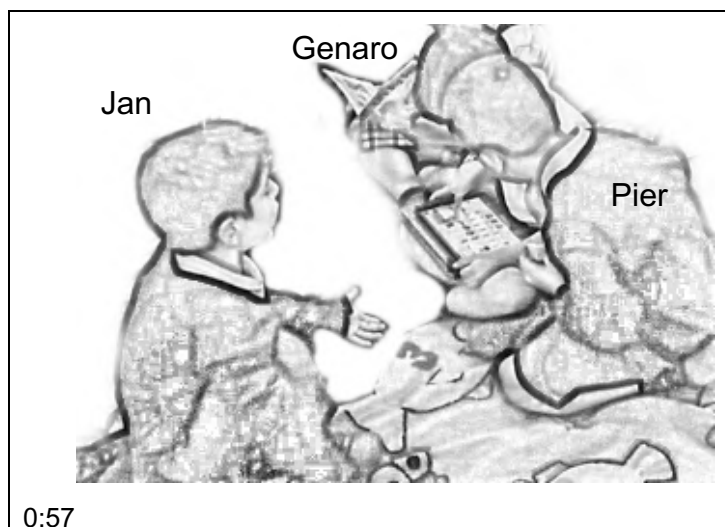


Figure 4.14.8) Jan distancing his body posture from the interaction group and open palm gesture of emphasis.

At 0:59, Maia exclaims “**Aquí pone /or/**” (“*here it has “or/”*”) pointing at a word in a book (task-completion orientation). Pier, Jan and Genaro’s triad dissolves and they join the rest of the group in a whole group interaction, all sitting down except Lluvia who engages from outside the circle while standing up (figure 4.14.9) (participation framework: whole-group). At 1:02 Pier utters “for” that is *repeated* by Genaro at 1:04 and, a second time by Pier himself at 1:05 overlapping Genaro’s second repetition in an orchestration of *repetitions* (language use).



Figure 4.14.9) Whole group interaction triggered by Maia’s turn (Lluvia standing up)

At 1:07 Jan *disagrees* and in a rising intonation (again shouting), “**PERO EMPIEZA por la F**” (“*BUT IT BEGINS with F*”), providing his argument against the use of the word ‘for’ (task-completion orientation)(disagreement)(beginning sound). At 1:09 Genaro engages with Jan’s previous turn and accepts his argument “**ah no**” (co-regulation)(agreement).

4.14.2 Discussion.

This language-related episode has been segmented in two extracts given that the length and the richness of the episode makes it difficult to analyze in a single extract (refer to episode 4.15). It was selected because a language exploration trigger, that arises during the interaction, is visible thereby making a potentially transformative engagement evident as well. In this short episode the actions that are highlighted respond to: a) preschoolers using some strategies to complete the task which show

co-regulation and task-completion orientation; b) preschoolers negotiating words beginning with /o/ and showing a collaborative social order; c) self-made translations and use of English pronunciation (approximation).

The first feature to note is that starting at 0:00 the teacher asks the preschoolers 'what do you need' and, in a demonstration of understanding of the question and the task, Lluvia replies "/o/ /o/ /o/ /o/" which is further elaborated, thus co-constructed, by Jan "something begin". In offering these answers the preschoolers show that they have understood the task, the point they are at in the task and the question made by the teacher. At 0:05 the teacher elicits further responses regarding the preschooler's need but then leaves the sentence unfinished upon hearing Maia suggest "all". The teacher clearly orients towards her answer as she begins her next turn repeating the word and elongating the beginning sound "a:ll + ah: + try another word + try a book or something". The teacher makes a facial gesture, looking at an indefinite point and slightly turning her head to one side (figure 4.14.2), apparently evaluating and reflecting on the answer. It should be noted that 'all' phonetically begins with /o/ although in writing it begins with 'a' which can cause some confusion for the preschoolers as they are in the phase of identifying letters with their sound (as 'a' in apple) and are not yet learning alternative spellings in which some letters have a not usual corresponding sound (as 'a' in all). It can be argued that the teacher takes a short pause and decides not to explicitly reject the word, as it does begin with /o/ phonetically, but does suggest to the preschoolers to find another word and further suggests using a "a book or something". It is relevant, as well, that the teacher does not offer an explanation on why it would be better to find another word.

It can be argued that the reason that made the teacher take that decision and prompted her not to offer an explanation might have been that it was too complex for the preschoolers. In any case, it is clear that her decision was based on a pedagogical interest which is visible through her short pause, gesture and speech. In any case, the teacher leaves the working space short after her turn and the preschoolers actively seek another word.

In connection to this, it is interesting to note that the preschoolers, at 0:08 (figure 4.14.2), are engaging with the teacher through gaze and soon after she leaves the working space they make use of her suggestions. At 0:12, Lluvia engages with the poster on the wall evidenced in the way she turns her head and reads something (figure 4.14.10) while Diana, standing up, is looking in a book. This shows an orientation towards task-completion. Lluvia and Diana move in the space, self-motivated by their interests and this motivation and capability of movement prompts them to explore the resources.

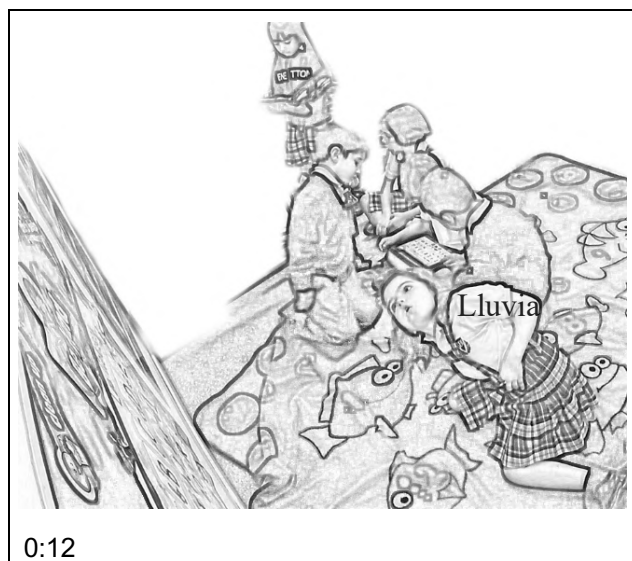


Figure 4.14.10) Lluvia turning her torso and head towards the poster on the wall, Diana looking a book.

At 0:14 Diana suggests the word 'bo:x box/ box/' while Maia announces her intentions to seek more resources as she gets a book, saying "I'm going to be telling you". She indicates her intentions to look at the book and comments her findings although it is not clear who she was directing her speech to. Thus, Lluvia is 'trying something' (seeking other resources such as the poster) as suggested by the teacher and Maia and Diana are 'trying a book' as also suggested by the teacher. Hence, the teacher strategies have been accepted and employed by the preschoolers.

It is interesting to observe that Lluvia's suggestion 'offer' elicits Maia's interest, who reads the word at 0:24 and Genaro who reads the word on the wall at 0:28. However, although the word 'offer' is correctly read by Maia and Genaro it is not taken further. It can be argued that the word 'offer' is not understood by the preschoolers and

hence not pursued further. It is not possible to know whether they know or not the word but given that English is for them a foreign language and that the poster on the wall has a title to 'offer help', in relation to good manners in the school, it seems plausible to consider that the word (offer) is not completely understood by them hence their lack of engagement. Furthermore, at 0:35 after Lluvia's suggestion at 0:14 was not singled out by the group she explores the other strategy 'try a book' and announces to the group "let me see I'm going to look at a book".

It is clear that some preschoolers not only engaged through gaze with the teacher's suggestion at 0:08 but that embraced the suggestion and followed it. It is interesting to note that they did so even though the teacher was not present and that the teacher did not insist or check for comprehension regarding her instructions when she was still present in the working space. The teacher's tone or speech was not an order or direct instruction, her tone was low at the end of her turn and she left soon after the comment. This makes it visible that there is a collaborative classroom order and that co-regulation is present. Preschoolers were agentic in engaging with the teacher's suggestion and in using such suggestions, added to their own ideas (such as looking at the poster on the wall), and thereby language exploration triggers arise.

Furthermore, regarding the first suggestion made by the teacher 'try another word' there is also evidence of active engagement: at 0:14 Maia suggests 'box'; at 0:14 Lluvia suggests 'offer'; at 0:28 Pier suggests 'orn'; at 0:59 Maia suggests 'or' and at 1:02 Pier suggests 'for'. Hence, five different suggestions are presented to the group, making it evident that the preschoolers heard and aligned to the teacher's suggestion. Thus seemingly a language exploration trigger arises from the preschooler's engagement with the suggestion of the teacher which seems to be generated by preschoolers' orientation towards completing the task and a co-regulation sense. The preschoolers are agentic and active in completing the task, they participate actively during the episode to provide and share possible words. The preschoolers also appear receptive to the teacher's suggestions and comments.

In relation to language exploration triggers, Jan and Maia, provide evidence through some of their turns that they are exploring the target language throughout the

interaction that takes place during the task. At 0:22 Jan makes explicit “not that one” referring to Genaro, Pier and Diana’s suggestion of ‘box’. This shows Jan’s disagreement with the suggestion. Maia, completes Jan’s rejection offering the argument “but it begins with /b/” making visible her support for Jan. She has identified the beginning letter sound of ‘box’ and rejects the word, expanding on her rejection with an argument to support her assertion. Hence, how Maia is also engaged in a language exploration trigger is visible; it arises from an incorrect suggestion, in her support to Jan’s rejection and the task instruction (objects beginning with the given letter sound).

At 0:48, Jan again engages in a language exploration trigger by interpreting the suggestion made by Pier ‘orn’ and his description of it “an oven yes you can put it sometimes in the kitchen”. Seemingly Jan recognizes it as an incorrect translation. Jan makes this explicit to Pier “but Pier (1s) you are saying everything in Spanish that begins with /o/ and that in English does not begin:” indicating to Pier that ‘orn’ is not an English word although recognizing it begins with /o/. This action demonstrates that Jan has heard the suggestion and analyzed it, recognizing that it is a translation from Spanish, and that it does begin with /o/. This turn shows that Jan had to analyze the beginning sound of ‘orn’ and relate it to his knowledge of English vocabulary. Furthermore, at 0:57, since Pier ignores Jan’s comment, he makes again explicit to Pier, in a rising intonation, “it is not said like that”, demonstrating that Jan is convinced of his point of view and is agentic in reformulating it in a more direct and emphatic way. At 1:02 Pier and Genaro suggest the word ‘for’. Jan does not align completely with the suggestion, telling them “but it begins with F”. In doing so it is clear that he has identified the beginning sound of the word and recognized it is not /o/ and identified it is /f/ engaging in another language exploration trigger. It is also relevant to note that Genaro aligns with Jan, acknowledging that it is not a plausible word “ah no” showing once again the enactment of the collaborative stance of the group and co-regulation orientation.











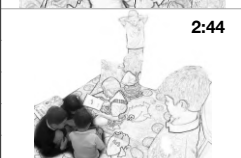

Another point to highlight is Pier’s agency in self-translating the word oven from Spanish to English. Pier, at 0:28, recommends the word ‘orn’ (/ɔrn/) and a description of what it is in Spanish. The word in Spanish is close in pronunciation /arna/. The

self-translation highlights that Pier is using his understanding of the English sounds to translate the word. It is interesting to see how the engagement in the task generates a potential transformation in which Pier uses his understanding of the target language to find a translation (although incorrect). Pier's intonation shows that he recognizes that the pronunciation is different. Furthermore, at 0:40 Genaro, misinterprets Pier's comment of 'orn' assuming he has changed the beginning sound of 'arm' for /o/. This is visible through Genaro's gesture of showing his arm to Pier and saying "orm **how do you want me to *****" This provides evidence that Genaro does not recognize 'orn' but instead, using his understanding of English interprets it as a close equivalent, thus interpreting 'orn' as 'orm' and understanding it as 'arm'. This misunderstanding triggers a communicative strategy by Pier who then describes what "orn" is: "**An oven, yes, you can put it sometimes in the kitchen**". His description then triggers a correction by Jan "**But Pier (1s) you are, you are saying everything in Spanish that begins with /o/ and that in English does not begin:.**". Thus, this task-completion orientation and co-regulation in which suggestions, agreements and disagreements are naturally allowed in the working group seems to generate a place where language learning triggers arise and thus potentially transformative engagement is visible.

In general, this extract has shown how preschoolers explored the target language through their interaction and participated in a potentially transformative engagement. We have observed: preschoolers translating words using their target language knowledge and understanding; preschoolers recognizing, identifying and making available to the group the beginning sounds of some words; preschoolers actively engaging in seeking a word beginning with /o/ and; preschoolers following the teacher's suggested strategies and in turn exploring resources to find words.

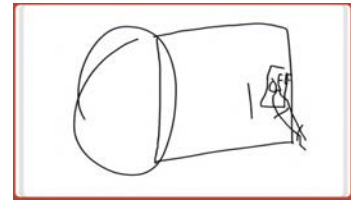
Synopsis: In this short language-related episode, the following are visible: the **collaborative social order**, **co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** and **self-task organization**; self-motivated movement from **subgroups** to **subgroups** to interact with peers (participation framework) and with classroom resources generated by **movement** in the working space. The visible language exploration triggers are engagement with a **suggestion** that generates **disagreement** and **agreement**, **repetition** and the use of **multiple modes** (either in multimodal sign or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); assessment of the chosen object's **representability**; **co-construction** of the illustration idea; **language switching**; **beginning sound** identification; **definition** offer of a word's meaning; **approximation** of words in Spanish/Catalan to English (mistaken translations).

4.15 EPISODE: "ON OFF"

Episode 4.15 Beginning sound - Group B			
Stills	Time	Vocalization	
	1:27	1:21-1:26	Pier: Aquí/ + /b/ /oo// k/ book/ (here/ /b/ /oo/ /k/ book)
	1:28	1:26-1:27	Maia: Pero: es con la /o:// (but: it is with /o://)
		1:28-1:32	Jan: Pero tiene que empezar con /o/ y como dijo la Miss Nathaly en una palabra o en una fra(se) (but it has to begin with /o/ and as Miss Nathaly said in a word or senten(ce))
	1:36	1:32-1:34	Diana: No tiene que empezar con /o/ (it does not have to begin with /o/)
	1:40	1:35-1:38	Jan: Lo ababa de decir la Miss Nathaly a la Lluvia y a\ a mi/ (just said it Miss Nathaly to Lluvia and\ and me/)
		1:40-1:42	Pier: *****
		1:40-1:43	Diana: = *** of/ + of/ + of/
	1:43	1:42-1:43	Maia: =en un ga/to:/ (in a ca/t:/)
	"Off-to-Timbuktu-Cow"	1:44-1:50	Pier: En el gato:: en el gato he/ he visto una/ una letra en el gato (in the cat:: in the cat:: I/ I have seen a/ letter in the cat)
		1:50-1:51	Maia: =PARA/ (STOP/)
			(hand fight over the book the teacher comes in and talks the situation. All the preschoolers are focused on the situation)
	2:22	2:20-1:22	Lluvia: I speaking in English\
	2:22	2:22-2:24	Diana: off/ off\ off/
		2:23-2:25	Teacher: =off/ beautiful off (teacher leaves the working space)
		2:25-2:26	Jan: /o/ /o/ /o/
	2:26	2:26-2:26:50	Genaro: off/
	2:28	2:29-2:36	Jan: *** Haz un interrumpot u:n interrump:tor y haz/ haz/ que lo acabas + sabes/ (do a *switch a swit:ch and do/ do/ as if you finish it + you know/)
		2:38-2:39	Genaro: off/
		2:42-2:46	Diana: on/ off on + on off
	2:44	2:42-2:44	Genaro: =eso seguro que está aquí (looking through the stickers on the app). (That for sure is here ((looking through the stickers on the app)
	2:46	2:43-2:46	Pier: =da igual que no este aquí lo puedes dibujar\ (It doesn't matter if it is not there you can draw it\)
		2:46-2:47	Diana: =on off

4.15.1 Analysis: Beginning sound search – Group B

The episode occurs at the second of the four sessions of the book of sounds' task project. The language-related episode is composed of an extract of thirty seconds and a



second extract of twenty-seven seconds. Part of the segment has been cut because it is not immediately relevant to the interest of the research and is marked in the transduction. This episode is the second part of a longer episode (refer to episode 4.14) (this episode's timing is a continuation of episode 4.14). Preschoolers continue finding a word for the letter sound 'o'.

At 1:21 Biel finds the word 'book', while looking in a book, and says “**Aquí** + /b/ /oo// k/ book/” (“*here + /b/ /oo/ /k/ book*”) articulating the word he has found sound by sound (task-completion orientation). At 1:26 Maia replies to him “**Pero: es con la /o://**” (“*but it is with /o://*”). She rejects the word by showing it does not begin with 'o'. To do so, she points at the word in the book to show the beginning sound (figure 4.15.1) (task-completion orientation: co-regulation)(disagreement)(multimodal sign)(beginning sound).

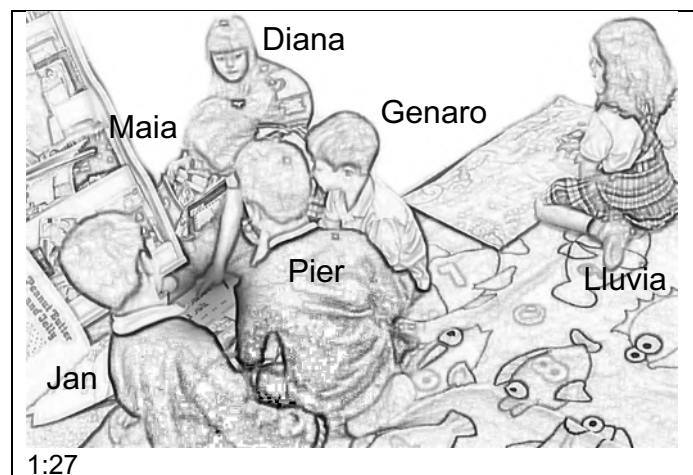


Figure 4.15.1) Maia pointing at the word 'book' that Pier has suggested for /o/

All the group is interacting in a circle except for Lluvia, who is seated separately with a book, but observing the others in the circle with a direct gaze. At 1:28 Jan supports Maia's comment and provides an argument “**Pero tiene que empezar con /o// y como dijo la Miss Nathaly en una palabra o en una fra(se)**” (“*but it has to begin with /o/ and as Miss Nathaly said in a word or senten(ce)*”). He places his hand on Pier's back

and moves closer to the books (figure 4.15.2) (task-completion orientation: co-regulation) (disagreement)(multimodal turn). In his argument, Jan does not finish the sentence and brings up the teacher's instruction to buttress his argument.



Figure 4.15.2) Jan leaning against Pier and placing his hand on Pier's back

At 1:32 Diana joins the interaction with a *disagreement* to Jan's comment "**No tiene que empezar con /o/**" ("it does not have to begin with /o/") (task-completion orientation: co-regulation). At 1:35 Jan rephrases his previous turn "**Lo acaba de decir la Miss Nathaly a la Lluvia y a\ a mi/**" ("just said it Miss Nathaly to Lluvia\ and me/) adding a testimony to his argument while playing with the toy kitchen opposite to the sitting group (repetition)(co-regulation)(spontaneous play).

At 1:40 Maia has a book and Diana has another book. Diana makes a *suggestion* to the group "of/ + of/ + of/". The picture book Diana is using is "Moo-Cow Kun-Fu-Cow" (written by Nich Sharratt). The page on which she finds the word 'off' has a picture of the cow in a canoe and the text is "Off-to-Timbuktu-Cow" (task-completion orientation)(reading). At 1:42 Maia says "**en un ga/to:/**" ("in a ca/t:/") making reference to a word she has seen on a book's cover that has a cat. At 1:44 Pier, *repeating* and *co-constructing* Maia's turn, says "**En el gato:: en el gato he/ he visto una/ una letra en el gato**" ("in the cat:: in the cat:: / / I have seen a letter in the cat") (task-completion orientation)(agreement). Pier makes reference to the same phonics book that has a cat on the cover (the Jelly and Bean series by Marlene Greenwood). At 1:50 Maia shouts "**PARA**" ("STOP") and a struggle over the book begins and the teacher, entering the

working space, intervenes (the extract from 1:51 to 2:20 is not included given that it is of no relevance for the research) (physical contact)(disagreement).

At 2:20 the teacher is still in the working space and Lluvia, speaking to the teacher, observes “I speaking in English”, highlighting that she has been using the target language (language use). At 2:22 Diana offers the group another *suggestion* “off/ off/ off/” (task-completion orientation)(repetition). The teacher overlaps Diana’s turn (in her second repetition of ‘off’) and *agreeing* with the suggestion says “of/ beautiful of”, thus displaying her acceptance of the word and commending it. Both the teacher and Diana exaggerate the lip’s articulation during the /o/ in ‘of’ (figure 4.15.3) (multimodal sign). Soon after the turn the teacher leaves the working space (movement).



Figure 4.15.3) The teacher and Diana exaggerating the sound /o/ in articulating ‘of’

At 2:25 Jan *repeats* “/o/ /o/ /o/”, which is the sound being worked by the group, and at 2:26 Genaro, the iPad manager sitting with the iPad, *takes up* Diana’s *suggestion* and says “off”, apparently also ratifying the word (task-completion orientation)(agreement). At 2:28 Jan moves closer to Genaro and gives him, in Spanish, an illustration idea “*** Haz un interruptor* u:n interrumpot* y haz/ haz/ que lo acabas + sabes/” (“do a switch* a swit:\ch* and do/ do/ as if you finish it + you know/”) (task-completion orientation)(representation). Jan mispronounces the word switch in Spanish but then reformulates it, this time almost pronouncing it correctly the second time. (The first time, the word is equivalent to the conjugated verb ‘interrupt’ in Catalan) (Figure 4.15.4).

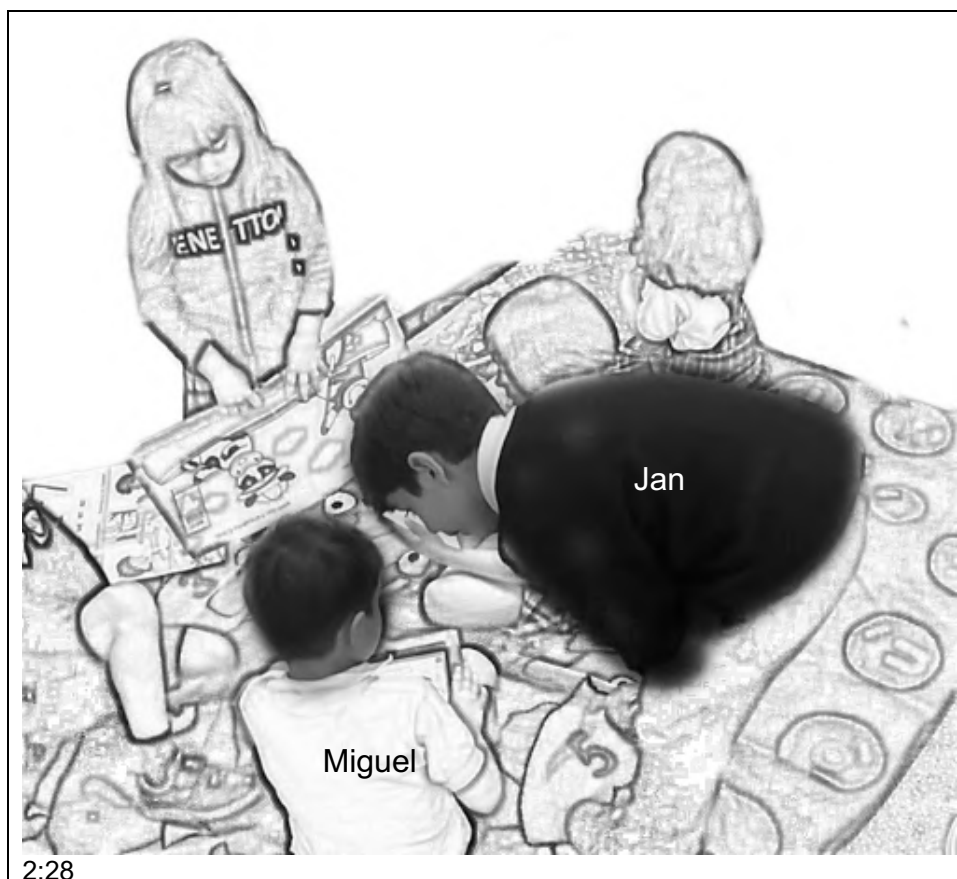


Figure 4.15.4) Jan approaching Genaro in giving him a representation idea for 'off'

At 2:38 Genaro *repeats* the suggested word “off/”. At 2:42 Diana proposes “on/ off on + on off”, referring to the action of turning something on and off and engaging with Jan’s illustration suggestion and connecting it with the complete sequence of action, (to turn something on-off) thus co-constructing Jan’s suggestion (co-construction)(task-completion orientation). At 2:24 and overlapping Diana, Genaro comments “**eso seguro que está aquí**” (“*that for sure is here*”), making reference to the object being available as a digital sticker in the app. At 2:43 Pier makes a comment to Genaro “**da igual que no este aquí lo puedes dibujar**” (“*It doesn’t matter if it is not there you can draw it*”). He is making reference to the option of drawing the object if the on-off sticker is not available in the app. At 2:40 Jan moves back to his previous standing position, away from the sitting group. Lluvia continues in her place outside of the circle looking at a book while Miguel is standing next to Jan (participation framework: subgroups)(movement). The sitting group is composed of Genaro, Pier, Diana and Lluvia. At 2:46 Diana repeats her suggestion “on off” (figure 4.15.5) (repetition).

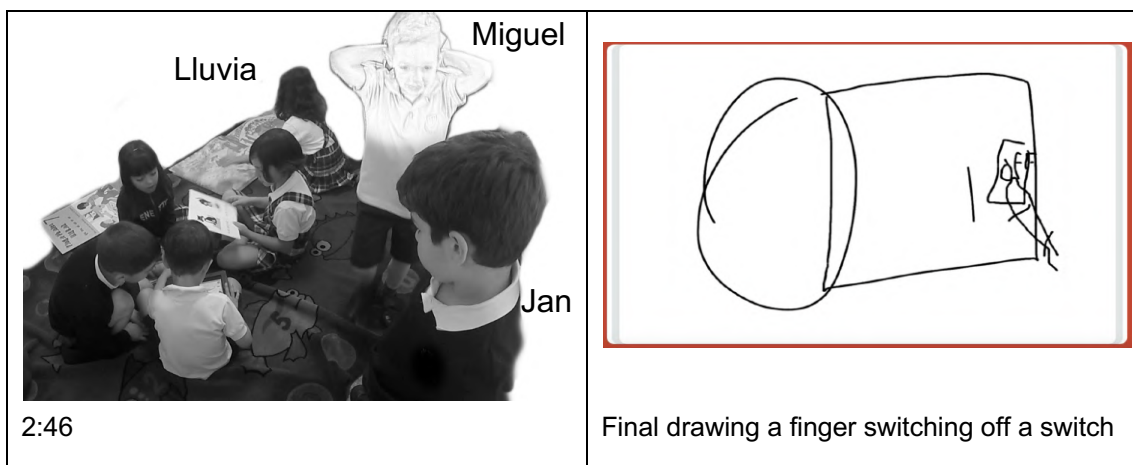


Figure 4.15.5) Interaction group at the end of the episode and the drawing included in the task.

4.15.2 Discussion

This extract is the second part of a longer episode (refer to episode 4.14 for the first part), however, it has been segmented in two extracts given the length and the richness of the interaction. In this short episode the actions that are highlighted respond to: a) preschoolers showing task-completion orientation through a collaborative stance to find an object word beginning with /o/ thus enacting the collaborative social order and co-regulation stance; b) preschoolers agreeing and disagreeing with suggestions and supporting their arguments; c) preschoolers co-constructing an idea for illustration to represent the chosen word.

The first to note is that the preschoolers, as in the previous extract, continue being actively engaged with the task and making suggestions of words for the letter sound being worked: 'o'. At 1:21 Pier suggests 'book' and at 1:40 Diana suggests 'off'. Both suggestions have been found by the preschoolers in books, following the recommendations made by the teacher. This makes visible how the preschoolers are actively participating in the task and oriented towards its completion. In their search for words they are collaborating and offering suggestions, giving and receiving rejections and acceptances, all of which are sometimes accompanied by clarifications or arguments from other preschoolers. The collaborative social order and the co-regulation stance is also visible through the active collaboration and by their use of the teacher's suggestions.

It is relevant to highlight that the preschoolers reject and disagree with some of the suggestions made in the group but that there is often discussion or a presentation of the arguments that support the agreement or disagreement. For instance, Maia at 1:26 rejects Pier's suggestion but offers a reason "but: it is with /o://". To underscore her argument, she uses her posture and index finger to help him identify in the book she is pointing at, the written word and that it begins, all of this as she exclaims, with /o/. This indicates how she is being agentic in using a multimodal answer (multimodal sign) to present her disagreement through provision of a supportive argument, which is in fact a language-test offered to Pier. We can also observe how the teacher's instruction is brought into the discussion by Jan as supportive argument for his rejection and disagreement of Pier's suggestion: "but it has to begin with /o/ and as Miss Nathay said in a word or senten(ce)". Jan intensifies his comment by leaning on Pier and getting very close to him (figure 4.15.3). He also makes visible that he is an agentic multimodal communicator. Thus, Maia and Jan are seen offering not only rejections but arguments to support their disagreement while they also use various modes to accomplish their communicative interest to show Pier he is not correct.

It can be argued that the interaction is based on a co-construction of the task in which the suggestions made are accepted or rejected but accompanied by an argument; thus the task is constructed collaboratively. The only suggestion that was engaged but not accepted or rejected nor received a further comment was that of Lluvia in the previous episode 'offer' (refer to episode 4.14).

It is also relevant to note in this extract that the suggestion made by Diana at 1:40 comes from a sentence in a book "Off-to-Timbuktu-Cow" which is not a usual sentence, especially given that the meaning of 'off' is obscure. However, as the word is accepted by the teacher at 1:23 "off/ beautiful off" it might have been accepted by the preschoolers orientation to the teacher's suggestion or by them understanding 'off' not as an adverb of place (as in Off-to-Timbuktu-Cow) but as an adverb they recognize such as 'off' in turning off the lights. However, this is not known. What is visible is that at 2:29 Genaro repeats it and that at 2:29 Jan offers a representation suggestion, hence making evident that he has paid attention to Diana's suggestion and interpreted it. Jan displays not only his interpretation but a suggestion on how to

represent it on the iPad: “do a switch* a swit:\ch* and do/ do/ as if you finish it + you know!”. Interestingly the final representation is a switch being turned off by a finger (figure 4.15.6).

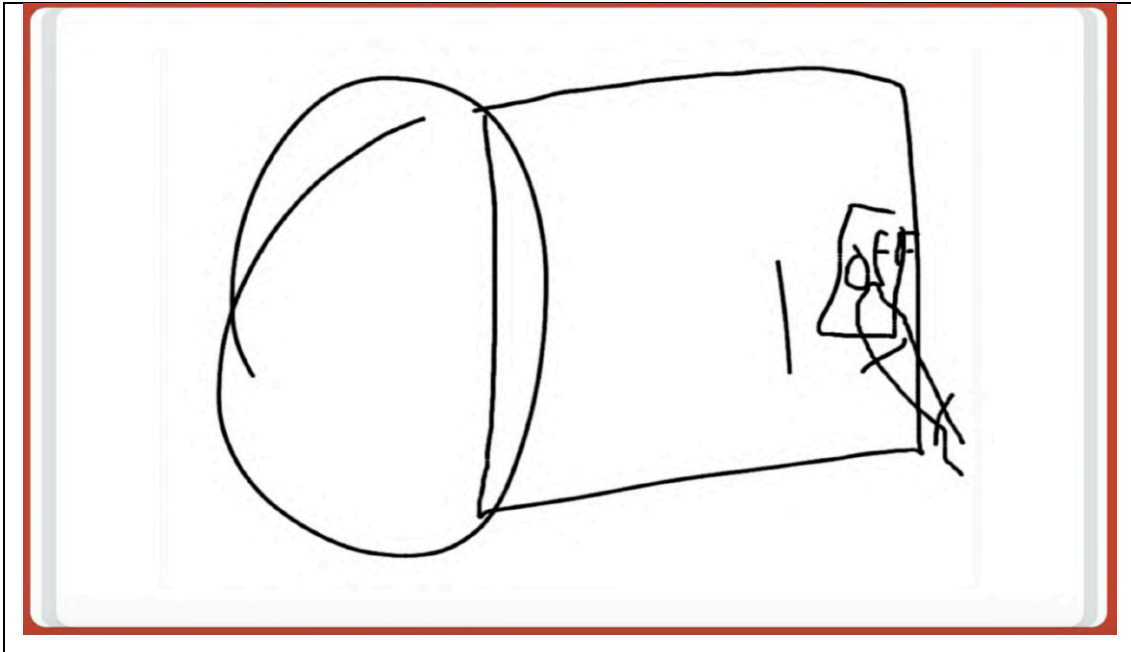


Figure 4.15.6) representation of the word 'off'

It is also relevant that, at 2:42, Diana elaborated and co-constructed it by offering “on/ off on+ off”. This demonstrates that after the group has discussed the word beginning with ‘o’, Jan and Diana continue oriented towards the task by focusing on the illustration or representability of the word. This is evidently a language learning trigger. Jan reflects on how to represent oral language in a graphic form and Diana is able to further offer the completing action of “off”, demonstrating that there is language exploration during and through the interaction. It is also evident that the preschoolers are agentic in engaging with the suggestions made and in so doing identifying its beginning sound in order to agree or disagree with suggestions. In doing so, the preschoolers need to assess the suggestions, which is in itself an act of language exploration.

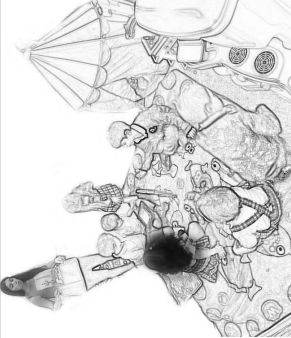

Last but not least it is worth highlighting that Jan uses his body posture and position in the space very strategically. Every time he wants to make a point stand out, he intensifies it by getting very close to the preschoolers he is talking to as in 1:28 and

2:28. This demonstrates how Jan uses body posture and position in space to his advantage during interaction.

In general, we have seen that the preschoolers worked collaboratively and that in so doing they are participating in potentially transformative engagement through the interaction with other preschoolers, the task and their interests. What has been made visible in these excerpts: preschoolers rejecting and disagreeing with some suggestions, offering arguments to support their rejection; preschoolers offering arguments hence assessing the suggestions made by others and; preschoolers engaging with the selected choice and further engaging with the representation of it.

Synopsis: In this short language-related episode, it is visible: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation**; self-motivated movement from **subgroups** to **subgroups** or to **classroom resources** to interact with peers or resources (participation framework) generated by **movement** in the working space; **spontaneous play** and use of **physical contact** as communicative resource. The language exploration triggers visible are engagement with the search of a word beginning with /o/ that generates **disagreement, agreement, repetition** and collaborative search as well as the use of **multiple modes** (either in multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); assessment of suggestions and of the chosen object's **representability, language switching** and **co-construction** of the illustration idea.

4.16 EPISODE: “CÓMO HAGO UP?”

Episode 4.16 Representation of adverbs - Group B		
Stills	Time	Vocalization
	0:01-0:02	Lluvia: Quién hace la /ɔ/ (who is doing /ɔ/)
	0:02-0:04	Teacher: is that/ is that /ɔ/ or /N/ /N/ /N/
	0:04-0:05	?: /N/ /N/
	0:05-0:07	teacher: = /N/ /N/ + what can you do with /N//
	0:07-0:08	?: /N://
	0:08-0:08:30	Jan: Lluvia/
	0:09-0:11	Pier: Para que todos la vean aquí/ (so all can see it here/)
	0:11-0:12	teacher: What can you do with /N//
	0:12-0:13	Diana: Yo *** (me ***)
	0:14-0:15	Pier: *****
	0:15-0:16	Jan: Aquí nadie la ve (no one can see it here)
	0:16-0:17	Maia: u:p\
	0:18-0:20	Pier: Aquí sí que la van a ver ++ y aquí no se aguanta (here they are going to see it ++ and here it won't stand)
	0:18-0:23	Teacher: =say it/ up/ + beautiful up/ up/ ++ come'on up/
	0:23-0:23:30	Jan: up/
	0:23:30-0:24	?: up/
	0:24-0:24:30	Teacher: up/
	0:26-0:28	Lluvia: Y cómo hago up/ (and how do I do up/)

4.16.1 Analysis: Representation of adverbs - Group B

The episode occurs at the second of the four sessions of the book of sounds' task project. The language-related episode is an extract of twenty-eight seconds. This episode is sequenced before another episode (refer to episode 4.17) This extract presents the teacher bringing the preschoolers' attention to the pronunciation of the letter sound 'u' in English. The extract also presents a preschooler engaging with the representability of the adverb 'up'.



At 0:01 Lluvia asks the group a question “**quién hace la /ʊ/**” (“who is doing /ʊ/”) (task-completion orientation) referring to the next letter sound to be worked. Genaro is the iPad manager at that moment and is illustrating and object for 'o' The teacher, who is standing in the working space, upon hearing Lluvia's question *engages* with it by gazing directly at her and asks her “is that/ is that /ʊ/ or /ʌ/ /ʌ/ /ʌ/ /ʌ/”. The question is in reference to Lluvia's articulation in English of the letter sound 'u'. (in Spanish 'u' sounds /ʊ/) (figure 4.16.1).

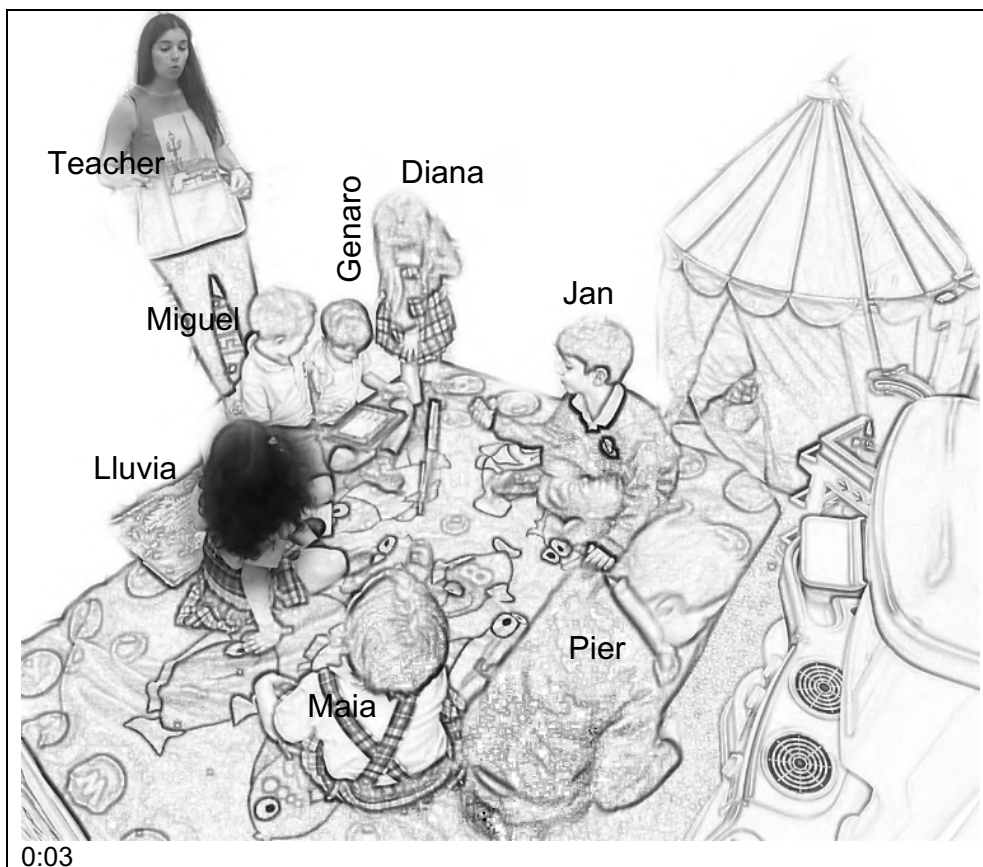


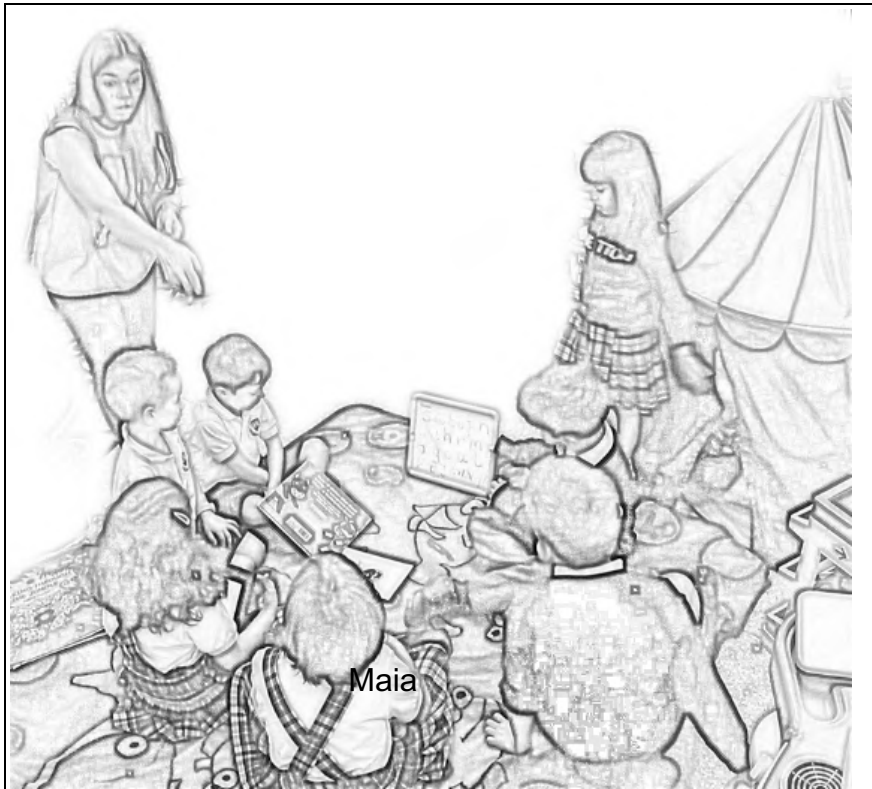
Figure 4.16.1) The teacher engaging with Lluvia through gaze and directed speech.

At 0:04 an unidentified preschooler responds to the teacher's question and replies "/Λ/ /Λ/". The teacher gives the answer to her question and asks a further question "/Λ/ /Λ/ + what can you do with /Λ/" (task-completion orientation). At 0:07 an unidentified preschooler, articulates "/Λ:/" (repetition).

At 0:08, Jan addresses himself to Lluvia calling her by her name: "Lluvia". Then no further engagement happens between Jan and Lluvia from that speech turn onwards in this episode. At 0:09 Pier moves the individual whiteboard in which the teacher wrote all the letter sounds in order and while doing so comments "**para que todos lo vean aquí**" ("so all can see it here"), making reference to what is written on the whiteboard.

At 0:11 the teacher has not received an answer to her previous question and *repeats* it "What can you do with /Λ/". Between 0:12, and 0:15 Diana, Pier and Jan are sitting in the circle formation and interacting among themselves in relation to where the whiteboard (with all the letter sounds in order) is placed (participation framework: subgroups). At 0:16 Maia, with a shy voice responds to the teacher's question, offering the answer "u:p\" (vocabulary) with a falling intonation at the end of the word. Her answer does not stand out given the low intonation.

At 0:18 Pier continues talking with Diana and Jan in relation to the whiteboard. At 0:18 the teacher replies to Maia's answer and with intensifier gestures (figure 4.16.2a), which includes pointing with her index finger to Maia, and moving closer to her and slightly bending her torso towards her, the teacher asks Maia to repeat the word "say it/ up/ + beautiful up/ up/ ++ come'on up/" (multimodal turn). However, the teacher does not wait for Maia's repetition and *repeats* 'up' herself. In the same speech turn the teacher ratifies the chosen word (up) by saying 'beautiful'. She then encourages the preschoolers to use it: "come'on up/" (figure 4.16.2b).



a) 0:18



b) 0:21

Figure 4.16.2) a) 0:18 Teacher's exaggerated gesture to recognize Maia's 'up'. b) 0:21 teacher encouragement to preschoolers to use 'up'.

At 0:23 Jan *repeats* ‘up’ and immediately after that an unidentified preschooler *repeats* it as well. At 0:24 the teacher, no longer in the working circle but still near, says “up/” (repetition).

At 0:26 Lluvia is the iPad manager and is responsible for illustrating ‘u’. She turns her torso, creating a closed dyad between her and Maia (participation framework: dyad). Lluvia asks Maia “*y cómo hago up/*” (“*and how do I do up/*”) (representability) in relation to how to represent the word ‘up’ in a drawing. As a gesture of doubt or question, Lluvia raises both her shoulders during her speech turn (figure 4.16.4) (multimodal sign).

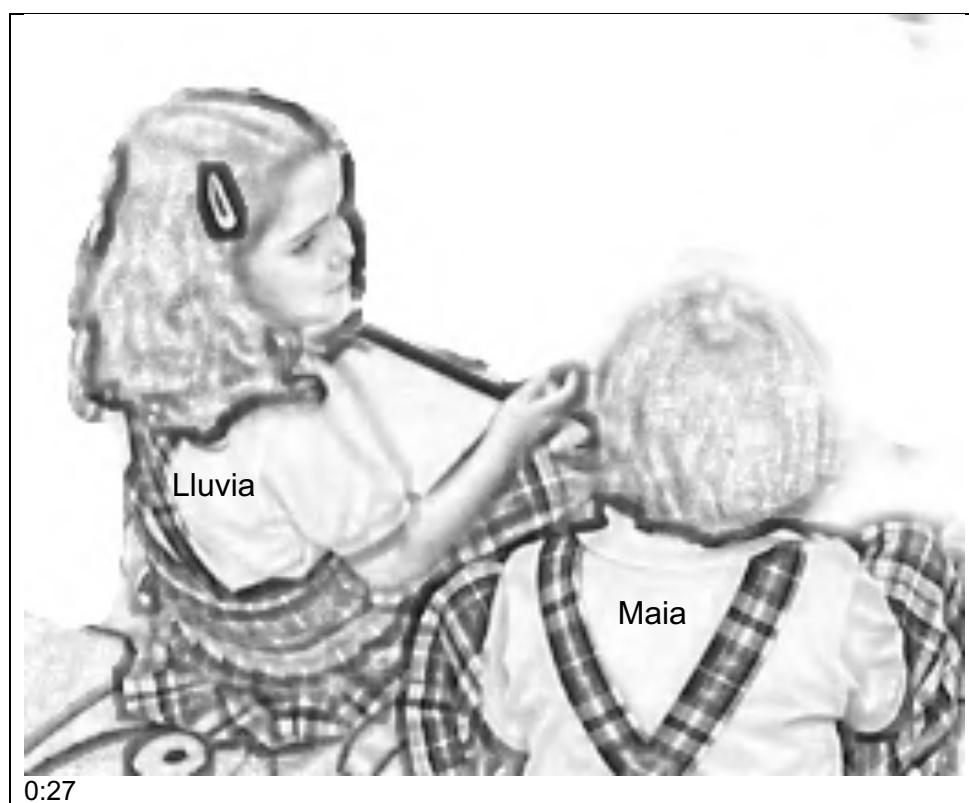


Figure 4.16.4) Lluvia gazing at Maia with the iPad on her lap at the moment of asking her “and how do I do up”

4.16.2 Discussion

In this short episode the actions that are highlighted respond to: a) the teacher’s pedagogical interest and her actions as corrections and promotor of engagement; b) a preschooler recognizing the difficulty of representation through illustration of some words (adverb).

The first feature to note is that the teacher hears Lluvia asking her classmates “**who is doing /u/**”. The teacher, who is aware of the letter sound the preschoolers are illustrating, identifies the incorrect pronunciation of /u/ and asks Lluvia “is that/ is that /u/ or /ʌ/ /ʌ/ /ʌ/ /ʌ/”. The teacher looks at Lluvia although the question is open to the group. The teacher herself answers without waiting for Lluvia’s answer and then receives the answer from an unidentified preschooler. The teacher continues engaging with the group and asks a further question “what can you do with /ʌ/”, connecting her previous language-related question to the task instruction. At 0:16 the teacher obtains a shy answer from Maia and encourages her with an exaggeratedly loud instruction “say it!”. She uses her index finger to point at her, making a multimodal sign. The teacher also ratifies the word choice by saying “beautiful up/ up!” and encourages the preschoolers to use it, with “come’on up!”. The teacher leaves soon after, but the preschoolers take up the teacher’s suggestion, as seen at 0:23 and 0:23:50 and through various repetitions. Hence, in this short intervention the teacher redirects and corrects a letter sound that was mistakenly pronounced by Lluvia and then promotes the preschoolers to find a word with the sound. It is interesting to observe the very short time that the teacher needs to correct a preschooler and help the group to find a word. This highlights, on the one hand the role of the teacher and on the other hand that preschoolers engage in rich and extensive language exploration triggers when they work autonomously because the negotiation is often longer and more complex.


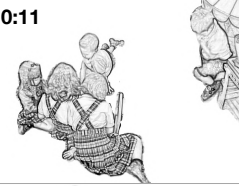
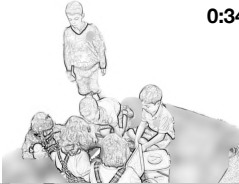

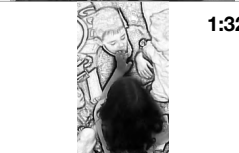




Secondly it is worth noting that once she has ratified the word ‘up’ the teacher leaves the working space but Lluvia, the iPad manager, finds herself with the task of representing in a drawing the adverb ‘up’. Her gesture and gaze (figure 4.16.4) display that she finds this to be a challenge. It is interesting to observe how her question “**and how do I do up**” initiates a language exploration trigger. The comment made by the teacher when she promoted the word ‘up’ places the responsibility on Lluvia which then makes Lluvia reflect on the representability of the word ‘up’. This challenge is in itself a language exploration trigger: oral and written words that can be represented through illustration easily and words that cannot is experienced by Lluvia as she ponders the possibilities of representing the word ‘up’.

It is also worth highlighting that Lluvia presents herself as agentic in designing a dyad between Maia and herself, to further explore her doubt and in seeking help. Lluvia turned her torso and addressed Maia, the preschooler that suggested 'up', asking her "and how do I do up". Maia raises her shoulder as she asks the question, emphasizing her doubt. It is relevant to observe her use of gesture, raising her shoulders, to communicate doubt. This demonstrates that Lluvia is capable of communicating multimodally her situation of doubt.

In conclusion, in this short extract we have seen how the teacher's intervention can correct and encourage students. We can also observe how a preschooler found that some words are not represented as easily as others.

Synopsis: This short language-related episode highlights: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** by engaging with the teacher's question and offering a suggestion and self-motivated body **movement**, from **whole group** to a **dyad**, to interact with a peer in a smaller more intimate group (participation framework). The visible language exploration triggers are engagement with a **question** posed by the **teacher** that generates a word **suggestion** which is accepted and encouraged by the teacher; and the use of multiple modes (either in multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); assessment of the chosen adverb **representability** and **language switching**.

4.17 EPISODE: “UMBRELLA U! U! U!”

Episode 4.17 Pronunciation exploration - Group B		
Stills	Time	Vocalization
 0:04	0:01-0:03	Diana: /ʌmbɾeɫə/ /ʌ/ (umbrella)
	0:03-0:04	Miguel: /ɔmbɾeɫə/ (umbrella)
	0:05-0:07	Miguel: a la: basu:ra:/ (to the: bi:n/)
	0:07-0:10	Diana: /ʌmbɾeɫə/ /ʌmbɾeɫə/ /ʌ:mɾeɫə/ /ʌmbɾeɫə/ /ʌ/
	0:10-0:11	Maia: yo te he dicho /ʌp/ (I told you /ʌp/)
 0:11	0:12-0:15	Diana: /ʌmbɾeɫ:/ /ʌp/ /ʌmbɾeɫə/
	0:17-0:18	Miguel: /əmbɾeɫə/
	0:19-0:20	Genaro: /ʌmbɾeɫə/
	0:19-0:20	Diana: =/ʌmbɾeɫə/
 0:34	0:34-0:35	Miguel: Qué vas a hacer/ (what are you going to do/)
	0:35-0:36	Lluvia: /əmbɾeɫə/
	0:36-0:37	Miguel: =/ʌmbɾe:ɫə/ vas a hacer algún *** (are you going to do some ***)
	0:37-0:38	Diana: /ʌmbɾeɫə/ (in a cartoon voice)
 1:27	1:24-1:27	Teacher: what are you doing/ + /ʌ/ + /ʌ/
	1:28-1:29	Diana: /ʌmbɾeɫə/
	1:28-1:29	Pier: =yo haré la /f:/ (I will do /f:/)
	1:28-1:28:30	teacher: =ok/
	1:30-1:34	Pier: yo haré la /f:/ yo haré la /f:/ (I will do /f:/ I will do /f:/)
 1:32	1:30-1:34	Lluvia: =I try to s*** =I try to espérate (wait)
	1:34-1:35	Miguel: ay para/ (hey stop/)
	1:35-1:58	Lluvia: Miss: Nathaly =I'm going to do =/əmbɾeɫə/= with a persona= what is your name + I'm going to do= lloviendo = ++ raining = with= one with += with: one with one + girl *** =that that. (raining)
 1:41	1:36-1:37	Maia: =yo haré la /f/ (I'm going to do /f/)
	1:37-1:38	Pier: =yo haré/ /f/ (I'm going to do /f/)
	1:37:40-1:38	Genaro: =foto/ (photo)
	1:39-1:40	Pier: (I'm going to do /f/) =yo haré/ /f/
	1:43-1:43:30	teacher: =ok/
 1:43	1:45-1:46	Teacher: =raining
	1:45-1:46	Pier: =yo /f/ (me /f/)
	1:46-1:48	Jan: =nos faltan
	1:57-1:58	Teacher: =ok/ so quick/
 1:58	3:21-3:22	Miguel: /ʌmbɾeɫə/
	3:23-3:25	Pier: yo yo cambiaré el color de la página (I I will change the color of the page)
	3:26-3:27	Diana: Miss /əmbɾeɫə/
	3:27-3:28	Diana: /ʌ/ /ʌ/ /ʌ/ /ʌmbɾeɫə/
 3:22	3:29-3:31	Miguel: /ə/ /ə/ /ə/ /əmbɾeɫə/
	3:31:30-3:33	Pier: /ɔ/ /ɔ/ /ɔ/ /ɔmbɾeɫə/

4.17.1 Analysis: Pronunciation exploration – Group B



The episode occurs at the second of the four sessions of the book of sounds' task project. The language-related episode is composed of four extracts, the first of twenty seconds; the second of eight seconds; the third of thirty-four seconds and the last of twelve seconds. The extracts are organized sequentially, and the omitted parts were of no interest to the research. This episode is part of a longer episode (how do I do up?) but is presented separately focusing specifically on pronunciation exploration. The other part of this episode's description looks at the difficulties in representing abstract words (adverbs; see episode 4.16).

At 0:01 Diana utters to the group “/ʌmbɾɛlə/ /u/ (umbrella)”, using correct pronunciation (vocabulary)(language use). The working subgroup she is speaking to is composed of Maia, Miguel, Diana and Lluvia, who is the iPad manager. The rest of the group is not in the working space. The preschoolers are seated in a “t” formation which allows them to easily gaze at the iPad. In this formation they need to turn their torsos to gaze at each other, except Miguel who is sitting in front of them (participation framework: subgroup). At 0:04 Miguel ratifies Diana's previous suggestion in the prior turn and *repeats* 'umbrella' with a slightly different *pronunciation* “/ɒmbɾɛlə/” (figure 4.17.1).

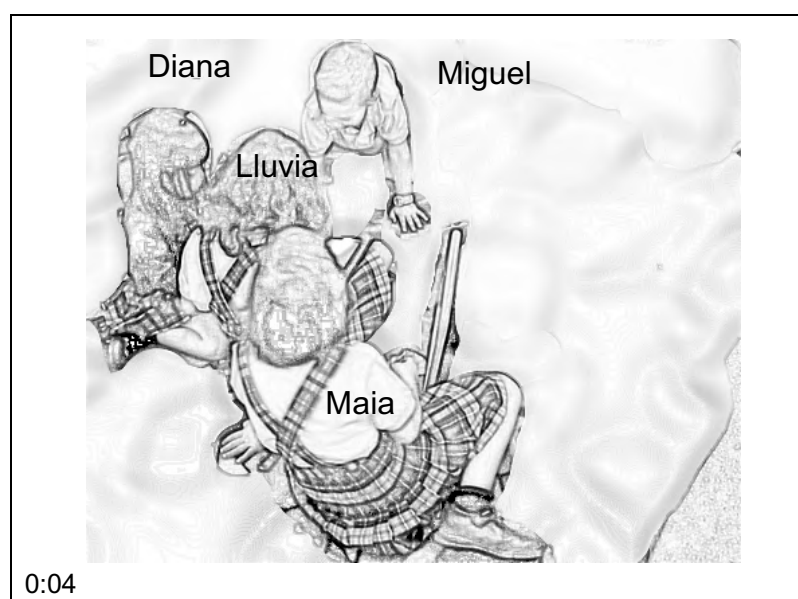


Figure 4.17.1) preschoolers in a “t” formation

At 0:05 Miguel utters in Spanish “a la: basu:ra:!” “to the bin!” in reference to discarding the digital drawing that was created by Lluvia (moving it to the bin icon to delete it). At 0:07 Diana *repeats* the word ‘umbrella’ four times, using the same previous pronunciation “/ʌmbrelə/ /ʌmbrelə/ /ʌ:mbrelə/ /ʌmbrelə/ /ʌ/”. Her utterance also imitates the task instruction by emphasizing the initial sound in isolation, although at the end and not at the beginning as requested by the teacher.

At 0:10, Maia, addresses Lluvia while leaning on her shoulder to mark her speech turn, telling her “yo te he dicho /ʌp/” (“I told you /ʌp/”) in relation to the word she had previously *suggested* and which had been acknowledged and ratified by the teacher earlier (refer to episode 4.16) (task-completion orientation)(co-regulation)(physicality). At 0:11, Genaro emerges from inside the circus tent, where he had been playing, and joins the working group interaction (figure 4.17.2) (spontaneous play). At 0.12 Diana *repeats* her suggestion for the third time “ʌmbrel:/ /ʌp/ /ʌmbrelə/” (umbrella up umbrella) (task-completion orientation). At 0.17, Miguel also *repeats* for the second time “/əmbrelə/” with the beginning sound pronounced differently than in his previous turn. This repetition is slightly different from both his and Diana’s previous turns (task-completion orientation). At 0:19, Genaro also *repeats* the word, pronouncing it correctly “/ʌmbrelə/” but is overlapped by Diana who pronounces it “/ʌmbrelə/” (task-completion orientation). This is the end of first extract.

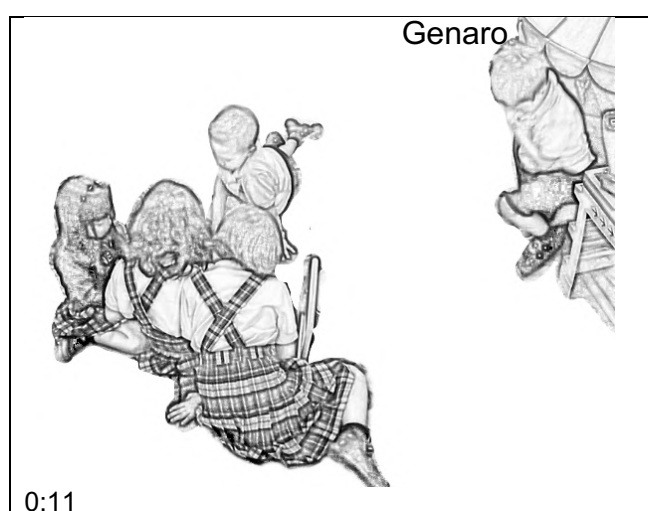


Figure 4.17.2) Maia leaning her shoulder on Lluvia, Genaro appearing from the tent.

The second part takes place fourteen seconds after the one just described. At 0:34, Pier walks in the working space and while still standing up gazes at the group sitting

down (figure 4.17.3) (participation framework: subgroups)(movement). At 0:34, Miguel asks Lluvia “**Qué vas a hacer/**” (“*what are you going to do/*”) (task-completion orientation). Lluvia answers Miguel’s question, declaring “umbrella”, using the same pronunciation as Miguel in his previous turn “/əmbɾɛlə/” (repetition). At 0:36 Miguel, in a latching turn with Lluvia, *repeats* the word ‘umbrella’, this time with a different pronunciation than in his previous turn (this time correctly) “/ʌmbɾɛ:lə/ **vas a hacer algún *****” (“/ʌmbɾɛ:lə/ *are you going to do some ****”), followed by question (task-completion orientation). At 0:37, Diana repeats the word ‘umbrella’ in a mock voice “/ʌmbɾɛlə/” (playfulness) The second extract ends here.

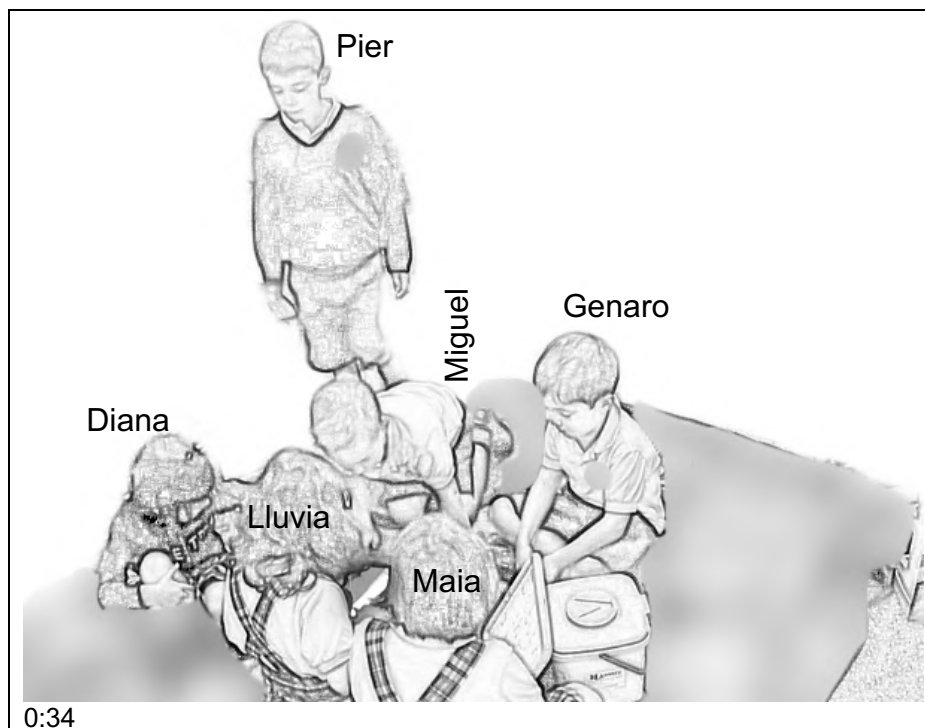


Figure 4.17.3) Miguel asking Lluvia “what are you going to do while leaning closer to the iPad screen.

The third extract begins at 1:24, forty-two seconds after the previous. At 1:24 the teacher appears in the working space and standing in front of the group asks “what are you doing /ʌ + /ʌ/”. She ends her question with the articulation of the letter sound in isolation which the preschoolers had been working on the last time she was in the working space (refer to episode 4.16) (task-completion orientation). At 1:28 Diana answers to the teacher “/ʌmbɾɛlə/” (task-completion orientation). In an overlapping turn, Pier asserts self-selection for the action “**yo haré la /f:/**” (“*I will do /f:/*”) (self-task organization). The teacher replies “ok/” to the answer given by Diana. Pier *repeats* his previous comment twice “**yo haré la /f:/ yo haré la /f:/**” (“*I will do /f:/ I will do /f:/*”) while

overlapping Lluvia twice who is speaking directly to the teacher (self-task organization). Lluvia is first interrupted at “I try to ***” and then at “I try to **espérate** (*wait*)”. The second time Lluvia is overlapped she stops the sentence and addressing Pier in Spanish, commands him: “wait” while positioning her open hand on his face to emphasize the word “stop” to Pier (figure 4.17.4) (multimodal sign)(co-regulation).



Figure 4.17.4) Lluvia using an open palm gesture to emphasize her ‘stop’ to Pier for interrupting her.

At 1:34 Miguel complains to Pier “**ay para**” (“*hey stop*”) who is pushing him with his torso to try to get closer to Lluvia (figure 4.17.4). At 1:35 Lluvia continues speaking to the teacher with several overlaps from Maia, Pier, Genaro, Jan and even the teacher (figure 4.17.5).

Lluvia: Miss: Nathaly =I’m going to do =/əmbreɪə/= with a a persona = what is your name + I’m going to do= lloviendo = ++ raining = with= one with += with: one with one + girl *** =that that. (raining)				
Maia:	↓	=yo haré la /f/ (I’m going to do /f/)		
Pier:		↓	=yo haré/ /f/ (I’m going to do /f/)	
Genaro:			↓	=foto/ (photo)
Pier:				↓
teacher:				=yo
Teacher:				
teacher:		↓	=ok/	
Teacher:			↓	=raining
Pier:				↓
Jan:				=yo /f/ (me /f/)
Jan:				
Jan:				=nos
Jan:				
Teacher:			↓	=ok/ so quick/

Figure 4.17.5) Lluvia’s turn overlaps

As can be seen in figure 4.17.5, Lluvia is interrupted nine times by different preschoolers but still manages to communicate to the teacher “Miss: Nathaly =I’m going to do =/əmbrelə/= with a a **persona**= what is your name + I’m going to do= **lloviendo** = ++ raining = with= one with += with: one with one + girl *** =that that”. Lluvia asks the teacher, with the incorrect formulation; “what is your name I’m going to do **lloviendo**”. Lluvia uses the question ‘what is your name?’ instead of ‘how do you say’ (lloviendo = raining) in English (language use)(self-regulation). Lluvia moves her finger, as if painting water drops, to signify ‘raining’ while saying “what is your name” and continues using gestures to signify rain but using her other hand as a ‘canvas’ or ‘iPad screen’ support while saying “I’m going to do” (figure 4.17.6) referring to how she is going to illustrate raining (multimodal sign).



Figure 4.17.6) Lluvia’s gestures to signal ‘raining’

At 1:36 Maia states “**yo haré la /f/**” (“*I will do /f/*”) in an overlapping turn with Lluvia (self-task organization). At 1:37, Pier engages with Maia and argues “**yo haré /f/**” (“*I will do /f/*”) (self-task organization). At 1:37, and overlapping Lluvia and Pier, Genaro offers a suggestion “**foto**” (“*photo*”) (vocabulary). At 1:39, Pier repeats his previous turn “**yo haré /f/**” (“*I will do /f/*”) (self-task organization). At 1:43 the teacher also overlaps Lluvia’s turn with “ok”. At 1:45 the teacher speaks during a short pause in Lluvia’s turn after Lluvia has said “lloviendo” in Spanish to offer the word in English: “raining”. Lluvia accepts and expands the teacher’s answer and immediately after the teacher has articulated “raining” she continues with her turn, incorporating the word “raining” in English in her discourse. At 1: 45 Pier repeats for the sixth time “**yo /f/**” (“*me /f/*”) (self-task organization). At 1:46 Jan informs the group of the letter sounds left to finish “**nos**

faltan ocho!” (“we are missing eight”) (task completion orientation)(co-regulation). At 1:57 The teacher interrupts Lluvia and finishes the conversation “ok/ so quick!” cutting off Lluvia’s turn, while encouraging the preschoolers to finish by leaning towards the iPad (extract 4.17.8). The third extract ends here.

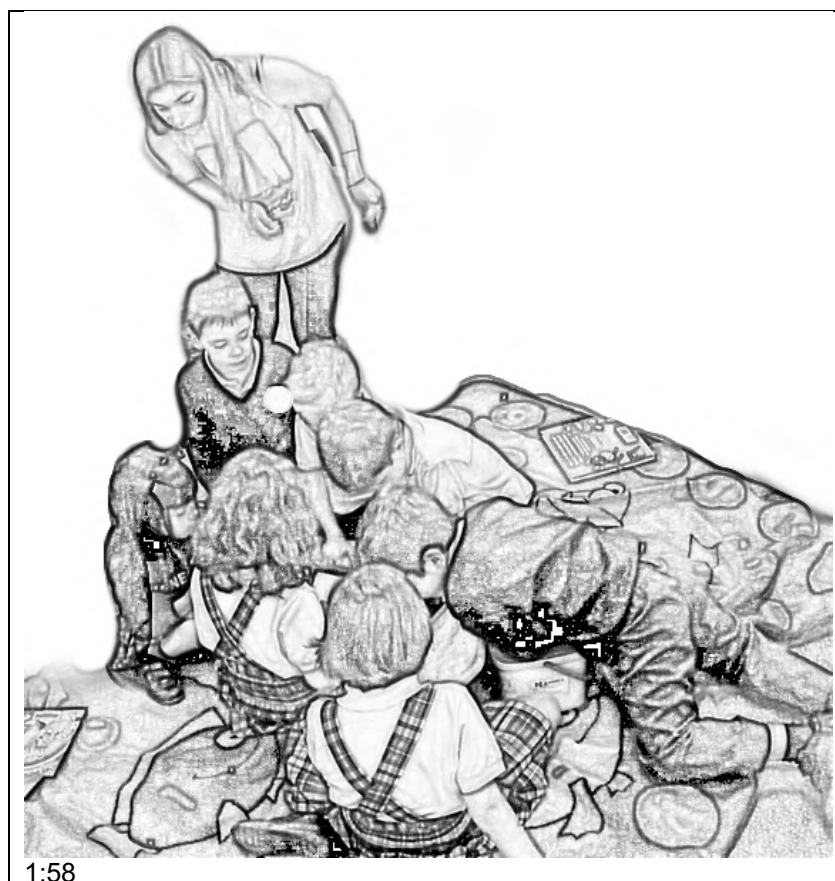


Figure 4.17.8) The teacher leaning towards the iPad screen and finishing the conversation with Lluvia

At 3:21, after a pause of one minute and three seconds, the exploration of the word ‘umbrella’ continues. At 3:21 Miguel utters “/ʌmbɾɛlə/” using a correct pronunciation (repetition). At 3:23 Pier remarks his intention to carry out an action: “yo yo cambiaré el color de la página” (“I I will change the color of the page”), making reference to the background color of the page of the digital book (self-task organization). At 3:26 Diana replies to Miguel’s previous turn, adding additional information “Miss /əmbɾɛlə/” followed by “/ʌ /ʌ /ʌ /ʌmbɾɛlə/”, enacting the task instruction by articulating the isolated beginning sound three times before the word (beginning sound)(repetition). Miguel, at 3:29, repeats Diana’s turn but with a different pronunciation “/ə/ /ə/ /ə/ /əmbɾɛlə/” which differs as well from his turn at 3:21. Pier, at 3:31, repeats Diana’s and Miguel’s turn but with a third, different proposal for the pronunciation “/ɒ/ /ɒ/ /ɒ/

/ʌmbɹɛlə/". The group is sitting in a circle position except for Jan who is playing with the toy kitchen (figure 4.17.9) (play).

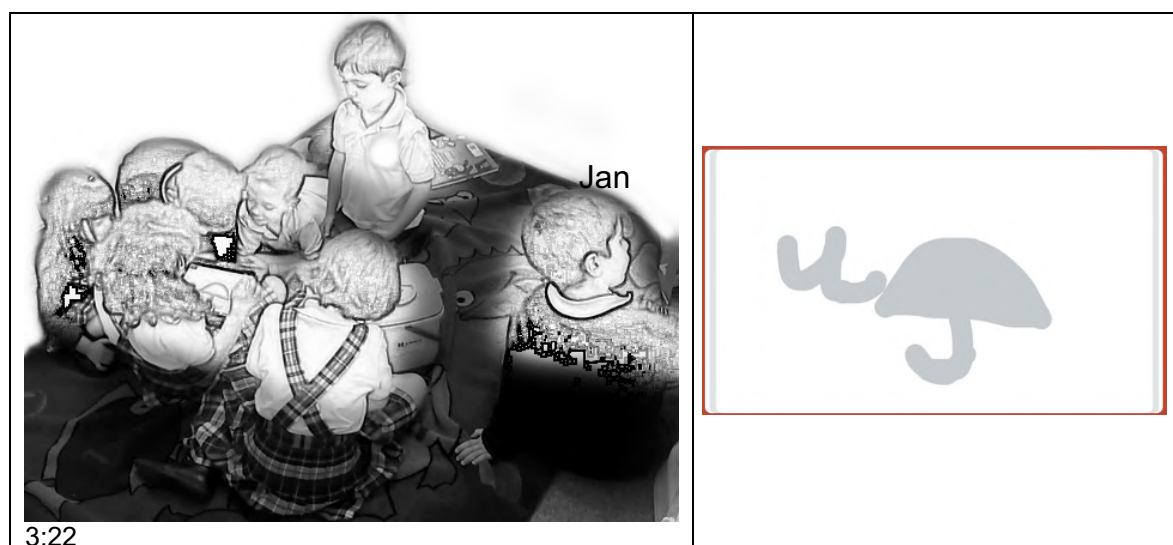


Figure 4.17.9) whole-group interaction at 3:22 and final drawing

4.17.2 Discussion

In this short episode, which is the second part of a longer episode, the actions that are highlighted respond to: a) pronunciation exploration through a chain of repetitions; b) the use of physical contact to accomplish engagement interests; c) the use of multimodal signs to accomplish communicative interests and needs.

The first aspect of relevance is the natural, playful and fluid exploration of the pronunciation of the word 'umbrella'. The word is articulated twenty-one times by different preschoolers and is manifested in four different pronunciations "/ʌmbɹɛlə/", "/ɒmbɹɛlə/" "/ʌmbɹɛl:/" and "/əmbɹɛlə/". It is interesting how the exploration takes place without an explicit mention regarding the difference. The preschoolers are not proposing corrections to the classmates or imposing their pronunciation on the others. It is not possible to know whether it is due to a lack of appreciation of the differences or to a natural acceptance. However, Miguel and Diana eventually change how they pronounce the word during the episode. For instance, over her twelve times of articulating the word, Diana produces two different forms "/ʌmbɹɛlə/" and "əmbɹɛlə/". The first time she uses the word she applies a correct pronunciation and the second time, incorrect. This second time is produced once, and interestingly, uttered in a playful turn "Miss əmbɹɛlə/" which makes visible that her pronunciation

changed in a playful turn “Miss əmbɾɛlə/” and not when uttered in isolation “/ʌmbɾɛlə/”. This might point that the change is due to the playfulness although it is not known. (Diana also produces an incomplete form of the word “/ʌmbɾɛl:/” but repeats the word “/ʌmbɾɛlə/” in the same turn, then such variation is seemingly not a change in pronunciation but simply a word not finished)

Miguel, on the other hand, pronounces the word five times and with three different pronunciations during the interaction “/ɒmbɾɛlə/”, “/əmbɾɛlə/” and “/ʌmbɾɛlə/”. The evolution of the changes in pronunciation are interesting; at 0:03 he produces “/ɒmbɾɛlə/” after hearing Diana pronouncing it correctly, one time in one turn. At 0:17, after Diana pronounced the word correctly seven times in three turns, he utters “/əmbɾɛlə/”. Interestingly, at 0:35 and after Diana pronounces the word correctly eight times, in four turns, and Genaro once in one turn, Miguel pronounces the word correctly “/ʌmbɾɛlə/”.

At 3:21, Miguel pronounces the word correctly for a second time “/ʌmbɾɛlə/”. However, at 3:29 and after hearing Diana correctly ten times, and one time as “Miss /əmbɾɛlə/” he now uses an incorrect pronunciation “/ə/ /ə/ /ə/ /əmbɾɛlə/” in which he adds the isolated sound three times before the word. The turn at 3:29 is slow and includes the isolated beginning sound which might explain the change. However, it is relevant to note that he changes his pronunciation of the word throughout the episode hence making visible that through the repetition and the engagement with other preschooler’s pronunciation he comes to change his pronunciation. This also highlights the collaborative social order and the co-regulation that occurs. Engagement with others appears to make the preschoolers susceptible to changing their actions, in this case the pronunciation of a target word.

Several preschoolers (Lluvia, Miguel, Genaro, Pier and Diana), experimented with the pronunciation, and the actions evolved into chain of repetitions (various repetitions by various members). The episode demonstrates a process of pronunciation exploration in situ. The preschoolers make available different pronunciations of ‘umbrella’ without being corrected by others. This shows the interaction as natural, self-motivated and lively in which changes in pronunciation

occur during and as a consequence of the interaction. It demonstrates that such interaction in which preschoolers are ratified to produce, play and test their language hypotheses is in itself a potentially transformative space.

The second point to note is the use of body posture to display interest in the interaction. At 0:34 Miguel leans towards the iPad while asking “*what are you going to do*” to Lluvia. This action shows a multimodal engagement in which Miguel uses his body posture and his proximity to the iPad to show interest for the object Lluvia is going to illustrate. His question is emphasized with his leaning posture which highlights his engagement. At 1:58 The teacher uses a similar leaning posture although she is standing up. The teacher uses this resource to engage with the illustration on the iPad and show her interest (figure 4.17.6) At the same time, she instructs “ok so quick/” making reference to the use of time and encouraging the preschoolers to finish with the letter sound. It is worth highlighting that at the moment of doing so all the preschoolers are gazing at the iPad’s screen in a mutual orientation towards what is occurring on it. It can be argued that the use of body posture and proximity is accepted and used as a resource in this setting. The preschoolers do not oppose to the closeness and use it to show intense engagement (refer to other episodes to see more examples). In this short extract, the preschoolers show their interest in the illustration by getting closer to the source of their interest, the iPad’s screen.

The third point of note is the use of gesture to accomplish communicative interests, in this case to describe the illustration idea. At 1:35 Lluvia begins the description of her illustration to the teacher. The description is slow and marked by pauses and interrupted by others several times. In her description, she begins “I’m going to do umbrella with a *persona*” and finds an obstacle in finding the word ‘raining’ in English. To solve the obstacle, she fills in the gap of ‘raining’ with a direct question to the teacher “what is your name I’m going to do *lloviendo*” and she makes a gesture as if drawing droplets. With the gesture she frames “I’m going to do *lloviendo*” as a drawing. She then makes a more complex gesture, at 1:43, using her other hand as a canvas and further framing the water droplets as if drawn on a digital canvas (figure 4.17.5). Lluvia takes a long multimodal turn. Through speech she describes the

general picture of what she is going to draw and through gesture she fills in her vocabulary needs and frames the medium of where she will do the drawing as if on a digital canvas.

In general, in this extract we have seen how a preschooler uses gestures to frame her actions and to overcome a language obstacle in the target language. We have also observed how the use of posture serves a preschooler and the teacher to mark intensity in engagement and how these preschoolers seem to accept the use of this communicative resource which can include close physical contact. Furthermore, in terms of language exploration triggers we can discern how the task itself triggers a pronunciation exploration. It is worth highlighting that the exploration happened when the teacher was not present, and it brings to the table the question of whether such exploration would have taken place with the presence of the teacher. The autonomous and collaborative characteristic of the task promotes and triggers language exploration such as pronunciation exploration. This is brought about through the collaborative social order which allows co-regulation, co-participation and exploration in a natural a fluid way.

Synopsis: In this short language-related episode, there are: the **collaborative social order** and **co-regulation** and **self-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** and **self-task organization**; self-motivated movement from **subgroups** to **subgroups** to interact with peers (participation framework) generated by **movement** in the working space; **spontaneous play** and **playfulness** and use of **physical contact** as communicative resource. The language exploration triggers visible are engagement with a **suggestion** that generates **agreement** and a chain of **repetitions** of the word 'umbrella' **with variation** in the **pronunciation** and the use of **multiple modes** (either as multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; object suggestion (**vocabulary**); **language switching** and **co-construction** of **pronunciation** through repetition (in some turns the phonetic transcription is used given that it shows the variation made from turn to turn)

4.18 EPISODE: “LA /d/ VA DEL REVÉS”

Episode 4.18 Letter formation - Group B

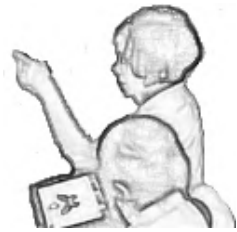
Pier: esa es la /d// (that one is /d/)	Maia: no/ la /d/ /d/ va así (no /d/ /d/ is like this)	Lluvia: La /d/ va del revés (/d/ goes the other way around)
0:00 0:01	0:02 0:03 0:04	0:05 0:06

Timeline key

Time line, red line in stills indicates when in time it happened

0:01

4.18.1 Analysis: Letter formation - Group B



The episode occurs at the third of the four sessions of the book of sounds' task project. The language-related episode is composed of one extract of six seconds and it presents preschoolers negotiating the letter formation of 'b'.

Starting at 0:00 Maia, who is the iPad manager, is working on 'b' and has used a butterfly digital sticker, available in the app, to illustrate a butterfly for 'b'. Pier, Maia, Diana and Lluvia are sitting very close to each other in a circle formation. Miguel is outside the circle, displaying his engagement with the interaction through gaze, Jan and Genaro are playing in the tent in a different interaction subgroup (spontaneous play) (figure 4.18.1a). Starting at 0:00 Maia is writing 'b' on the screen and Pier exclaims "esa es la /d/" ("that one is /d//") suggesting that Maia is making a mistake, and writing 'd' instead of 'b' (disagreement)(grapheme identification). Pier is sitting in front of Maia, his gaze direction is opposite to the writing direction of Maia (Figure 4.18.1b).

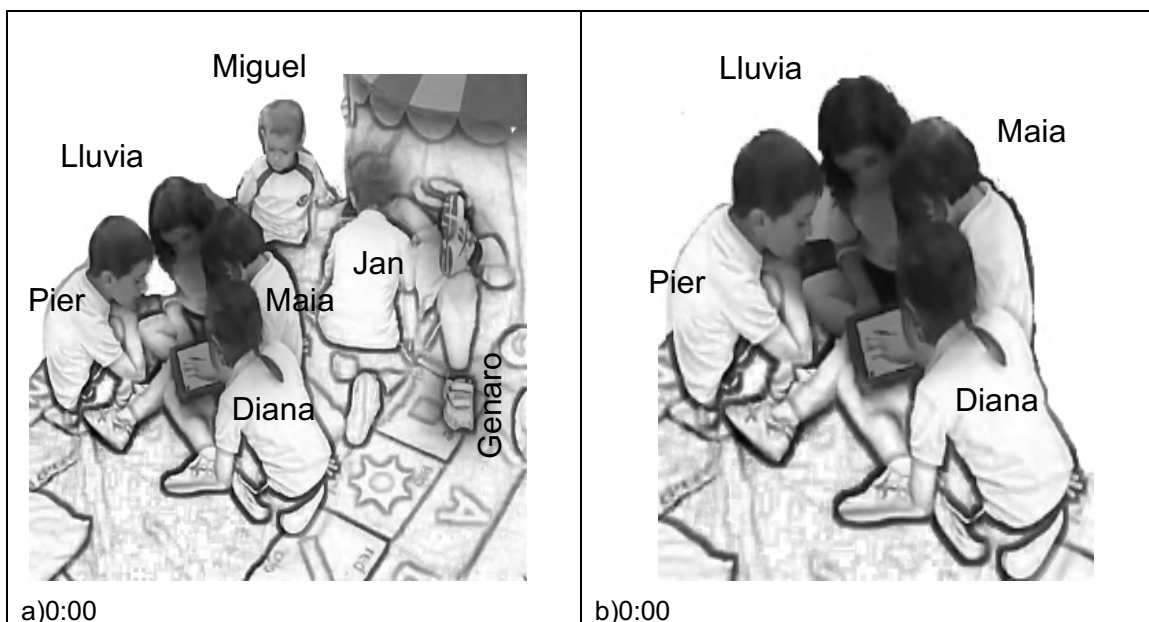


Figure 4.18.1) a) preschoolers interaction subgroups: Maia, Pier, Lluvia and Diana in a subgroup and Genaro and Jan playing in the tent. b) Detail of Maia, Pier, Lluvia and Diana's interaction subgroup

At 0:02 Maia engages with Pier's disagreement comment and replies "no/ la /d/ /d/ va así" ("no /d/ /d/ is like this") (disagreement)(letter formation). At 0:02, after the

articulation of “no” Maia turns her head to look at Pier (figure 4.18.2a) and after establishing eye contact with him, at 0:03, uses her index finger to draw a ‘d’ in the air (figure 4.18.2b). First drawing a line upwards and then a semi-circle with a tail, at 0:04. The tail is a characteristic that has been explicitly taught to them as differential from ‘b’ (figure 4.18.3a/b) (multimodal sign)(letter formation).

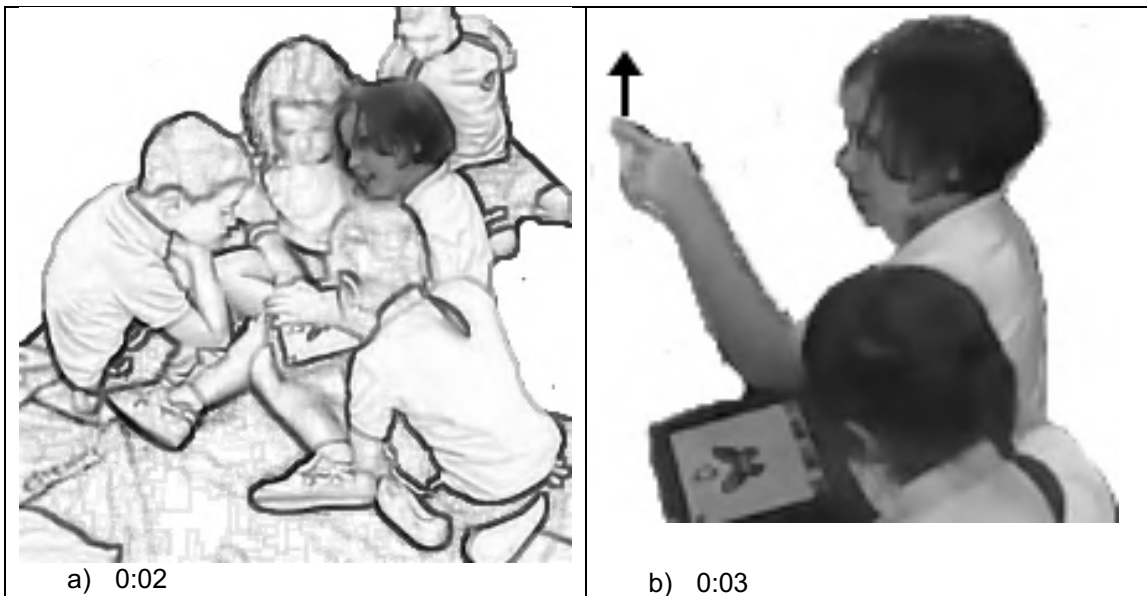


Figure 4.18.2) a) Maia engaging through gaze with Pier. b) Maia drawing ‘d’

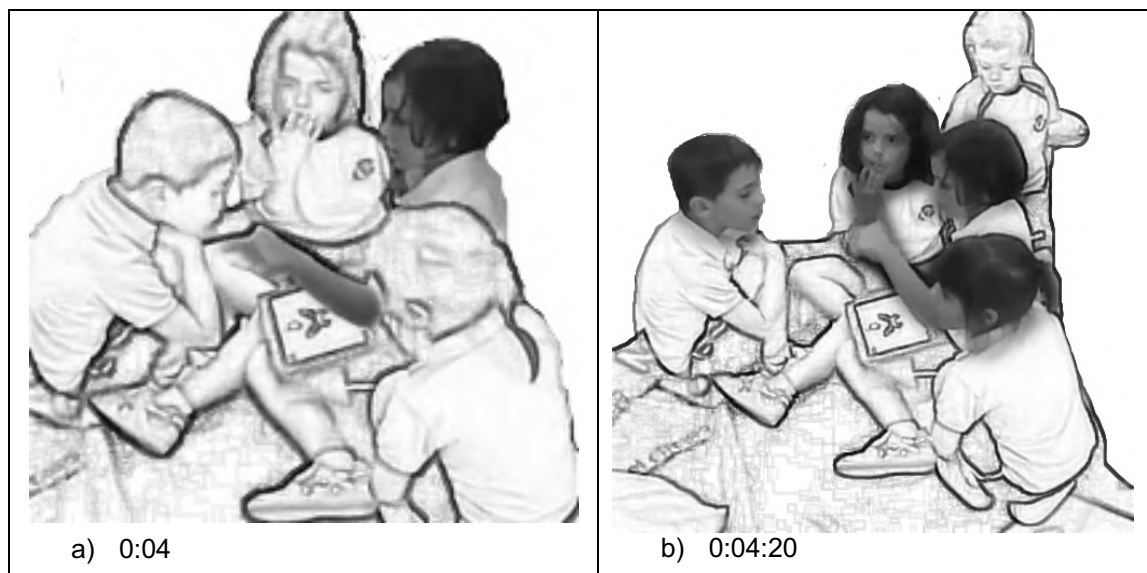


Figure 4.18.3) a) Maia drawing ‘d’ with her finger in the air. b) Pier establishing eye contact with Maia

Immediately afterwards Maia begins to draw ‘d’ in the air again. Pier, at 0:04:30, lifts his head to look at Maia’s finger movement (figure 4.18.3b). At 0:05 Lluvia joins the discussion and displays her *agreement* with Maia “La /d/ va del revés” (“/d/ goes the other way around”) while using her index finger to draw a half circle with a tail (figure

4.18.4a/b) (letter formation)(co-construction)(description)(multimodal sign). Pier continues looking at Lluvia for fractions of a second, after she finishes drawing 'd'.



Figure 4.18.4) a) Lluvia drawing 'd' b) Lluvia's drawing directionality.

4.18.2 Discussion

In this short episode the actions that are highlighted respond to: a) a preschooler's engagement with the illustration process as a trigger of letter formation exploration; b) 'b' letter formation assessment and description; c) co-construction of a description; d) the use of multimodal signs to accomplish communicative interests and needs.

The first noteworthy point is that the working group is divided into two subgroups. One subgroup, Maia, Pier, Lluvia, Diana and Miguel, is engaging with the illustration of 'b' on the iPad's screen. The subgroup is sitting down in a circle formation very close to each other. Miguel displays his engagement through gaze with the subgroup and the iPad's screen although he is seated outside the circle. The preschoolers in the sitting circle do not engage with Miguel in the episode; perhaps because he is not immediately within the scope of their eyes. Miguel's engagement with the group's interaction is quite discrete and he does little to make the others aware of him, but he is within the participation framework and can be brought into the interaction at any time. In this episode we can observe how Miguel and Diana display their engagement through different modes such as body position in space, body

orientation and gaze. The other subgroup is Jan and Genaro who are playing in the tent. They do not engage in the language exploration and they stay out of task, playing during this episode (Figure 4.18.1). This is not language-related but shows that preschoolers sometimes disengage from the task during the process.

It is interesting to note that starting at 0:00 Pier engages with Maia's 'b' drawing and comments "that one is /d/". This demonstrates Pier's interest and engagement with the letter drawing and that he is able to recognize that the directionality of 'b' and 'd' is different. We can also observe that through his interaction he generates a language exploration trigger in which he first assesses the letter being drawn by Maia and, in disagreeing with its directionality initiates a discussion. In the sequentiality of the action, this leads to an illustrated answer from Maia and Lluvia, both of whom respond to his comment. First, at 0:02, Maia engages with Pier's comment and says "no /d/ /d/ goes like this" illustrating with her index figure the directionality of 'd' (figure 4.18.3, 4.18.4). Note that Maia draws in the air a 'd' with all the details including the tail, which they have been taught as a differentiating mark from 'b' (figure 4.18.5).

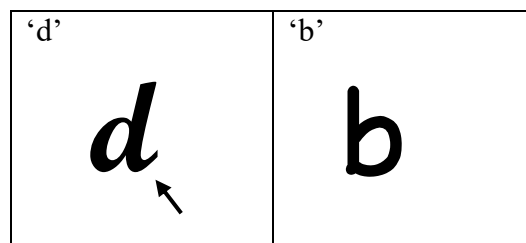


Figure 4.18.5) 'd' tail and 'b'

Furthermore, Maia intentionally stops her gaze engagement with the iPad and establishes eye contact with Pier. This makes evident that Maia is able to distinguish the directionality of 'b' and 'd' and that she is able to share this knowledge to the others. It is interesting that she uses gestures instead of speech. It can be argued that describing through speech the characteristics of the directionality of 'd' is very complex and that using a finger to draw 'd' in the air proves Maia as agentic in using multiple modes to communicate her interest with efficacy and efficiency.

At 0:05 Lluvia joins the discussion and describes, through speech, the directionality difference between 'b' and 'd', "/d/ goes the other way around". It is interesting to






observe that she uses her index finger to show the circular part of the 'd' (figure 4.18.4) while providing a metalinguistic explanation of a trait, through speech (goes the other way round) while also supporting her assertion by describing the traits through gestures (directionality and the tail). It is evident that Lluvia co-constructs Maia's turn as she describes 'd' directionality, adding to what Maia has already described in speech and gesture. It is also interesting to observe that Lluvia uses speech to describe an aspect that is vague to show with gestures: The "other way round" is challenging to illustrate because Pier is in front of Maia so sees Maia's drawing, gesture and the letter written on the iPad as a mirror effect thus speech seems to be a clearer way to describe this aspect.

It is also interesting that Lluvia uses her gestures to mark only the part of the letter formation that is different (the tail). This makes it evident that Lluvia is agentic in using the same modes as she has seen but adapting them and offering different information for each mode. Hence, we have Maia marking through speech that 'd' was different, then showing this difference through gestures while Lluvia comments the difference in the letter formation through speech and illustrating a key detail through gesture. This episode highlights a potentially transformative engagement between Pier, Maia and Lluvia, who explore their knowledge on the letter formation of 'b' and 'd'.






In general, we can observe that during the engagement in the task, and triggered by the action of a classmate, a preschooler is able to initiate a negotiation that leads the group to discuss the letter formation of 'd' in relation to 'b', all of which is a potentially transformative engagement. The preschoolers emerged as resourceful meaning-makers, as demonstrated through their complex and elaborate use of modes to describe the letter formation of 'd'. The co-construction of a supporting argument is also evident and highlights the co-regulation and collaborative social order enactment. Furthermore, it is also relevant how two preschoolers decide to engage through gaze, body orientation and body position in space showing that the engagement and involvement in the interaction is not solely relegated to the participants who use speech.

Synopsis: In this short language-related episode we have observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **engagement** with other's actions on the iPad and negotiation on task related matters (letter formation); self-motivated **body movement (arms and torso)** as communicative resource and **spontaneous play**. The visible language exploration triggers are engagement with a **comment** that generates **disagreement** and **co-construction** of a supporting argument and; the use of **multiple modes** (either in multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related visible points are: **letter formation, description and co-construction of letter formation description and grapheme identification.**

4.19 EPISODE: "DOC NO, DOG!"

Time in Seconds	Vocalization		Interaction stills	Gaze							iPad	
	Interaction subgroup	Interaction subgroup		Ge	Fa	Nu	So	Ta	Cu			
0:00												
0:01	Curriel: /dai.fɪn/ /dai.fɪn/	Gerika: La /d/ porque es la primera (The /d/ because it is the first one)										
0:02												
0:03	Nuno: o /d/ /d/ /dbk/ (or /d/ /d/ /dbk/)											
0:04												
0:05	Nuno: /d/ /d/ /dbk/											
0:06		Gerika: A mi me gusta más *** (I like more ***)										
0:07	Nuno: /d/ /d/ /db::k/											
0:08		Curriel: /d/ /d/ /dbk/										
0:09												
0:10												
0:11	Fabian: /dɔk/ no/ /dɔg/ /dɔg//	Gerika: Yo también lo *** si yo fuera la\ (Me too I will *** if I were the\)										
0:12												
0:13	Fabian: /ɔg/ /g/ /g/											
0:14												
0:16	Nuno: =/da:::/											
0:16	Sofia: =/dɔg//											
0:17	Sofia: /d/ /d/ /dɔg/											
0:18												
0:19												
0:20	Nuno: o /d/ /d/ /dai.fɪn/ (or d/ /d/ /dai.fɪn/)											
0:21												
0:22												
0:23	Curriel: /d/ /d/ /dai.fɪn/											

Participants' names	key
Genaro	Ge
Fabian	Fa
Nuno	Nu
Sofia	So
Tatiana	Ta
Curriel	Cu

Movement key	
iPad	
Participant	
ABC Wall Poster	
Random point in the classroom	
No information	
iPad Screen touch 1 participant	

4.19.1 Analysis: Vocabulary, pronunciation and articulation – Group A



This episode occurs at the second of the four sessions of the book of sounds' task. The language-related episode is composed of one extract of twenty-three seconds.

Starting at 0:00 there are two subgroups: Gerika (the iPad manager), Sofia, Tatiana and Fabian and; the dyad of Curiel and Nuno (participation framework: subgroups). Nuno is lying on the carpet in a playful attitude (playfulness). Starting at 0:00 Gerika turns her torso towards the whiteboard (an individual whiteboard in which the teacher annotated the order of all the letter sounds to be included in the book of sounds) and addresses Sofia with: “La /d/ porque es la primera” (“the /d/ because it is the first one”). At 0:01, Curiel, in the other subgroup, responds to Gerika’s speech turn (while remaining in his dyad formation with Nuno) with a suggestion of a word beginning with /d/ “/’da:l.fn/ /’da:l.fn/” (figure 4.19.1) (vocabulary)(beginning sound)(collaborative social order)(task-completion orientation). At 0:03, Nuno engages with Curiel and offers another suggestion for ‘d’ “o (or) /d/ /d/ /dbk/” repeating it at 0:05 “/d/ /d/ /dbk/” and again at 0:07 elongating the vowel “/d/ /d/ /db::k/” (repetition)(beginning sound) (vocabulary)(collaborative social order)(task-completion orientation). In all three speech turns Nuno mimics the task instruction by repeating in isolation the beginning sound /d/ before the word. Throughout his speech turns he is lying on the carpet in a playful manner (Figure 4.19.1) (playfulness).

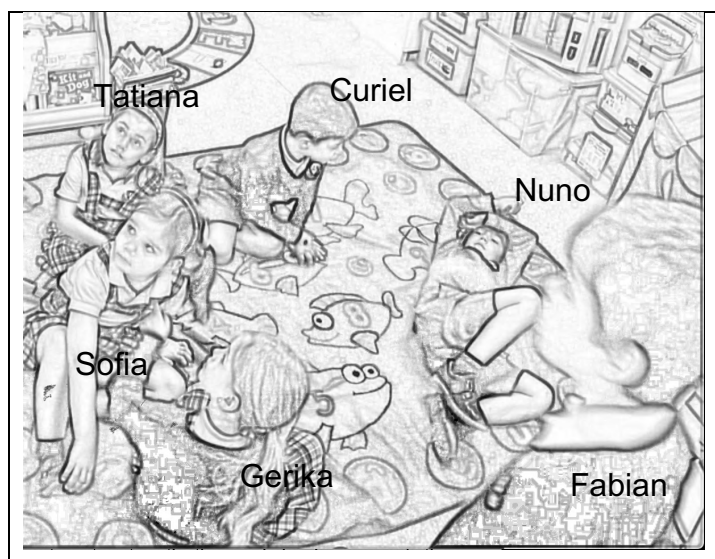


Figure 4.19.1) Gerika, Sofia, Tatiana and Fabian’s interaction subgroup gazing at the whiteboard and Nuno and Curiel’s subgroup at 0:01

At 0:06, Gerika, with the iPad on her lap, utters “**A mi me gusta más *****” (“I like more ***”), addressing Sofia, although it is not evident to what or whom she is referring to. At 0:08, Curiel moves very close to Sofia and utters “/d/ /d/ /dɔk/”, which was Nuno’s suggestion, while gazing at Sofia with a half laugh (figure 4.19.2) (movement)(playfulness)(repetition).

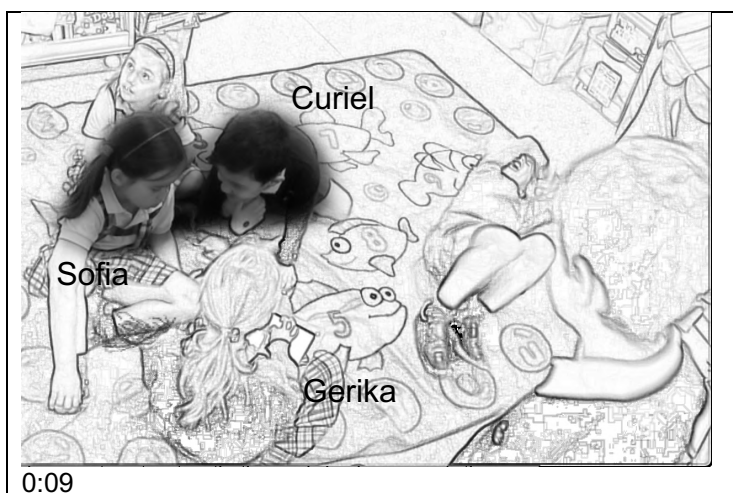


Figure 4.19.2) Curiel moving close to Sofia and Gerika and making available “dog”

At 0:11 Fabian, standing up next to the camera (he is the appointed ‘narrator’: refer to episode 4.21 to see how he adopts the role) *engages* with Curiel’s suggestion and provides an explicit *correction* to the last sound of the word “/dɔk/ no/ /da:g/ /da:g/” (phoneme identification)(pronunciation)(disagreement). During this speech turn the two subgroups merge into a whole group: Nuno sits up and gazes at Fabian and the rest of the group turn their torsos and gaze towards him except for Gerika who has her back to him. Gerika overlaps his turn with a comment “**Yo también lo *** si yo fuera la**” “me too I will *** if I were the\” (figure 4.19.3) although it is not evident to whom or what she is referring to.



Figure 4.19.3) Tatiana, Curiel and Nuno gazing at Fabian at 0:12.

At 0:13 Fabian articulates the ending of the word followed by the isolated last sound “/ɑ:g/ /g/” repeating the phoneme he intends to correct (language-test)(pronunciation). At 0:16 Nuno engages with Fabian and establishing direct eye contact articulates “/dɑ::/” not articulating the last sound, the one corrected by Fabian (figure 4.19.4a) (engagement)(collaborative social order: co-regulation). Sofia overlaps Nuno and repeats the word “/dɑ:g/” with a rising intonation, apparently disagreeing with his rejection. At 0:17, Sofia establishes eye contact with Fabian and provides an exaggerated articulation of the *beginning letter sound* /d/ while showing her articulation, pointing at her teeth with her index finger. Addressing Fabian directly she says: “/d/ /d/ /dɑ:g/” (figure 4.19.4b) placing emphasis on the beginning sound of the word (not the sound corrected by Fabian at 0:11 an 0:13) (disagreement)(multimodal sign)(collaborative social order: co-regulation)(articulation)(beginning sound)(language-test).



Figure 4.19.4) a)Nuno and b)Sofia’s detail of articulation.

At 0:20, addressing Fabian, Nuno offers a different suggestion; one that was previously offered by Curiel at 0:01; “o (or) /d/ /d/ /'dɑ:l.fɪn/” (repetition)(beginning sound). To do so, Nuno draws closer to Fabian and establishes direct eye contact with him while exaggerating the *pronunciation* of /d/, underscoring the beginning sound of the word (figure 4.19.5) (articulation)(disagreement)(co-construction).



Figure 4.19.5) Nuno articulating /d/ with an exaggerated articulation.

4.19.2 Discussion

In this short language-related episode the actions that are highlighted respond to: a) mispronunciation correction; b) use of a multimodal sign to accomplish communicative interests and needs: pointing gesture and exaggerated articulation to support a suggestion; c) use of space, proximity, to mark intensity.

The first noteworthy point is how during the interaction, at 0:01, Curiel offers a suggestion for a word beginning with /d/, 'dolphin', and Nuno engaging with it offers a different suggestion 'dog' beginning with 'd'. This engagement happens in a dyad interaction between Curiel and Nuno (figure 4.19.1). Curiel then responds to Nuno's 'dog' suggestion and repeats it at 0:08 making evident that he aligns with Nuno by adopting, through repetition, the word suggested by him in a previous turn. When Curiel repeats Nuno's suggestion 'dog' he moves towards Sofia and joins the other subgroup (Nuno does not engage with any subgroup for three seconds.) Hence, Curiel first accepts and repeats Nuno's suggestion and then shares it with Sofia.

The second aspect to note is that at 0:16 Fabian engages with 'doc' (dog), indicating verbally a correction to the last sound of the word "/dɒk/ no/ /dɑ:g/ /dɑ:g/" "/ɑ:g/ /g/ /g/". Fabian's comment makes all the preschoolers turn their heads and look at him, except Gerika, the iPad manager, who continues looking at the iPad. It is interesting

to observe how Fabian's speech turn at 0:16, problematizes /dɒk/, captures the attention of the preschoolers and shapes the interaction by initiating a merge between the two sub-groups into a whole group.

At 0:16, Nuno first engages with Fabian offering an intense "dɑ:::" elongating the vowel and overlapping Fabian at the end of his speech turn. Nuno establishes direct eye contact with Fabian. It is interesting how he emphasizes the beginning sound of the word but leaves unpronounced the last sound, which has been problematized by Fabian. It is not possible to know for certain but it seems that Nuno recognizes, during his pronunciation of the word to Fabian, where the problem is because he does not pronounce the incorrect ending sound (or any ending).

Overlapping Nuno, Sofia enunciates her support to Nuno's suggestion 'dog' for 'd'. At 0.16, Sofia turns her head, establishes eye contact with Fabian and articulates Nuno's suggested word "/dɑ:g//". At 0:17, mimicking the task instruction, she repeats the isolated beginning sound "/d/ /d/ /dɑ:g/" followed by the word 'dog' correctly pronounced. Sofia makes visible to Fabian that the beginning sound is 'd' by showing an exaggerated articulation of the sound and by pointing at her teeth where the articulation of the sound takes place (tongue placed behind upper teeth). Sofia uses gesture to point at her teeth, exaggerated articulation and speech to prove her point offering a language-test in a multimodal sign. The use of the exaggerated articulation makes visible that Sofia is showing proof of her point and thus making her understanding demonstrable in the interaction. Sofia uses multimodal resources to show Fabian that the word is correct, disagreeing with Fabian's correction by using gesture, gaze and body posture and orientation. This also shows that Sofia has not understood Fabian's correction (last sound of 'doc').

In this short extract it is visible how Fabian, Sofia, Nuno and Curiel engage in an interaction that triggers language exploration. Although Fabian seems to fail in making the preschoolers realize where the mistake is according to him (ending sound) and it is unknown if Nuno realizes his pronunciation mistake (doc instead of dog), it is worth highlighting that they all demonstrate they have assessed the

beginning sound of the word given their comments, and Fabian the incorrect ending sound as well, thus showing exploration of language.







It is also worth highlighting that the preschoolers explore options for the letter sound /d/ although they do so while still illustrating /a/. This provides evidence that during the task interaction process, a language exploration trigger can appear prompted by preschoolers' suggestions of words for the next letter sounds and that the exploration is not limited to sounds being worked on at the moment (which was /a/).

Another key point is the use of space to mark intensity. At 0:08 Curiel upon hearing Nuno's suggestion 'dog' turns to Sofia and repeats it directly to her. Curiel uses space by drawing very close to Sofia as an emphasis to his suggestion. Curiel's action seems to mark that his speech suggestion is important; proximity marks its importance. Furthermore at 0.22, Nuno offers a second suggestion to Fabian, addressed directly to him. To do so, Nuno gets very close to Fabian for the articulation of "/ da:l.fɪn/". Hence it seems that both Nuno and Curiel use proximity to mark the importance of something in their verbal discourse. This shows that these preschoolers are agentic in communicating multimodally in this extract. It also shows that the use of space seems to be accepted and used, at least by some members, at different points in the interaction to place emphasis and mark relevance in what they are communicating.

In general, the extract shows that some preschoolers act as agentic multimodal communicators through their use of multiple modes to make meaning. Curiel and Nuno make use of space and proximity to mark intensity and relevance of what they are saying. Sofia and Nuno use an exaggerated articulation of isolated sounds to support their arguments. Sofia uses gesture to emphasize even more this exaggerated articulation, displaying her resources to recognize, identify and provide proof of what according, to her, is the initial sound of a target word. Language exploration triggers arise during the task interaction as Curiel, Nuno, Sofia and Fabian engage in a potentially transformative interaction in which they identify and recognize sounds in words, not always successfully, but still managing to demonstrate their engagement in the interaction.

Synopsis: In this short language-related episode we have observed: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** by the self-motivated offer of suggestions and suggestion's corrections and; a **playful attitude**. The visible language exploration triggers are engagement with a **suggestion** that generates **disagreement (correction of pronunciation)** and **agreement (language-test to support suggestion)**, and the use of **multiple modes** (either in multimodal sign or turns) as a communicative resource (use of exaggerated articulation and gesture). The language features, aspects and actions explored and thus the potentially transformative language-related points evident are: object suggestion (**vocabulary**); **language switching**; **pronunciation** correction; **identification of ending and beginning sound** and; **language-test** to support disagreement.

4.20 EPISODE: "WIN ESO ES WIN!"

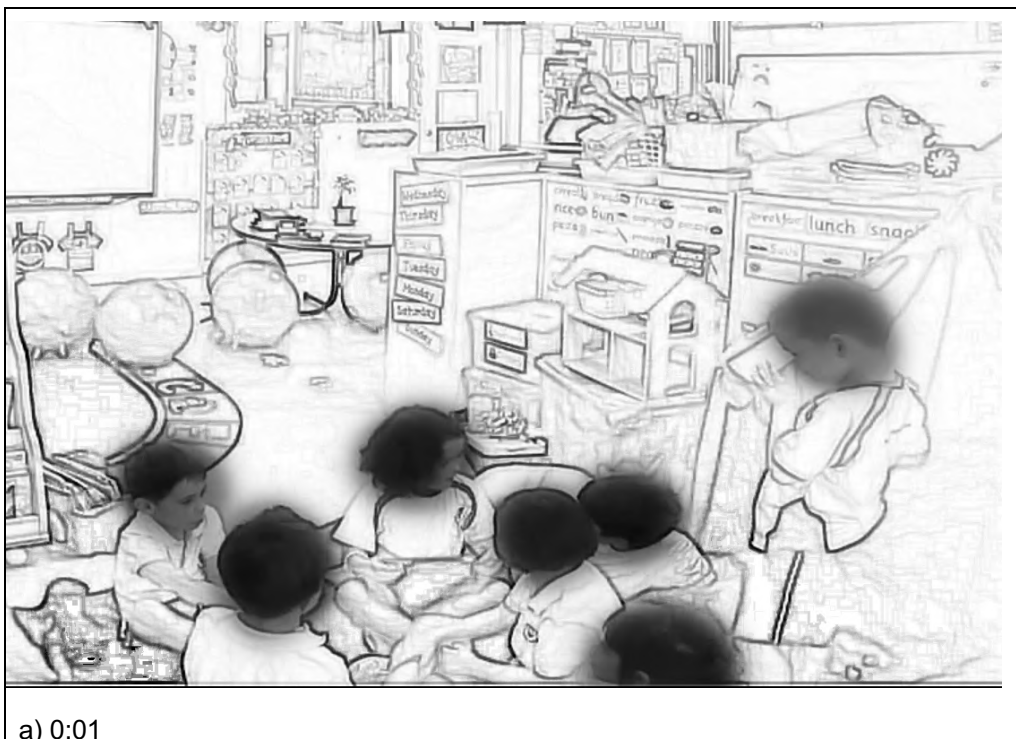
Episode 4.20 Representation as a trigger - Group B			Vocalization
Stills	Time		
 <p>0:20 Diana</p>	0:00-0:05	Diana: y yo/ ++ y yo: /f/ yo /f/ fan (and me ++ and me: /f/ me /f/ fan)	
	0:06-0:07	Maia: yo la /i/ (me /i/)	
 <p>Genaro 0:31</p>	0:06-0:07	Genaro: =yo /w/ one (me /w/ one)	
	0:07-0:07:30	Diana: =yo fan (me fan)	
	0:7:30-0:08	Genaro: yo one (me one)	
	0:09-0:12	Genaro: one one +++ se sembra mucho (one one +++ it's very similar)	
 <p>0:33</p>	0:16-0:21	Diana: tu dirás one **** uh uh uh (you will say one *** uh uh uh)	
	0:21-0:23	Genaro: uno/ uno/ (one/ one/)	
 <p>Pier Genaro 0:35</p>	0:23-0:28	Diana: o una copa/ pondrás una copa porque alguien ha ganado *wan és ganar (or a cup/ you will put a cup because someone won *wan is win)	
	0:31-0:34	Genaro: win/ eso es win/ +++ wi::n: wi::n: (win/ that is win/ +++ wi::n: wi::n:)	
 <p>Pier</p>	0:33-0:36	Pier: = I win/ I win/ I win me/	
	0:36.0:37	Genaro: Yo pondré la /w/ (I will put /w/)	
	0:37-0:39	Diana: wi:n wi:n	
 <p>Genaro 0:35</p>	0:40-0:41	Genaro: si yo haré que uno está ganando win (yes I will do that someone is winning win)	

4.20.1 Analysis: Representation as a trigger - Group B

The episode occurs at the third of the four sessions of the book of sounds' task project. The language-related episode is composed of one extract of forty-one seconds. The extract presents how the negotiation of the representation (and 'representability' of the object) provides opportunities for a preschooler's dyad to co-construct a more elaborated idea for representing the object. This, in turn, triggers language exploration and thus presents a potentially transformative engagement. It also presents a preschooler spontaneously joining a dyad's interaction with no restriction.



At 0:05 Diana declares “y yo ++ y yo: /f/ yo /f/” (“and me ++ an me: /f/ me /f/ fan”) (self-task organization) in relation to the letter sound and object that she wants to illustrate. At 0:06, Maia similarly declares “yo la /i/” (“me /i/”) (self-task organization). At this point the whole group is divided into two subgroups, Genaro and Diana form a dyad and the rest of the group form another interaction subgroup, except for Jan who is lying on the carpet (figure 4.20.1b) (participation framework: subgroups).



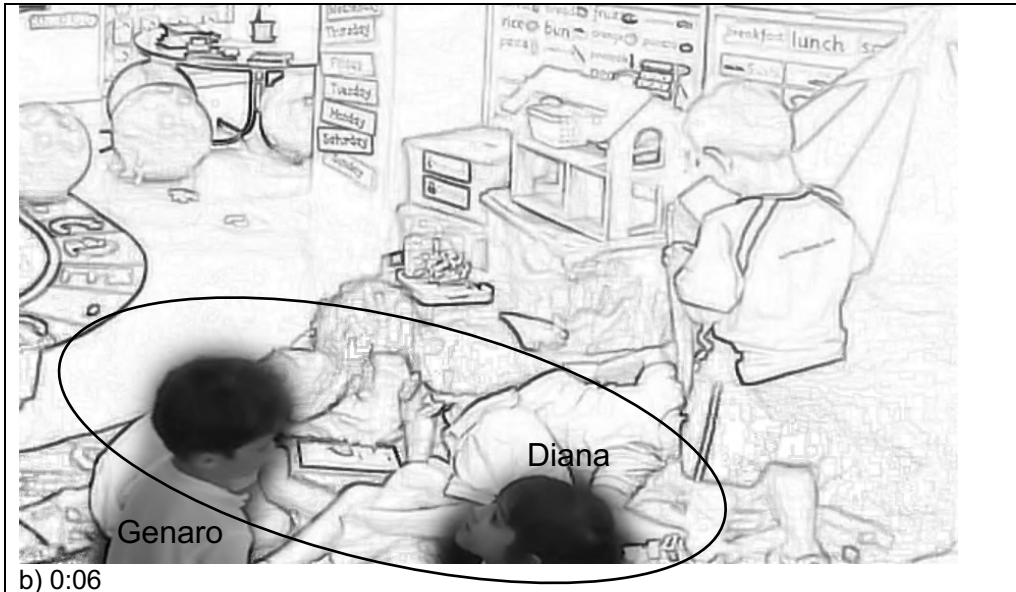


Figure 4.20.1) whole group interaction starting at 0:00 and dyad Miguel and Diana.

At 0:07 Genaro *engages* with Diana and tells her “yo /w/ one” (“me /w/ one”) (self-task organization) to which Diana responds to Genaro with a latching turn at the end of his turn; *repeating* “yo fan” (“me fan”) (figure 4.20.1b). Immediately afterwards, Genaro *repeats* “yo one” (“me one”) and after a second of pause, at 0:09, he expands his turn with “one one +++ se *sembra mucho*” (“one one +++ it’s very similar”) seemingly referring to his and Diana’s word (language switch). At 0:16, Diana replies to Genaro, saying “tu *dirás* one *** uh uh uh” (“you will say one *** uh uh uh”) (language switch). The ‘uh’ is articulated as a cheering shout and accompanied by an arm, closed fist, energetic waving, resembling a winning gesture (multimodal sign) (figure 4.20.2).

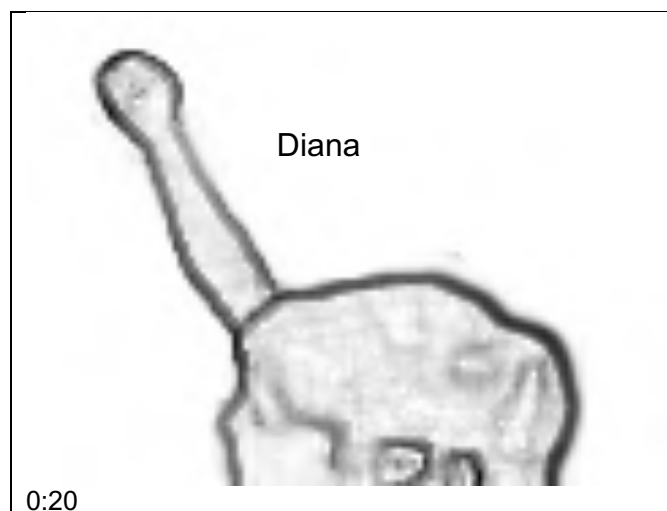


Figure 4.20.2) Diana’s winning gesture, energetic waving arm with closed fist.

At 0:21 Genaro repeats “uno uno” (“one one”). At 0:23, Diana suggests, in Spanish, an illustration idea “o una copa pondrás una copa porque alguien ha ganao* wan* es ganar” (“or a cup you will put a cup because someone won* wan* is win”) (co-construction)(description)(language switch). Diana mispronounces the word ‘win’, or its past tense ‘won’, as ‘wan’ which is apparently an attempt for English pronunciation. At 0:31, Genaro looks at Diana and articulates exaggeratedly ‘/w/’, with his lips and says to her “win/ eso es win/ +++ wi::n: wi::n:” (“win/ that is win/ +++ wi::n: wi::n:”) (figure 4.20.3a) Genaro repeats Diana’s winning gesture but with more intensity, waving both his arms, fists closed, with more energy and moving part of his torso at 0:33 (figure 4.20.3b) (multimodal sign)(co-construction)(language switch) .

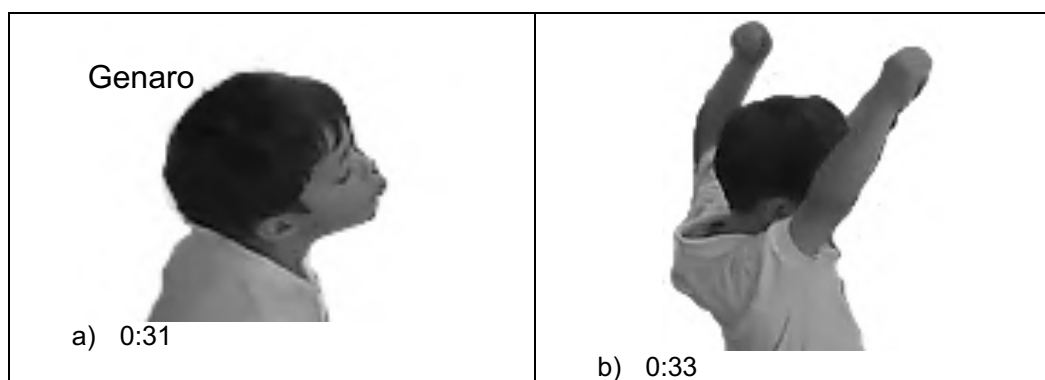


Figure 4.20.3) a)0:31: Genaro exaggerating the beginning sound ‘w’ of ‘win’; b) 0:33 Genaro waving energetically both his arms in a cheering gesture.

At 0:33, Pier engages with the dyad and overlapping Genaro makes available “I win/ I win/ I win me!” using one arm to make a cheering gesture that resembles the ones enacted by Diana at 0:20 and Genaro at 0.33 (figure 4.20.4). Pier was up to that point engaging with the other subgroup, he turned his torso and with no prelude engaged with Genaro and Diana. (multimodal sign)(co-construction)(language use).

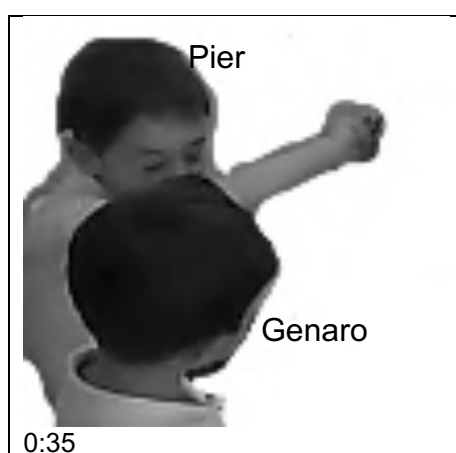


Figure 4.20.4) Pier waving his arm, closed fist, in a cheering gesture.

At 0:36 Genaro states “yo pondré la /w/” (“I wil put /w/”) (figure 4.20.5) (self-task organization). At 0:37, Diana responds to Pier and Genaro with: “w:i:n w:i:n” (figure 4.20.4) (language switch). At 0:40, Genaro, describing his idea of illustration announces, “si yo haré que uno está ganando win” (“yes I will do that someone is winning win”) (agreement)(representability)(language switch).

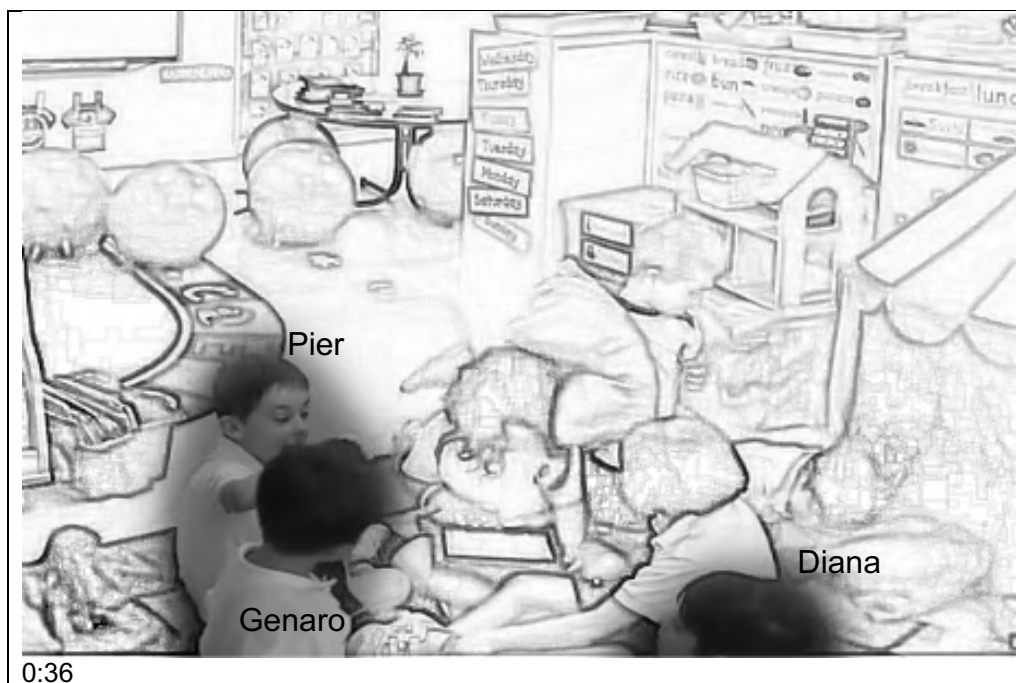


Figure 4.20.5) Interaction subgroup, Pier engages with Diana and Genaro’s dyad.

4.20.2 Discussion

In this short episode the actions that are highlighted respond to: a) a preschooler recognizing the phonetic similarity of two words; b) the use of multimodal signs to accomplish communicative interests and needs; c) co-construction of an illustration idea; exploration of representability.

The first point to note is that the language exploration trigger is a self-task organization orientation through which the preschoolers self-regulate themselves in the task. This is evident in the way in which they negotiate the letter sound they want to illustrate and engage in a co-construction of a word/concept’s illustration. Starting at 0.00 Diana states “and me ++ and me: /f/ me /f/ fan”, in a *self-task organization* orientation, and at 0:06 Genaro continues with “me /w/ one”. Both learners make available the letter sound they plan on illustrating. This discussion triggers Diana’s

representation comment “you will say one *** uh uh uh” in hearing Genaro’s word choice. It is not known if Diana was understanding Genaro’s ‘one’ as ‘win’ (Diana mispronounces win/won as wan at 0:23) or if she is suggesting an illustration idea.

However, what is clearly evident is how she uses this speech turn to communicate the act of winning by articulating cheering sounds “uh uh uh uh” and using an energetic arm gesture. The gesture is reproduced with variations by Genaro at 0:33, who uses a more energetic movement that includes both arms and torso movement while articulating ‘win’ and by Pier at 0:33 who engages with the dyad at that same moment. The use of the gestures (waving arms with fists closed) and the speech (related to winning) by the three preschoolers is a co-construction of the multimodal sign in which each preschooler adapts and modifies it to achieve the communicative intention. So each preschooler uses gestures, speech and body movement to communicate ‘winning’ (winning being the multimodal enactment) but they do so differently and according to their needs.

The discussion also triggers the recognition of similar sounding words. At 0:09, Genaro comments “one one +++ it’s very similar” seemingly making reference to the similarity between ‘fan’ and ‘one’. The act of noting that the two words are close in pronunciation is a potential language exploration through the engagement with each other’s turn and with the assessment of the words’ sonority. Thus, Genaro first recognized the phonetic form of the two words (his and Diana’s) and then recognized their similitude. Through the act of making the connection it is evident that he had to go through those steps and thus this is a potential language exploration transformation.

It is also evident that Genaro, upon hearing Diana’s turn “or a cup/ you will put a cup because someone won *wan is win” aligns with her suggestion although he corrects her by exaggeratedly articulating the beginning sound /w/ and by correcting her pronunciation mistake “win/ that is win/ +++ wi::n: wi::n”. Genaro’s engagement with Diana’s turn points to a potential transformation trigger because Genaro corrects Diana’s comment in what he understood as a probable mistake. Consequently Genaro introduces the word ‘win’ in his idea of what to represent and transforms his























initial idea of “me /w/ one” to “yes I will do that someone is winning win”. Hence, through the sequentiality of the interaction, Miguel co-constructs his idea of what to represent, based on his engagement with Diana’s comment and on a correction made to her “win/ that is win/ +++ wi::n: wi::n”.












As for the participation framework, it is interesting how Pier, who was engaging with another subgroup (the group with the iPad), turned his torso and joined with no prelude Diana and Genaro’s dyad showing that he was aware of their discussion by uttering “I win/ I win/ I win me/” and re-making the gestures used previously by Diana and Genaro. This provides an evidence of how preschoolers seemingly join with no objection different subgroups even with not preamble.

The episode has made visible a preschooler potentially being transformed through his engagement and agreement with other’s turns and then co-constructing his representation idea. A multimodal sign around “winning” is co-constructed in the interaction through the use of repetition, with variation, by three preschoolers has also been visible. And, a preschooler joining spontaneously a dyad. Furthermore, there is evidence of a preschooler recognizing two similarly pronounced words as well as the mispronunciation of ‘win’, leading to its correction.

Synopsis: Visible In this short language-related episode: the **collaborative social order** and **co-regulation** and **self-regulation** in preschoolers’ peer interaction through displays of **self-task organization** and; self-motivated **body movement** as communicative resource to orient from the **whole group** to a **dyad**, to join a dyad’s interaction (participation framework). The visible language exploration triggers are: engagement with a **suggestion** that generates **co-construction** of illustration idea (representability of a word), **disagreement** and **repetition** and; the use of multiple modes (multimodal signs) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are: **description** and **co-construction** of illustration ideas (**representability**) and **language switching**.

4.21 EPISODE: "HOLA CÁMARA"

Episode 4.21 Personification of the camera - Group A				
Action + Context	Stills	Detail	Time	Vocalization
0:00- 0:32 teacher sets the camera and preschoolers wait around the working area. Nerea, Tatiana and Gerika start planning the task			0:31-0:32	Teacher: Can you tell that to the camera
0:35-0:47 Fabian walks towards the camera and stands in front of it very closely looking straight at the camera			0:47-0:47	Adrian: Oh/ oh/
8:43. The teacher gives instructions to Fabian and she establishes direct eye-contact with the camera and points at it when referring to it			8:43-8:49	Teacher: Eh:m. Fabian you are in charge of telling the camera now we are doing this because of this and because of that okay/
			8:52-8:54	Teacher: pretend that it that works ****
0:47-9:00 The teacher has been setting the iPad and giving instructions. At 8:51 the teacher leaves. 9:02 Fabian points at the whiteboard to present the "order"			8:56-9:05	Fabian: **** ok camera, we are doing the hm /s/ (+) because is going to be in order
10:51 Nuno is half laughing while saying "your back to the camera"			10:44-10:45	Fabian: okay now we are doing the sound A
			10:45-10:45	Curiel: =ahhh (exhalation)
			10:48-10:51	Nuno: ahora tu saldrás de espaldas en la camara (now you will appear giving your back to the camera)
				
10:56 Fabian half turns his torso to the camera and points at it with his thumb and quick shaking movements, he then gets closer to the camera checking something in the gadget			10:52- 10:54	Fabian: =no porque está sin bateria (no because it has no battery)
			10:59-11:01	Fabian: llevará *** minutos recargando eh (it must be *** minutes recharging eh)
11:01-11:06 Nuno first says hello to the camera and then waves with a silly face at the camera. He waves from 11:02 to 11:06			11:01-11:02	Nuno: =Hola/ (hello/)
			11:04-11:05	Fabian: do:s horas\ (two: hours\)
13:20 children begin with the second letter sound /a/. There is a discussion related to using the letter sound or the letter name triggered by Fabian's comment on 13:24.			13:24-13:25	Fabian: Now we are doing "A"
13:24: Fabian looks at the camera and tells the camera what they are doing. Then Nuno stands up and tells him "as you are there" pointing at the camera			13:27-13:31	Nuno: = Como tu estas allí como tu eras el de la camara (as you are there as you are the one of the camera)
13:32 Nerea continues Fabians comment to Nuno and tells Fabian that he has to tell the camera. Fabian replies with a slightly high tone			13:31-13:32	Nerea: Tienes que decirlo* (you have to say it)
			13:33-13:34	Fabian: es que lo acabo de decir/ (Is just that I just said it)
13:40 Fabian stands in front of the camera and tells the camera, for the second time, that they are doing A			13:34-13:35	Curiel: =You did "A"
			13:36-13:38	Nerea: Ya pero lo tienes que decir a la cámara (yes but you have to tell it to the camera)
			13:38-13:41	Fabian: ok camera now we are doing "A"

<p>13:30 Nuno greets the camera and is followed by Curiel.</p>	 13:40	 13:41	<p>13:39-13:40 Nuno: =Hola cámara/ (hello camera/) 13:40-13:41 Curiel: Ho:la cámara. (hello camera)</p>
<p>10:44 Fabian stands up and looking at the camera tells it that they are still working on the same sound /a/. (Fabian does not tell the camera about the next letter sound /t/)</p>	 13:44 (2nd)		<p>13:44-13:45 Fabian: Still going on</p>
<p>10:59: The iPad has been given to a different drawing executor. Tatiana who receives an idea from Fabian. Fabian looks at the camera and for the first time speaks in Catalan to it</p>	 13:59 (3rd)	 13:59 (3rd)	<p>13:59-11:00 Fabian: Ara fem la /p/ Now (Now we do /p/)</p>
<p>11:14. Sofia is arguing with Fabian who is telling them to hurry up as they do not have much time.</p>	 14:20 (4)	 14:25 (4)	<p>14:20-14:25 Sofia: Y además no le estas diciendo a la cámara. (And also you are not telling the camera)</p>
<p>11:04:05 Fabian offers an explanation, and looks at the camera. The explanation is unintelligible</p>	 14:25 (4)	 14:34 (4)	<p>14:25 -14:28 Fabian: *** es que (is just that) 14:34-14:36 Fabian: We are doing the + hm N</p>
<p>15:33. Fabian looks at the camera and tells it that they are doing /h/. The teacher comes to check and finish the task at 16:39</p>	 15:33 (4)	 15:33 (4)	<p>15:33 -15:36 Fabian: Now we are doing /h/ /h/ h/ h/</p>

4.21.1 Analysis: Personification of the camera – Group A



The episode occurs at the first session of the book of sounds' task. The episode is composed of turns from the initial part of the session (15 minutes), in which members of the group make reference to the camera. Some turns have been omitted since the focus is on how the students react to the teachers' request to "tell the camera" and how this is co-constructed during the session and enacted as part of the collaborative social order through the recognition of the camera as a present element. Only turns that are related to this action sequence are included. The session lasted 45 minutes, of which the first 15¹⁵ minutes have been scanned to trace all the instances of direct reference to the camera. Some of the turns analyzed at "index finger as pointer" (episode 4.1) are reused here as the analysis is focused on different aspects.

At 0:31, the teacher, who has just set up the camera, starts to leave the space to get an iPad. While leaving, she observes a subgroup of three students, Nerea, Tatiana and Gerika, who appear to be planning the task. The teacher asks them "can you tell that to the camera" while pointing at the camera (figure 4.21.1a). There is no visible reaction from the subgroup. Fabian, who is part of the other subgroup, upon hearing the teacher, walks towards the camera (0:35) and stands in front of it for several seconds (until 0:47). He stares directly at the camera, as if maintaining 'eye-contact' with it (figure 4.21.1b) (collaborative social order: co-regulation).

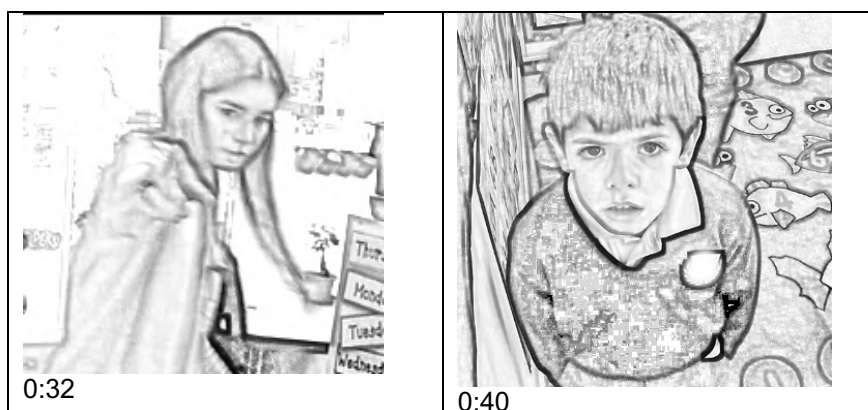


Figure 4.21.1) a) the teacher pointing at the camera. b) Fabian gazing at the camera.

¹⁵ Due to the large amount of data only the first 15 minutes were scanned. The first 15 minutes part is the most interesting as it shows great activity and the teacher's first acknowledgement of the camera.

At 8:43 the teacher gives explicit instructions to Fabian “Eh:m Fabian you are in charge of telling the camera now we are doing this because of this and because of that” (figure 4.21.2a). At 8:52, the teacher remarks to Fabian to “pretend that it works” making reference to the camera¹⁶. Complying with the teachers’ request, Fabian stands up, walks towards the camera and once in front of it tells the camera “ok camera, we are doing the hm /s/ because is going to be in order” (figure 4.21.2b) (collaborative social order: co-regulation)(task-completion orientation)(movement)(language use). At 10:44, Fabian, still in front of the camera, speaks directly to it, “okay now we are doing the sound A”. Fabian talks to the camera for a second time providing further evidence that he accepts his accountability and complies with the teacher’s command. It also demonstrates that Fabian comprehends that it is not an isolated request; it is a request that extends over time (collaborative social order: co-regulation)(task-completion orientation)(language use).



Figure 4.21.2) a) teacher pointing at the camera. b) Fabian showing the ‘order’ to the camera

At 10:48, Nuno narrates in a mocking tone what Fabian is doing, turning his back to the camera, “**ahora tu saldrás de espaldas en la camara**” (“*now you will appear giving your back to the camera*”) (playfulness)(task-completion orientation)(collaborative social order: co-regulation). Fabian responds to Nuno’s comment and turns towards the camera while remarking to Nuno “**no porqué está sin batería**” (“*no because it has no*

¹⁶ The GoPro camera has a red blinking light to signal it is recording. During one of the previous sessions the students, using their knowledge of the digital technology, thought it was running out of battery and started playing with the camera resulting in it falling down and a piece getting broken; and losing the angle in which it was placed, hence the teacher told them not to touch it even if it was out of battery. Hence, although recording the teacher recognized they might think it was not, hence the comment “pretend that it that works”

battery”). He looks closely at the camera as if examining it (co-regulation). At 10:59 he points out to Nuno that the battery needs time to charge: “llevará *** minutos recargando eh” (“it must be *** minutes recharging eh”). At 11:03, Nuno looks at the camera and with a playful face gesture accompanied by a hand wave says “hello/” to the camera (figure 4.21.3) (playfulness)(multimodal sign). At 11:04, Fabian utters “do:s horas” (“two: hours”) which seems to be a completion of his previous turn at 10:59.

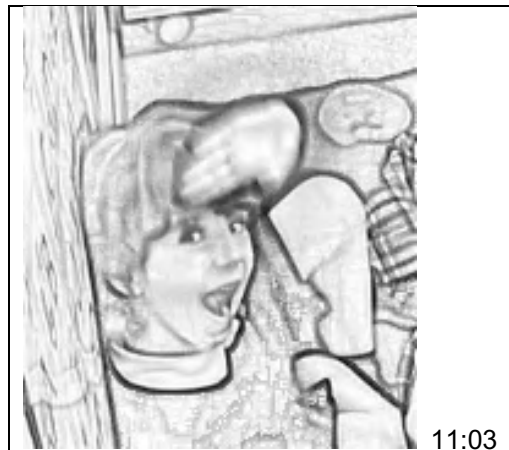


Figure 4.21.3) Nuno greeting the camera

At 13:24, Fabian continues with his appointed role and looking at the camera, without standing up or moving from the working subgroup tells the camera what the group is doing “Now we are doing A” (language use). At 13:27 Nuno stands up and points at the camera while walking around the circle to reach the opposite side. He then tells Nuno, “Como tu estas allí como tu eras el de la camara” (“as you are there as you are the one of the camera”) pointing near the camera at the place Fabian was before when he was talking to the camera (10:45) (figure 4.21.4.a/b) (movement)(multimodal sign).

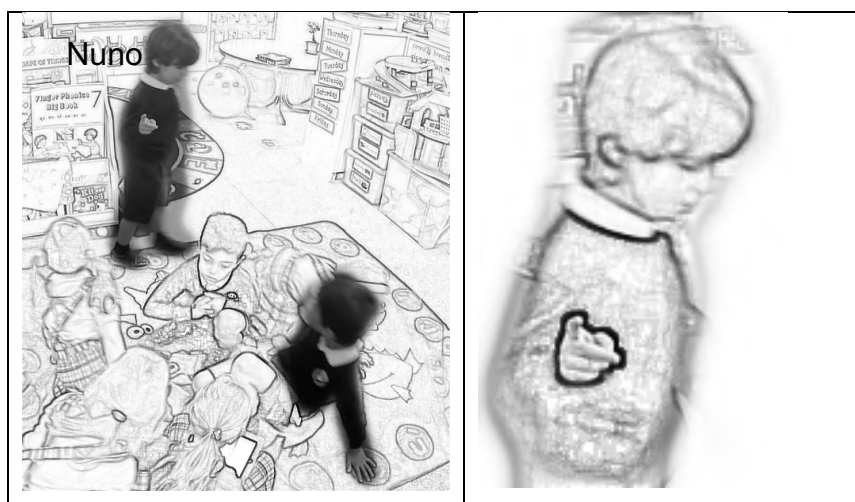


Figure 4.21.4) Nuno's gesture b) detail of Nuno's gesture

At 13:31, Nerea reacts to Nuno's comment and tells Fabian “ **tienes que decirlo***” (“you have to say it”), making reference to Fabian's role of commanding the camera (collaborative social order: co-regulation). At 13:33, Fabian, with a rising intonation to emphasize his comment, and accompanied by a hand gesture of disconformity, replies to Nerea “ **es que lo acabo de decir***” (“*is just that I just said it*”) (multimodal sign)(disagreement). At 13:34, Curiel gazes at the camera and utters “you did A” which is a reformulation of Fabian's prior message to the camera (repetition)(language use). At 13:36, Nerea replies to Fabian, offering a clarification “ **Ya pero lo tienes que decir a la cámara***” (“*yes, you have to say it to the camera*”) at the same time as she points and looks at the camera (figure 4.21.5) (multimodal turn)(collaborative social order: co-regulation).



Figure 4.21.5) Nerea pointing at the camera at 13:36.

At 13:40 and 13:41 Nuno and Curiel both look at the camera and say “ **hola cámara***” and “ **ho:la cámara***” (“*hello camera*”) which demonstrates their acknowledgement of the presence of the camera (playfulness). At 13:44 Fabian stands up from where he was sitting. Positioned in front of the camera, he establishes ‘eye contact’ with the camera and declares the work on ‘A’ is still in progress “still going on” (movement) (language use)(task-completion orientation). Fabian does not comment to the camera the following two letter sounds ‘t’ and ‘i’. At 13:59, Fabian continues with his role and maintaining ‘eye contact’ with the camera tells it “ **ara fem la /p/**” (“*now we are doing /p/*”) (task-completion orientation)(collaborative social order).

At 14:20, Sofia and Fabian are arguing. Fabian has been making comments on the amount of time left and the slow pace of the group. Sofia offers a counterargument “**y además no le estas diciendo a la cámara**” (“and also you are not telling the camera”) establishing eye contact with the camera and pointing at it (figure 4.21.6). Fabian offers an explanation that is unintelligible to the camera “***** es que**” (“***is just that”) while turning to look at the camera at 14:25 (task-completion orientation: co-regulation) (disagreement). At 14:34, Fabian establishes ‘eye contact’ with the camera and tells it “we are doing the + hm N” (task-completion orientation)(language use). At 15:33 Fabian, who is not in front of the camera, looks at it and from that position says to it “now we are doing the /h/ /h/ /h/” (task-completion orientation)(language use).



Figure 4.21.6) Sofia pointing at the camera

4.21.2 Discussion

This extract is a selection of the turns in which a member of the group, included the teacher, makes reference or directs herself or himself to the camera. In this extract it is evident that the camera is not only acknowledged by the group but that it plays a role in the task process. The camera is seemingly included in the collaborative social order through the co-construction of its role by the teacher and the preschoolers’ actions.

The actions that are highlighted respond to: a) the use of multimodal signs and turns to accomplish communicative interests and needs, in this case the co-construction of the role of the camera in the collaborative social order; b) preschoolers switching

languages and using the target language strategically to talk to the camera; c) preschoolers self-motivated movement to accomplish their communicative needs including directing themselves to the camera.

At the beginning we can observe how the teacher refers explicitly to the camera “can you tell that to the camera”, fostering the notion of communication between students and camera. To do so, she appoints Fabian to the role of “narrator”. During the appointment of the role to Fabian the teacher looks directly at the camera and uses her index finger to point at it. This action is relevant, as the teacher directs her gaze to Fabian at the beginning of her instruction but at the moment of articulating “camera” (8:43) her gaze and gesture are directed to the camera. In the sequence of this action, we can observe how the camera becomes a central artefact that plays a mediating factor in the communication. It can be argued that this is the first moment in which the camera is given a role by the teacher. At this first action it is no longer a camera but “the camera” and a student is requested to “tell(ing) to the camera”. The choice of wording ‘telling the camera’ made by the teacher is relevant as it creates a link between the students and the camera and indicates that the camera has an agentive role in the interaction.

The first contact that Fabian has with the camera is right after the teacher asks the subgroup of preschoolers, sitting on the carpet, to tell what they are talking about to the camera. Fabian has not yet been asked to be the “narrator” but in hearing the teacher talking about the camera “can you tell that to the camera” (0:31) he reacts by approaching to the camera and establishing eye contact with it. The term eye contact is used in this extract to make visible that it is not just an action of ‘looking at the camera’ but entails establishing a contact that is eye to camera eye. The look is *direct* and when captured in stills the participants appear to be establishing direct eye contact to the viewer of the video as can be seen in figure 4.21.7. This group was formed by seven preschoolers, five of which at some point during the first session of the book of sounds, established eye contact with the camera.



4.21.7: Screen captures from the interaction, used in the transduction. The participants are establishing eye contact with the camera at the moment of the screen capture.

Fabian's first narration to the camera shows an interesting choice of wording "ok camera we are doing the hm /s/ because is going to be in order". It is noteworthy

that Fabian personifies the camera by referring to it 'ok camera' while talking to it. The second relevant point is that Fabian turns his torso and points to the whiteboard, in which the teacher wrote the letter sounds order for the book of sounds, to make reference to 'the order' of the letters the group has been requested to follow (9:02). This forms part of his narration to the camera regarding what the group is doing. It seems that Fabian is confident that by pointing at the whiteboard, which is an angle not captured by the camera, his reference to the 'order' has been made clear. The referent is treated by Fabian as if shared by the camera. The third point to note is that Fabian has positioned himself in front of the camera making use of the space. These actions point at a collaborative social order being co-constructed.

At 10:51, Fabian gives his back to the camera and Nuno indicates to Fabian that he will appear with his back to the camera. In this turn, it appears that Nuno is referring to the camera as an artefact that both records and forms part of the task. However, it is relevant that Nuno noted the position of Fabian in relation to the camera eye and that he decides to highlight that to Fabian by remarking that he is going to "appear giving his back to the camera". Nuno points at the camera but does not establish eye contact with it. This action shows that Nuno is acknowledging the camera and its function, thus enacting the collaborative social order being co-constructed. The turn is followed by Fabian's explanations to Nuno and his examination of the camera through eye contact directed to the camera.

At 11:01 Nuno, who is sitting with the group, turns and says "hello/" to the camera, waving at it with a playful gesture and establishing eye contact with it. Nuno's attitude appears to be an act of acknowledgement of the camera and its function. However, there is a potential transformation in the process; at Nuno's previous turns he only points and refers to the camera in speech but avoids eye contact, in this last turn Nuno establishes eye contact and greets it directly.

At 13:24, Fabian continues committed to his role and tells the camera that they are working on the following sound, "now we are doing A". In this turn Fabian does not get closer to the camera to comment the action being taken by the group, however he establishes eye contact while remaining sitting on the carpet with the group. Nuno

stands up and directing his comment to Fabian tells him that “as you are there as you are the one of the camera”. This turn is relevant in terms of the construction that he uses, “as you are there (...)”, referring to Fabian as if he were in a position that he is not. Nuno tells Fabian that he *is* in front of the camera while pointing at it (using a multimodal sign), although actually Fabian is not there. Nuno also remarks “(...) as you are the one of the camera” in the same turn hence making an explicit connection between the position of being close to the camera with the role of “the one of the camera” or the narrator. Nerea joins in and remarks to Fabian “you have to say it”, referring to the camera as she gazes directly and points at the camera thereby reinforcing Nuno’s turn. Fabian with an open palm gesture of disconformity replies to Nerea “is just that I just did it”. Nerea, then reformulates her comment and tells Nuno “yes but you have to say it to the camera”. This turn is relevant as Nerea recognizes that Fabian said what he was supposed to say “yes (...)” but remarks that it has to be said *to* the camera “yes, but you have to tell it *to the camera*”. This turn demonstrates a personification of the camera. Nerea marks a difference between “said it” (by Fabian at 13:33) and “tell it to the camera” (Nerea at 13:36). During this turn Nerea establishes eye contact and points at the camera, in this way acknowledging to whom the comment has to be directed to. Fabian reacts to Nuno and Nerea’s comments and tells the camera for a second time what they are working on “ok camera now we are doing A”, using the target language and gazing at the camera as he does so.

At 13:39 and 13:40 Nuno and Curiel, sequentially one after the other, greet the camera saying, “hello camera/” waving their hands with a playful smile. This is the second time that Nuno greets the camera and the playfulness in his action and the direct gaze and directed hand wave is a multimodal sign (hello) directed to the camera. It can be argued that at this point Nuno is personifying the camera and establishing a playful relation with it.

At 13:44 Fabian establishes eye contact with the camera and tells it “still going on”. It is interesting how he communicates with the camera although there are no changes in the working process. This provides evidence that the camera is personified as something worth explaining not only the steps but the process as the teacher

requested (“we are doing this because of this and because of that”). The narration of the process also reinforces the inclusion of the camera in the collaborative social order. At 13:59 Fabian establishes eye contact with the camera again and tells it that the group is working on ‘/p/ “now we do /p/”. In this turn, Nuno talks in Catalan for the first time and interestingly he forgets to announce the following two sounds. In the episode (not included in the extract) he helps actively in illustrating both the two following sounds which he forgets to announce.







At 11:14 Fabian and Sofia are arguing because Fabian is pushing the illustrators to finish because he thinks they do not have time to finish (not included in the extract). At 14:20 Sofia offers a counterargument “and also you are not telling the camera”. She uses a multimodal turn that includes speech, gaze and gesture while using direct gaze to the camera and a pointing gesture to intensify the personified object that he is not telling the information to. This action is a personification of the camera. In her argument Sofia includes the camera as a third element, the element being the one who has not been told about the process of the work “and also you are not telling the camera”. However, the reference to the camera is made not only by mentioning it but by acknowledging it through a multimodal turn while referring to it. At that moment the camera is given a presence in the discussion. This point is made visible with Fabian’s reaction, he turns his back and looks at the camera and offers an explanation to Sofia. At 11:34, Fabian tells the camera what they are doing “we are doing the + hm N”. This interaction shows that a discussion between two preschoolers evolves into an interaction in which two members acknowledge and include the camera in their discourse as another agent. At 15:33, Fabian tells the camera the last sound the group begins during the session’s 15 minutes span analyzed “Now we are doing /h/ /h/ h/ h/” he establishes eye contact with it as previously.

In conclusion, the personification of the camera is a *potentially transformative engagement* during the process of the task. The teacher acknowledges the camera and promotes, at a particular point in her discourse, that a subgroup should talk to the camera. She also appoints a camera narrator. During the task process the preschoolers establish eye contact with the camera while talking to it or talking about




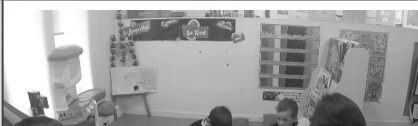



it. Figure 4.21.7 is evidence that this contact with the camera is part of the discourse of the participants. This is relevant as the preschoolers have to intentionally direct their gaze at the camera which is positioned above their heads. It is also relevant because it includes the camera in the communication as a personified artifact to be included in the mediation of the interaction. Furthermore, the responsibility of Fabian to be the narrator is constructed during the process and as part of the comments of the other preschoolers who ask, challenge or comment on Fabian's communication with the camera. This also aids in the co-construction of the collaborative social order of which the camera is part of the task or as a 'participant' in the group. It is also important to note the fact that two preschoolers act playfully, greeting the camera, an embodied acknowledgement of the presence of the camera. Hence, in this selection of turns one can argue that the camera became a personified artefact in the task interaction and that it happened as a transformation that was co-constructed through the small actions and reactions of the preschoolers throughout the interaction.

Synopsis: Visible in this short language-related episode: the **collaborative social order** and **co-regulation** in preschoolers' peer interaction through displays of **task-completion orientation** by means of complaining with the teacher's instruction 'to tell the camera'; self-motivated movement to interact with the camera (participation framework) generated by **movement** in the working space. The visible language exploration triggers are engagement with a **suggestion** that generates **disagreement** and **agreement**, and the use of **multiple modes** (either in multimodal signs or turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language use** and **co-construction** of the collaborative social order regarding the stance of the camera in the task project.

4.22 EPISODE: “TEACHER!”

Beebots- Water Challenge- Group B		
Time	Still	Vocalization
0:01-0:02	<p>0:02</p> 	<p>Miguel: ya está limpia/ (It is now clean/) [programs the Beebot and it starts moving over the wet surface with a tissue paper attached at the rear hook]</p>
0:03-0:08		<p>Lluvia: No/ Miguel la profesora lo tiene que decir (no/ Miguel the teacher has to say it) [trying to attach the tissue paper to the rear hook of the Beebot]</p>
0:08-0:09	<p>0:08</p> 	<p>Diana: Alguien me trae una silla/ (Can someone bring me a chair/) [going from one side of the working space to the other with the iPad and the camera of the iPad on, Maia and Miguel follow her each with a Beebot on their hand]</p>
0:09-0:12	<p>0:12</p> 	<p>Maia: Puc fer la teva *ajudanta i et faig coses (I can be your helper and I do things for you)</p>
0:12-0:13		<p>Pier: chicos/ (guys/)[Pier is not in the working space only his voice can be heard]</p>
0:13-0:14	<p>0:17</p> 	<p>Diana: *** [Turns her head to Maia and makes a comment to Maia, Maia leaves the working space and reenters with a chair at 0.32]</p>

Beebots- Water Challenge- Group B

0:14-0:19		<p>Pier: Cómo os ponéis el papel (how do you put your paper) [Pier enters the working space with a Beebot and a tissue paper in his had] Cómo os ponéis el papel (how do you put your paper) [sits between Lluvia and</p>
0:16-0:16		<p>Lluvia: =A ver/ (let's see/)</p>
0:23-0:30		<p>Lluvia: No::/ que no/ + teacher/ he is don't is doing now and is don't can't [Lluvia turns her head to look and direct herself to Diana who is taking pictures with the iPad] (no::/ don't/ + teacher/ he is don't is doing now and is don't can't)</p>
0:30-0:32		<p>Maia: té the chair Diana [Maia comes in with a chair and puts it where Diana is standing] (have the chair Diana)</p>
0:35-0:37		<p>Jan: You say five off to Pier [to Diana]</p>
0:37-0:46		<p>Diana: [walks towards Lluvia and leaning very close to her they talk, the conversation is inaudible to the camera, Lluvia uses her hands to make gestures to explain]</p>
0:46-		<p>Diana: [stands up and looks at the Beebots]</p>

4.22.1 Analysis: Beebots water challenge – Group B

The episode occurs at the third and last session of the Beebots' challenge: the water spill challenge. The teacher sprayed water on the floor and asked the preschoolers to program the Beebot to clean the water spill. Diana has the iPad and has been appointed the role of teacher by the teacher at the beginning of the session. The episode is composed of one extract of forty-six seconds.



Lluvia, Jan and Miguel are sitting on the floor, each one with a Beebot and there are tissue papers and a water spray available on the floor (figure 4.22.1a). Starting at 0:00 Miguel clicks 'go' on his Beebot. His Beebot has a tissue paper attached at the rear hook. It starts moving. At 0:01 Miguel declares “*ya está limpia!*” (“*it is now clean!*”) referring to the water spill. At 0:03 Lluvia responds to Miguel’s action (engagement) with a *disagreement* and says to him “*no/ Miguel la profesora lo tiene que decir*” (“*no/ Miguel the teacher has to say it*”) (collaborative social order: co-regulation). Diana, who is holding the iPad, is documenting evidence of the work being done by the group (creating videos of their interaction). Genaro and Maia each have a Beebot in their hand and are standing close to Diana. Diana, Genaro and Maia are at the corner of the working space (figure 4.22.1b) (movement).

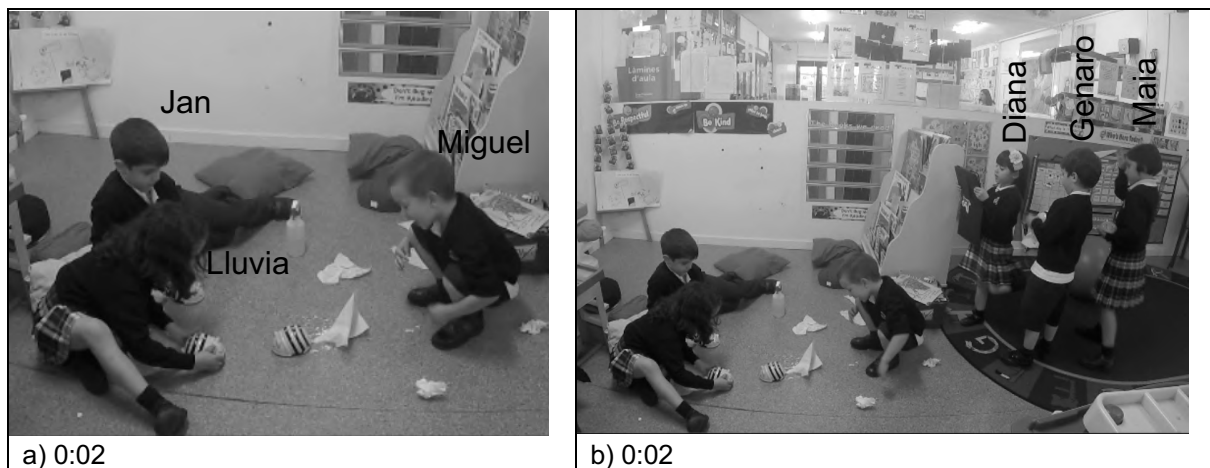


Figure 4.22.1) a) Lluvia, Jan and Miguel. b) Preschoolers position in the working space at 0:02

At 0:08, Diana, continuing to record with the iPad, moves from her initial position to another corner and Maia and Genaro follow her (movement). At 0:08 Maia, without changing the direction of her gaze which is focused on the iPad (recording the group)

makes a request “**alguien me trae una silla**” (“*can someone bring me a chair*”) (figure 4.22.2a). At 0:09 Maia moves closer to Diana and addressing Diana says in Catalan “**Puc fer* la teva ajudanta* i et faig coses**” (“*I can be your helper and I do things for you*”). Maia leaves the working space to get the chair (movement).

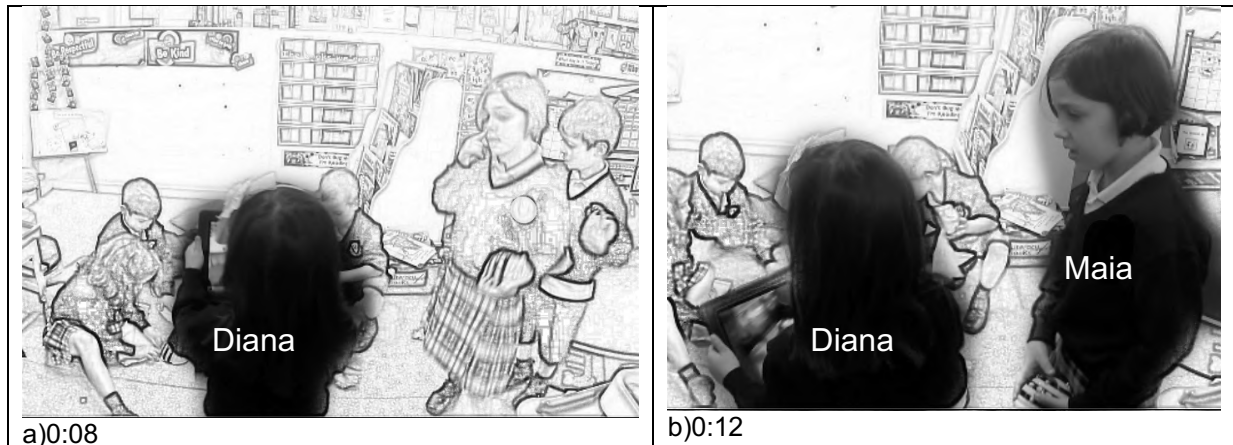


Figure 4.22.2) a) Diana asking for chair. b) Maia offering to do things for Diana

At 0:12 Pier, who is not in the working area, utters “**chicos**” (“*guys*”). His one-word request is audible in the working group even though he is not physically part of the group. At 0:13 Diana turns her head to Maia and makes a comment to her that is unintelligible to the camera (participation framework: dyad). At 0:14, Pier enters the working space and continues his speech turn “**Cómo os ponéis el papel cómo os ponéis el papel**” (“*how do you put your paper how do you put your paper*”) repeating his question twice. Pier crosses the circle formation of children working on the floor, composed of Lluvia, Jan and Miguel, and sits between Lluvia and Jan. (figure 4.22.3a) (movement)(task-completion orientation)(participation framework: subgroup). At 0:16 Lluvia says “**A ver**” (“*let’s see*”) with a rising intonation, although is not discernable to whom the statement was directed to. At 0:23 Lluvia makes explicit her *disagreement* “**no::/ que no/ + teacher/ he is don’t is doing now and is don’t can’t**” (“*no::/ don’t/ + teacher/ he is don’t is doing now and is don’t can’t*”) using Spanish and English (language use)(co-regulation). In her disagreement, Lluvia explicitly requests the attention of Diana by gazing at her and referring to her as ‘teacher’ (multimodal turn). Diana reacts to her and both establish direct eye contact (figure 4.22.3b).



Figure 4.22.3) a) Pier entering the working space. b) Lluvia requesting the Diana's attention "teacher/".

At 0:30, Maia comes in with the chair Diana had asked for and tells her "*té* (*have*) the chair" (classroom social order: co-regulation)(language use), using a plurilingual verbal construction. At 0:35, Jan directs himself to Diana and says "you say five off to Pier". Jan is making reference to a time out which Diana, as the appointed teacher, gave to Pier (classroom social order: co-regulation)(language use). At 0:37, Diana walks towards Lluvia and leaning towards her they form a dyad and both have a conversation that is inaudible to the camera. Lluvia uses gestures, with one arm and hand, during their conversation (figure 4.22.4) (multimodal turn).



Figure 4.22.4) Diana and Lluvia talking in a dyad at 0:42, Lluvia's gesture.

4.22.2 Discussion

The task from which this episode is taken was designed for using the target language and developing coding skills along with critical thinking, decision-making and problem-solving skills. In this short episode the actions that are highlighted respond to: a) the use of the target language to co-regulate actions and; b) the use of multimodal turns to accomplish communicative interests and needs.

A key aspect to note is that, as in the episode with group A (refer to episode 4.23), the preschoolers communicate in English when they address the teacher or the appointed student teacher. This appears to be an enactment of a classroom social order in which the use of the target language is understood to be mandatory for addressing the teacher. At 0:03 Lluvia, uses Spanish to bring the teacher's instruction into her argument to disagree with Miguel for activating the Beebots "no/ Miguel the teacher has to say it". Lluvia complains because, for her, they should all have to wait for the teacher to say they can activate the Beebots and Miguel did not wait. At 0:16 Lluvia makes a short intervention, "let's see/", although is not possible to know to whom or why. The utterance seems to be a sign of exasperation given her next action. At 0:23, Lluvia opens with an elongated "no::/ don't/" and then requests the appointed teacher's intervention "+ teacher he is don't is doing now and is don't can't". Lluvia has now switched to using English to formulate her request. This is the first evidence of the use of English during the interaction.

The use of English was triggered by the situation in which a student addressed the student teacher and appears to be part of the acknowledgement of her appointed role. In the utterance she requests the appointed teacher's aid to presumably enact the classroom social order in which disputes with peers that cannot be mutually resolved require the aid of the teacher. Hence it can be argued that apart from the classroom social order and the role of the teacher in it, the teachers' pedagogic intention is, as well, recognized and enacted by the preschoolers and possibly part of the classroom social order. Lluvia uses English exclusively when directing herself to the appointed teacher, Diana, who adopts the role of the teacher. This role carries the teacher's pedagogic intentionality which is, among others, for preschoolers to use the target language and to record students' progress. This follows the explicit

instructions of the (real/other) teacher who has asked the appointed teacher, Diana, to monitor the use of English and to record and take photos of the progress. Although the (real/other) teacher is not present to supervise both parts, the appointed teacher and the student still enact the classroom social order and the collaborative social order. As for language relevance, Lluvia uses English to communicate and the sole fact of making an effort to communicate in the target language is in itself a potentially transformative engagement.













It is also interesting to note that at 0:34 Maia, who has suggested a self-selected secondary role to the appointed teacher, Diana (“I can be your helper and I do things for you”) addresses Diana in English when she brings her the chair that Diana had requested at 0:08. At 0:30 Maia brings the chair and in placing it on the floor says “have the chair Diana”. This resembles the previous case in which Maia uses the target language to address to the appointed teacher. It is interesting to note that in her previous turn at 0:09 when Maia seems to be negotiating her role as the teacher’s helper she does so using Catalan. Hence, it appears that the use of the target language is consciously decided, it is to be used when directing oneself to the teacher but not necessary when directing to a classmate. This highlights the enactment of classroom social order during the task. Furthermore, Jan, at 0:35 speaking to the appointed teacher does so in English “you say five off to Pier”. Thus, it seems that this conscious decision, of using the target language when speaking to a “teacher” is shared among some members of the group as has been observed in this extract and other episodes in this study.











In general, it seems that preschoolers are aware that they are expected to use the target language when speaking to the teacher. What is evident is that some preschoolers use the target language to communicate orally with the appointed teacher, and that they do so strategically. The preschoolers use the target language when speaking to a peer who has been assigned the role of the appointed teacher but otherwise communicate to peers in their home language. Hence, the task, the classroom social order and the collaborative social order appears to create a frame in which the task is in EFL and thus preschoolers engage in potentially transformative

interactions in which language exploration triggers arise due to the framing of the task.

Synopsis: Visible in this short language-related episode: the **collaborative social order** in preschoolers' peer interaction through displays of **task-completion orientation** and; self-motivated **movement** around the working space to interact with subgroups or to accomplish the task; The visible language exploration triggers are engagement with the task that generates **activate participation; disagreement** with other's actions and **co-regulation** of such actions through the use of the **target language**; the use of **multiple modes** (in multimodal turns) as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language use** to complaint to the appointed teacher and **co-construction** of the complaint.

4.23 EPISODE: "TRAIN PLEASE!"

Beebots- Train Challenge- Group A					
Time	Still	Vocalization	Time	Still	
0:01		Teacher: Challenge/			
0:02		Fabian: Train			
0:03		Teacher: To finish the train today + Ok::			
0:05		Fabian: <u>Just one/</u>			
0:06		Teacher: One train/ ok Nuno/ + a:ll yours/			
0:10		Curiel: ****			
0:13		Nuno: ****Train Please/			
0:16		Nerea: You have to help to the others			
0:20		Teacher: For you (+ +) [gives the iPad] not for you to play For you to be the teacher ha/ because whatever you think you can do with the iPads to help them or yes/ Remember you have to tell them to work together to use English You are in charge ok/			
	Still	Vocalization (subgroup)	Time	Still	
				Vocalization (subgroup)	
0:37		Curiel: Nuno **** Tu eres la señorita (Nuno **** You are the teacher)	0:38		
0:45		Fabian: No/ pero (no/ but)		Sofia: Taitana [stretches her hand asking for Taitana's beebot] Taitana	
0:46		Nuno: =No però no pots fer\ (No but you can't do \) [to Curiel]			
0:48		Curiel:***			
0:48		Fabian: =Not but I was just telling them to talk about it [to Nuno]			
0:51		Nuno: Ya/ porque + vosotros tenéis que hablar yo no:/ (Well because + you have to talk me no:/) [to Curiel]			
0:56		Nuno: yo os tenéis yo/os tenéis yo\ (I you have to I/ you have to I)	0:55		
0:58			0:58	Sofia: Dame tu Beebot Curiel ponla aquí (give me your Beebot Curiel put it here)	
0:59		Nerea: for for help you have to **** you you you show it to Miss Nathaly, sí mira/ (yes look/)	1:01		
1:11			1:03	Sofia: Dámela tu Beebot Give it to me your Beebot [To Curiel, who hands in the Beebot to Sofia]	
			1:06	Curiel: Yo voy a atrás del todo (I go behind everything) [walks behind Sofia and sits in front of his Beebot]	
			1:08	1:08	Sofia: =No:/(no:!/)
			1:09	Curiel: Yo quiero mi Beebot (I want my Beebot)	
1:11		Nuno: **** es que si no **** (**** If not ****)	1:10		
1:19			1:13	Sofia: Ja pero no la apretes eh (Well, but don't click it eh) [there is a soft hand-hand fight, Sofia attempts to program Curiel's Beebot and he does not let her]	
		[silence]	1:29		
				Sofia: No Curie::I/ (No Curie::I) [Sofia is programming all the Beebots by clicking in order the same command in each Beebot and Curiel clicks his before his Beebot's turn]	
1:31		Nerea: Però ha dit que facis fotos amb això (But she said that you had to do the pictures with this) [points at something on the iPad]			
1:34				1:18	
1:37		Nerea: [Nuno turns the iPad to check the cover on the lens] A! espera espera Nuno + ara si ja pots ++ veus/ (Hey/ wait wait Nuno ++ now/ yes you can, you will can + see/) [checks the camera is on on iPad's screen]			
1:44				1:27	
1:46		Nuno: [Giggles and gently shakes head]			
				1:29	

Beebots Train Challenge- Group A				
1:46				
	Still	Vocalization		
1:55		Fabian: Ok/ I think we are ready		
1:58 2:00		Nerea: El meu quin és Sofia/ (Which one is mine Sofia)		
2:01		Sofia: Aquest (This one) [points at the 2nd Beebot]		
2:02		Nuno: Please/ Please/ [uses his elbow to gently push Nerea and make room for him in front of the train of Beebots, Nerea moves towards her Beebot and to sit next to Sofia]		
2:04		Curiel: Au Au que me he dao* en la espalda (Ouch Ouch I hurt my back) [Nerea and Tatiana move to find their place in front of their Beebot]		
2:08		Sofia: va/ Fabian/ (Come on/ Fabian/)		
2:09 2:10		Curiel: =Que hay que conducir/ (That we have to drive/)		
2:20		All: Shouting		
2:20 2:30		All: ((Shouting, laughing and Unintelligible talking))		
		[Fabian looks at the Beebots base where the wheels and the on/off buttons are placed]		
2:33		Curiel: La mia se va aquí ah:: (Mine/ goes there/ ah::)		

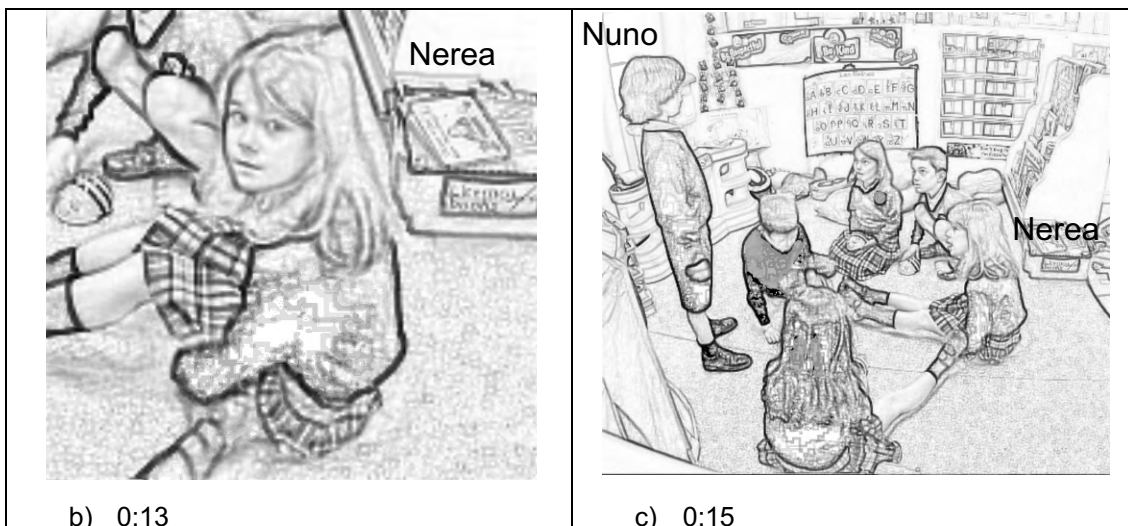
4.23.1 Analysis: Beebots train challenge – Group A

The episode occurs at the second session of the Beebots' train challenge. Nuno is appointed by the teacher as the "teacher" and given an iPad to do his job. Gerika is absent. The challenge is to make the Beebots move as a train. In the first session the children were not able to accomplish the challenge. The episode is composed of one extract of two minutes and thirty-three seconds.



Starting at 0:00 the preschoolers are sitting in a circle formation and Nuno is standing up outside the circle facing them. At 0:01 The teacher, who is behind the piece of furniture that holds the GoPro camera (a cubby 1,20-meter-high) announced the "challenge" and all the preschoolers look at her. Fabian completes the teacher's prompt with the word "train" at 0:02 (figure 4.23.1a) (co-construction). The teacher explains that the aim of the session is "to finish the train today + ok:.". Fabian clarifies "just one" (co-construction)(language use). The teacher responds to Fabian's turn and clarifies "one train/ ok Nuno + a:ll yours". Nuno clearly embodies the role of appointed teacher previously assigned by the teacher to him by stating to the group at 0:13, "train please/" (language use)(collaborative social order: co-regulation). From 0:13 to 0:16 Nerea directs her gaze to the camera establishing 'eye contact' with it (Figure 4.23.1b) (collaborative social order). At 0:16 Andrea, gazing at Nuno, addresses him and tells him "you have to help to the others" (figure 4.23.1c) (language use)(collaborative social order: co-regulation).





4.23.1) a) Preschoolers gazing at the teacher. b) Nerea gazing at the camera. c) Nerea directing her speech turn to Nuno

At 0:20 the teacher enters the working space with an iPad and hands it to Nuno. She makes available the responsibilities of the appointed teacher role to Nuno “For you (+) [gives the iPad] not for you to play. For you to be the teacher ha/ because whatever you think you can do with the iPads to help them or yes/ remember you have to tell them to work together to use English you are in charge ok/” thereby making explicit Nuno’s role and what is expected from him (figure 4.23.2). The teacher uses her arms to make gestures during her speech turn (multimodal sign) and Nuno establishes eye contact with her. At 0:36 the teacher finishes her speech turn and leaves the working space.



4.23.2) The teacher making explicit Nuno’s role and responsibilities through a multimodal sign

At 0:37 the whole-group divides into two subgroups: Nuno and Curiel are in a dyad and the rest of the group sits in a circle formation on the floor (figure 4.23.3a) (participation framework: subgroups). At 0:37 Curiel who has approached Nuno tells him “Nuno *** *Tu eres la señorita*” (“Nuno *** *you are the teacher*”) reminding him of his appointed role of teacher (collaborative social order: co-regulation). At 0:45 Fabian, who is sitting down, engages with Curiel’s comment and turning his torso at the dyad interaction says “no/ pero” (“no/ but”) with a gesture of a hand pointing at himself (figure 4.23.3b) (participation framework: subgroup)(multimodal turn). Fabian’s reply seems to indicate that Curiel is complaining about him although the entire interaction is not visible.

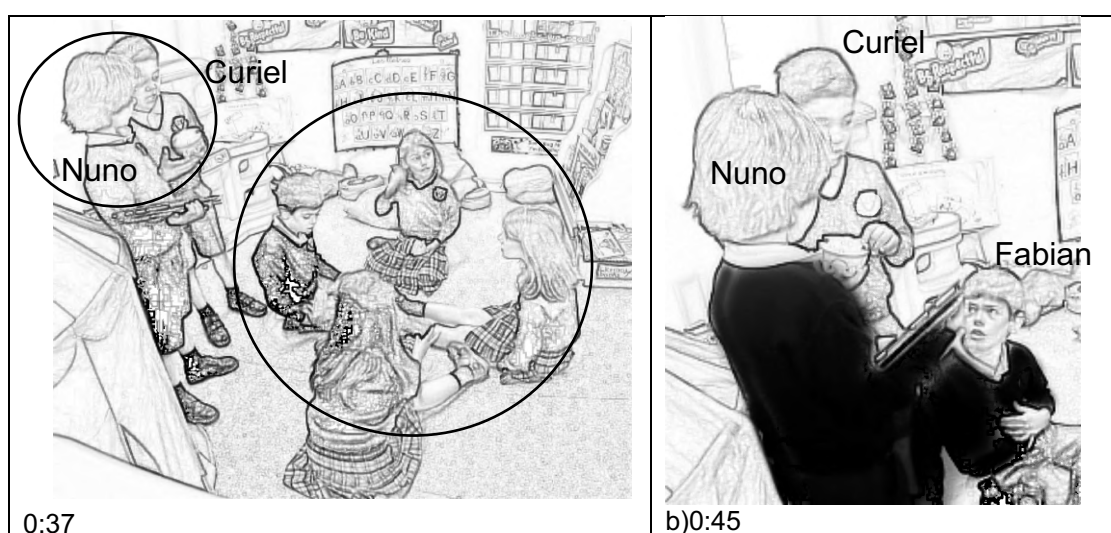


Figure 4.23.3) a) subgroups at 0.37. b) Fabian’s gesture at 0:45

At 0:46, Nuno engages with Curiel, who is standing up next to him and facing him, tells him “No però no pots fer\” (“not but you can’t do”) overlapping Fabian’s last word (disagreement) (participation framework: dyad). At 0:48 Nuno’s turn is overlapped by Fabian, who reinitiates his previous sentence turning his torso and gazing at Fabian and saying in English “No but I was just telling them to talk about it” as if defending an action taken by him previously (figure 4.23.4) (language use)(disagreement)(task-completion orientation). Fabian uses an arm-waving gesture to emphasize his disagreement (multimodal turn).

Nerea stands up and crosses the circle to approach Nuno (figure 4.23.4) (movement). At 0:51 Nuno with a rising intonation and looking directly at him, says to Curiel “*Ya/ porque + vosotros tenéis que hablar yo no:!*” (“well because + you have to talk me

no:/'") in response to Curiel's comment; which was seemingly a complaint about Fabian's actions. Curiel is moving behind the circle at that moment (movement). Nuno continues with an unfinished sentence "**yo os tenéis yo/ os tenéis yo**" ("I you have to I/ you have to I") During this speech turn Nuno moves from his place to the corner, followed by Nerea (movement).

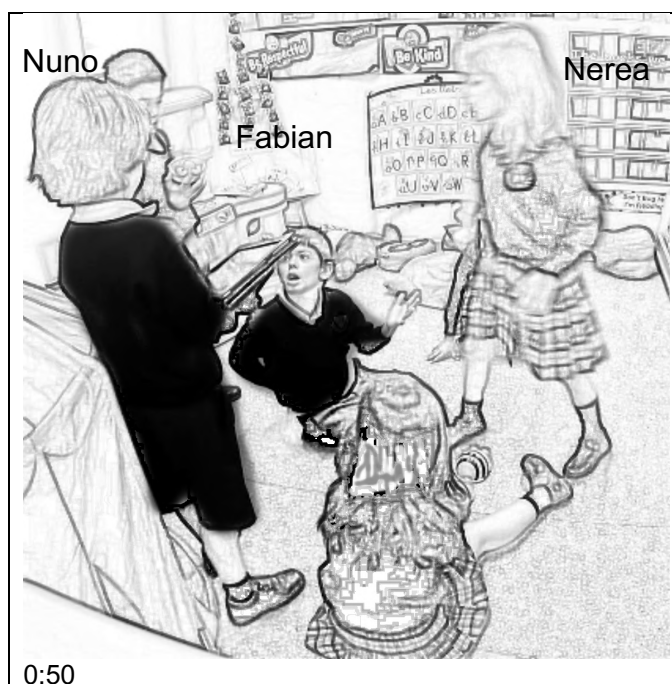


Figure 4.23.4) Fabian's gesture at 0:50

At, 0:59 Nerea and Nuno are standing in a dyad and the rest of the preschoolers are sitting down with the Beebots (participation framework: dyad). At 0:59, Nerea standing very close to Nuno tells him, in English (except the last words), "for help you have to *** you you you show it to Miss Nathaly, **sí mira** (yes look)" referring to the iPad (figure 4.23.5a) (language use)(collaborative social order: co-regulation). Nerea uses her finger to point while waving her hand in irregular circular movements during the speech turn, (multimodal sign). Nerea points at the other side of the working circle when referring to 'Miss Nathaly' (figure 4.23.5b). At 1:15 Nuno replies to Nerea "***** es que si no *****" ("*** If not ***") turning his head and directing his gaze to her at 1:18 (figure 4.23.5c).



Figure 4.23.5) a) Nerea articulating “you”. b) Nerea articulating “Nathaly”. c) Nerea articulating “no”

From 1:19 to 1:31 there is silence in Nuno and Nerea’s dyad. Nuno navigates the apps on the iPad and Nerea looks fixedly at it and pays close attention to the screen. At 1:31, Nerea addresses Nuno: “*Però ha dit que facis fotos amb això*” (“*but she said that you had to do the picture with this*”) pointing at the camera app on the iPad screen (figure 4.23.6a) (co-regulation)(task-completion orientation). At 1:37, Nuno turns the iPad around looking at the camera on the back of the iPad and then turns it again so the screen is face up again (figure 4.23.6b). At 1:37 Nerea, just as Nuno has turned the iPad back to its initial position, states “*Ai espera espera Nuno ++ ara sí ja pots ++ veus*” (“*Hey/ wait wait Nuno ++ now/ yes you can, you will can + see/*”) (figure 4.23.6b). Nerea looks closely at the cover of the iPad and moves the cover that is blocking the camera eye. At 1:44, the camera functions and Nuno giggles and shakes gently his head (figure 4.23.7a/b).



Figure 4.23.6) a) Nerea pointing and saying “with this” b) Nuno observing the back camera of the iPad

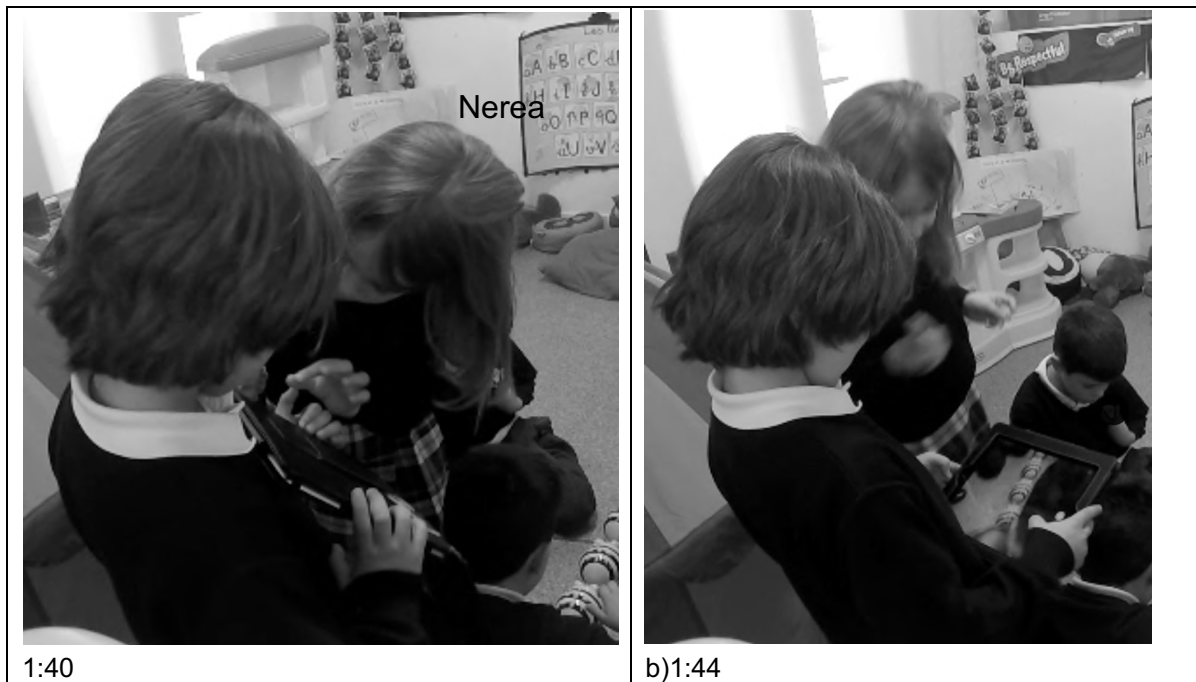


Figure 4.23.7) a) Nerea pointing at the cover on the camera eye. b) Nuno and the camera of the iPad working

At 1:50 Nuno and Nerea start walking around the circle leaving their position at the corner (movement). At 1:55 Fabian, sitting in the circle subgroup says to the group “Ok/ I think we are ready” in relation to the Beebots being in position to start the train movement (language use). At 1:56 (figure 4.23.8a) Nuno is standing outside the circle with the iPad and Nerea is standing in the circle with the rest of the preschoolers; all the preschoolers are in a whole-group interaction (movement). At 1:59, Nerea directs herself to Sofia, with a gesture of open palms to emphasize the interrogative status of her interaction and asks her “*El meu quin és Sofia!*” (“*Which one is mine Sofia!*”) (figure 4.23.8b) (multimodal sign)(task-completion orientation). At 2:01, Sofia replies to Nerea “*aquest*” (“*this one*”) pointing at the second Beebot of the line. (multimodal turn) (task-completion orientation) At 2:02 Nuno, uses his elbow to gently push Nerea to make room for him to record (figure 4.23.9), commenting “*please/ please!*” (multimodal turn)(language use)(physical contact).



Figure 4.23.8) a) Interaction group at 1:56. b) Nerea's gesture at 1:59 "which one is mine"



Figure 4.23.9) Nuno gently pushing Nerea.

At 2:04, Curiel hurts himself with the toys behind him and cries out "**Au Au que me he dao* en la espalda**" ("Ouch ouch I hurt my back"). At 2:08 Sofia, pointing at the 'go' key of one Beebot tells Fabian: "**va/ Fabia:n!**" ("come on/ Fabia:n!") signaling that it is time for him to be ready to click the 'go' key (Figure 4.23.10a). At 2:09 Curiel, overlapping Sofia's last word, says to everyone: "**Que hay que conduci:r!**" ("that we have to dri::ve/) (task-completion orientation: co-regulation). At 2:11 Nuno placing his hand on Fabian's head to move it to ensure visibility in the recording gets ready to

record (figure 4.23.10b) (physical contact). At 2:18 the Preschoolers click the ‘go’ key and the Beebots move. At 2:20 the preschoolers move and start shouting and laughing (movement). At 2:24. Fabian picks up his Beebot which has followed another path and checks its base. At 2:33, Curiel cries out “**La mia se va aquí ah:::**” (“*mine/ goes there/ ah:::*”) making reference to the path of his Beebot.



Figure 4.23.10) a) Sofia pointing at the ‘go’ key for Fabian. b) Nuno’s hand on Fabian’s head

4.23.2 Discussion

The task from which this episode is taken was designed for promoting target language use and developing coding skills along with critical thinking, decision-making and problem-solving skills. In this short episode the actions that are highlighted respond to: a) the use of the target language as triggered by the collaborative social order and co-regulation stance; b) the use of multimodal signs and turns to accomplish communicative interests and needs.

The first feature to be noted is that the working group seems to be aware that talking is part of the process of accomplishing the task. The teacher makes reference to the need to “talk about it” at different moments in the corpora of the research. However, in this episode it is visible how two preschoolers make evident that ‘talking about it’ is an expectation.

At 0:20 The teacher gives instructions to Nuno who is assigned the role of 'teacher'. The teacher makes it clear to him that one of his responsibilities as a teacher is to "tell them to work together to use English". At this point there is no explicit mention of the need to talk but rather the instruction is limited to the use of the target language. At 0:48, Fabian engages in a discussion between Nuno and Curiel and says to Nuno, in English, "No but I was just telling them to talk about it". This utterance brings 'talk about it' into the discourse and introduces it as part of the collaborative social order and co-regulation stance. At 0:51 Nuno tells Curiel: "well you have to talk me no:/" with an intense rising intonation. The pronunciation of 'no' seemingly is an answer to Curiel's complaint. These two speech turns make evident that 'talk' during the task is an expectation and thus part of the collaborative social order.

Fabian, seems to be adopting a role of leader (he has played the 'narrator' role previously, refer to episode 4.21) by making available to the preschoolers what is expected of them "(...) I was just telling them to talk about it". Furthermore at 1:55, Fabian promotes the initiation of the Beebots movement "ok/ I think we are ready" and he does so in English. Hence it seems that he is taking a role of responsibility and his comment " (...) I was just telling them to talk about it" gains relevance as it appears to be uttered from a self-selected responsibility position and could thus be an underlying reason for the use of English in two of his speech turns.

Another key point to note is the use of English during the episode in general. The speech turns from 0:01 to 0:20, when the teacher is present, are made in English. Fabian, Nuno and Nerea engage in the interaction and do so in English. It is worth highlighting that the preschoolers seem to be aware of the pedagogic intention of the teacher as they communicate in the target language in her presence. Furthermore, Nerea gazes at the camera, as if establishing eye contact with it, at 0:14 for two seconds, and interestingly at 0.16 Nerea addresses Nuno in English. It seems that the camera promotes the use of English. It was included by the teacher as an element in the task: "telling the camera now we are doing this because of this" so it becomes part of the collaborative social order (refer to episode 4.21). At 0:59, Nerea moves from the working circle subgroup and stands next to Nuno and gazing at the iPad in Nuno's hand rephrases part of the teacher's instruction to him, "for help you

have to *** you you you show it to Miss Nathaly”. Nerea has three more speech turns after this one but she uses Catalan. It seems that when the teacher is present Nerea uses English as well as when she acknowledges the camera. It is also visible how she makes an effort to use the target language although it is not always maintained. These incidents evidence a language exploration trigger in which Nerea engages in a potentially transformative engagement through her effort to use the target language which in turn promotes Nuno’s engagement with the target language, visible through his interaction with her, thus it becomes a potentially transformative engagement for both. We can also observe how Nuno, the appointed teacher, uses the target language when the teacher is present and before starting to record the video, as he does at 2:02 “please/ please/”. It is worth highlighting that of the eight speech turns that take place after the teacher leaves the working space three are in English.

In conclusion, the task frame ‘use English’, given by the teacher, seems to promote, to a limited extent, the use of English even when she is not present. The issue of how and when to use the target language, although limited, is in itself a language exploration engagement that is potentially transformative. It is visible in this language-related episode how some preschoolers use the target language not only when directing themselves to the teacher or in her presence but when they direct themselves to others in the presence of the student-teacher or the camera.

Synopsis: Visible in this short language-related episode: the **collaborative social order** in preschoolers’ peer interaction through displays of **task-completion orientation** and; self-motivated **movement** around the working space to interact with subgroups or to accomplish the task and; the use of **physical contact** as a communicative resource. The visible language exploration triggers are engagement with the task that generates **activate participation**; **disagreement** with other’s actions and **co-regulation** of such actions, at points managed through the use of the **target language** and; the use of **multimodal** turns as a communicative resource. The language features, aspects and actions explored and thus the potentially transformative language-related points evident are; **language use** and **co-construction** of the teachers’ instruction.

CHAPTER 5 – FINAL DISCUSSION

In this section we will see the discussion of the 23 episodes as a cohort in which the findings are discussed and presented. The findings are organized in three levels (macro, meso and micro) and are explained in detail in different sections.

First, on a macro level, preschoolers' interaction is analyzed by looking at what happens in their peer interaction dynamics, paying specific attention to their movement, their use of physical contact (physicality), their change in participation frameworks, spontaneous play and the classroom social order as well as collaborative social order thereby making visible how these all form part of the nature of preschoolers' peer interaction in autonomous and collaborative language learning tasks.

Secondly, on a meso level, the autonomous and collaborative tasks, supported by iPads and Beebots, are analyzed to identify what triggers language exploration. The meso analysis has shown that without engagement there cannot be triggers as the triggers appear if there is engagement, so if preschoolers engage with elements in the classroom, with others or with what others make available triggers can arise. This reinforces the theory of social interaction as the key foundation for learning. In second place, the triggers for language exploration, seen in this research, are: preschoolers' explicit or non-explicit agreements and disagreements; words, objects or representation of word suggestions to others; repetition of own or other's turn or part of a turn; self-task organization (self-regulation) and task-completion orientation that is often connected to the co-regulation and the collaborative social order.

And lastly, on a micro level, we will discuss the language features, aspects and actions that are explored by the preschoolers. Specifically, the exploration features, aspects and actions that are explored and that point to a potential transformation are: descriptions or definitions offered to others'; the strategic use of the language either for simple key words or for longer utterances usually found accompanied, complemented or completed by turns in the home language; the creative use of the language by offering 'approximations' of words in English that are resourcefully

produced by the preschoolers', based on their understanding of the English norms and the use of language-tests to prove a point made in relation to a language feature; phoneme or grapheme identification in words suggested; the analysis of the representability of a word/concept or idea (or how something in speech can be represented in a digital illustration); suggestion of objects (words) to represent; assessment of letter formation of letters written on the iPad; co-construction of ideas, suggestions, disagreements or agreements; self-corrections or correction of others; and reflections on the implications of the use or not of the target language in the task.

5.1 OVERVIEW

The episodes presented in the previous section have been analyzed as contextually situated moments given that interaction is always unique to a specific time, place and context. This implies that each moment under study cannot be reproduced spontaneously or replicated exactly as it occurred. However, through a close micro-analytical perspective of the set of episodes analyzed and discussed here, it is possible to discern emergent similarities and patterns across the set to draw a broad picture of the **nature of the interaction of preschoolers engaged in autonomous and collaborative language learning tasks supported by technology-enhanced gadgets**.

The analysis has shown that it is possible to conceptualize how preschoolers' peer interactions and language exploration develop in autonomous and collaborative language learning tasks, supported by iPads and Beebots, in particular through patterns of interaction that have been organized in a macro, meso and micro level (figure 5.1). On a macro level, the analysis looks at the **nature of preschoolers' peer interaction dynamics**, which addresses what happens in preschoolers' peer interaction and how it happens. On a meso level, the **triggers that occur in the interaction** are taken into consideration, observing what triggers language exploration and potential transformation in the preschoolers' interaction in autonomous and collaborative language learning tasks as they engage with the iPads and Beebots. On a micro level it is possible to identify the **potentially transformative language exploration** through the documented evidence of **language exploration** found in the data analysis. Given that this is an emic

perspective, drawing on ‘naturalistic data’ which is unique to its situated context, the dynamics and the potentially transformative triggers might differ from other transformative engagement contexts. Furthermore, the potential transformation is clearly influenced by the task’s design hence this third micro level is expected to vary according to the context of study.

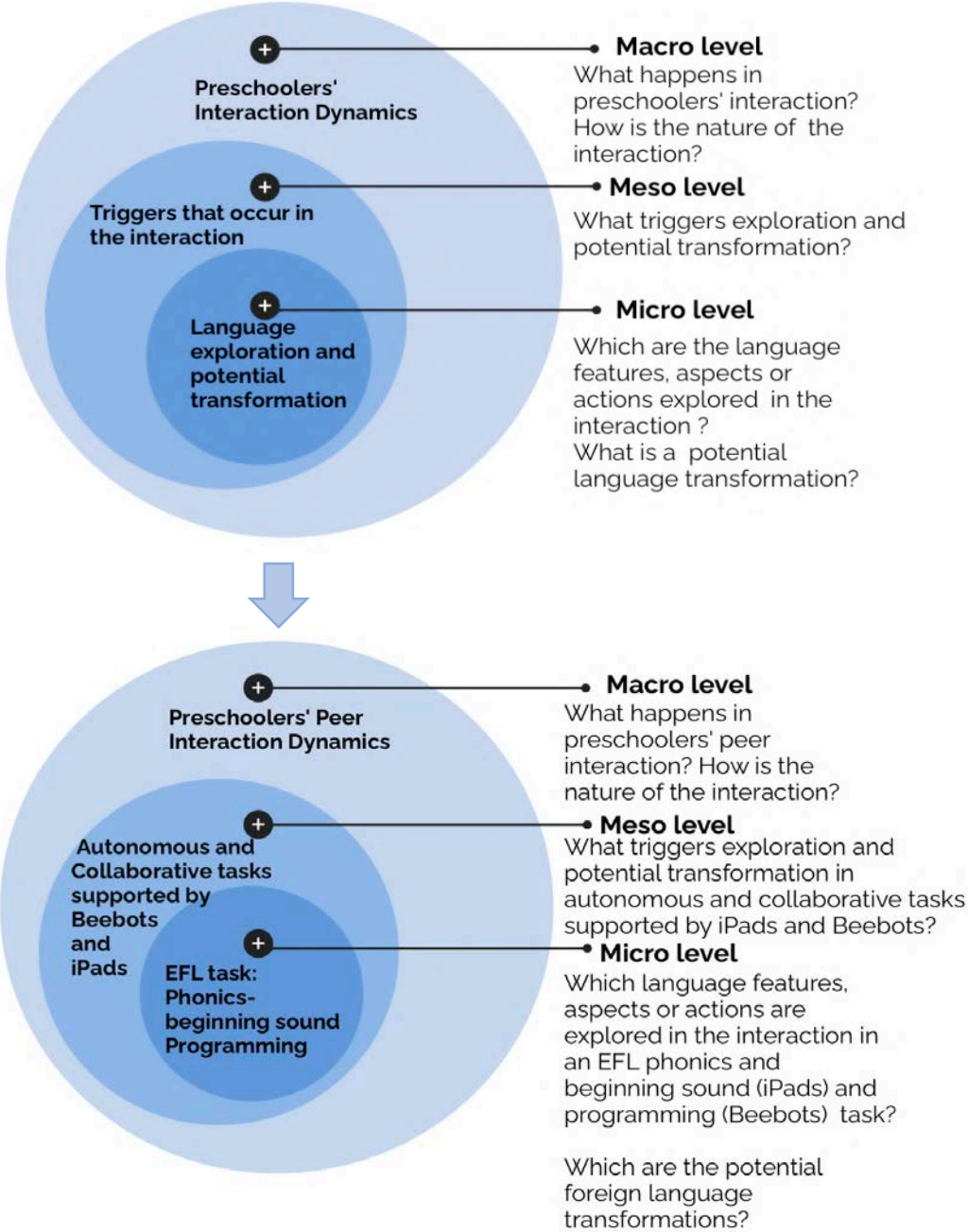


Figure 5.1: Macro, meso and micro levels of analysis of preschoolers' interaction, from a general to a concrete focus.

Figure 5.1 represents the aims and questions of this research, from a more general to a more concrete focus. It also endeavors to highlight that what is analyzed is part of the preschoolers' interaction but is not the only type of interaction that makes up their being: there are different types of interactions such as teacher-student or parent-child at a macro level; different types of tasks such as teacher-led tasks or free-play at a meso level; and various learning areas such as numeracy or science tasks at a micro-level, to give some examples.

In each of these levels different key aspects play an important role. In the following subsections the key findings found in this research, for each level, will be presented and discussed in order to provide a final discussion of all data analysis. Given that each episode has been analyzed and discussed in detail individually this section and its subsections is dedicated to highlight the similarities and patterns in order to uncover general patterns that point to the nature of preschoolers' peer interaction in autonomous and collaborative language learning tasks.

5.2 MACRO-LEVEL: PRESCHOOLERS' PEER INTERACTION DYNAMICS (THE NATURE OF INTERACTION)

At the macro level of **Preschooler's peer interaction dynamics**, the analysis makes visible what happens in preschoolers' peer interaction and how it happens, (figure 5.2) thus making visible **the nature of preschoolers' interaction**. The episodes selected have shown that in preschoolers' peer interaction there is evidence of preschoolers' **movement** in the assigned space, **play** (understood as out-of-task, spontaneous and self-motivated play with toys, other children or objects in the classroom), **physicality** (the use of physical contact towards other preschoolers), changes in the **participation framework** as orientation and engagement with different interaction groups, either whole group or sub-groups. Furthermore, the **classroom social order**, regarded as the implicit rules of behavior co-constructed in social interaction and maintained by the situated experience of preschoolers, is present and can be accounted for as having an influence on the preschoolers' dynamics of interaction. In the following subsections each of these aspects will be further explored.

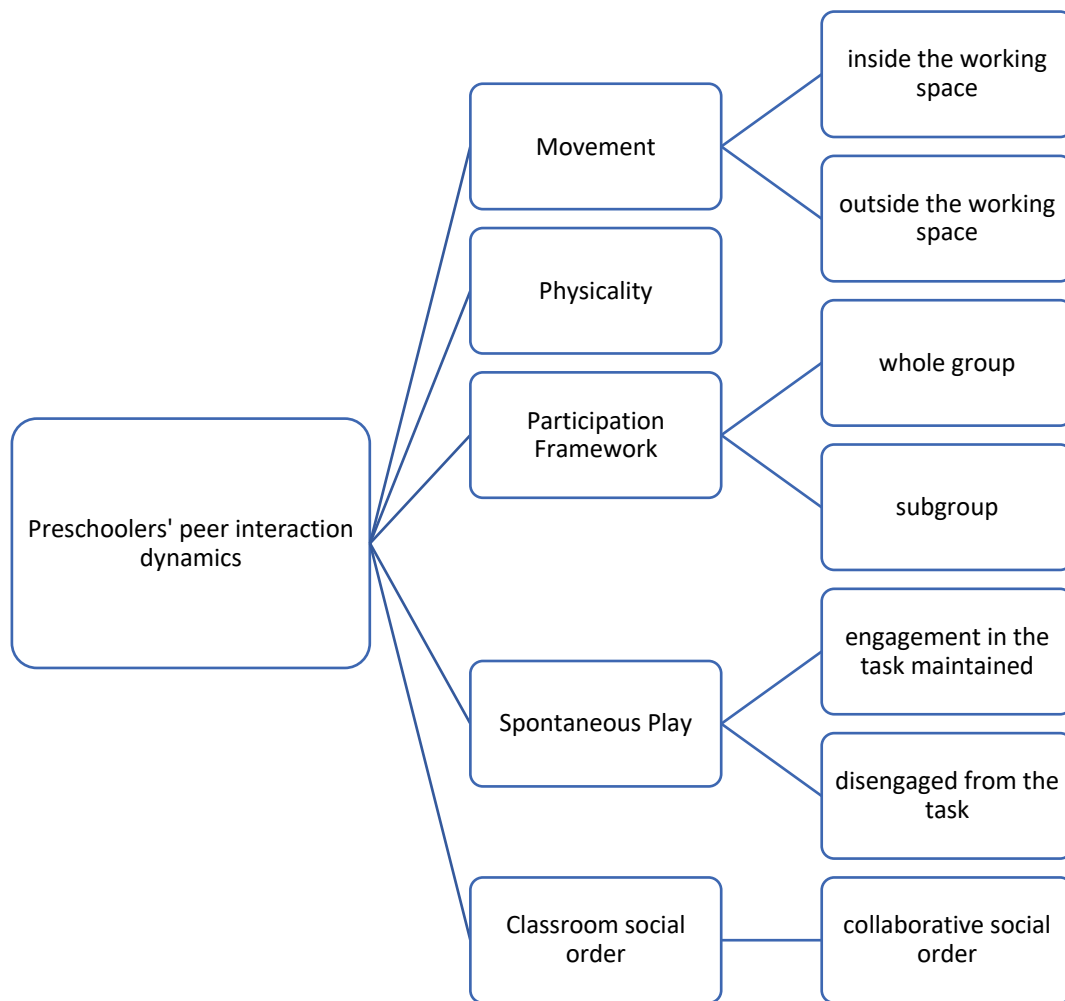


Figure 5.2: Macro level: Preschoolers' peer interaction dynamics

5.2.1 Preschoolers' peer interaction dynamics: movement

In this study, movement refers to the shifting from one position to another or movement from one place to another occurring in the working space during the interaction. This is of particular importance to the subject of this study: preschoolers. This is an age group prone to intense movement during their interactions in the classroom. The movement registered is the movement that occurs inside the working area but there is evidence of preschoolers leaving or entering the working space as well. In figure 5.3, the limitations of the recorded space are described. The movement that does not occur inside the working space is not analyzed as it is beyond the scope of this research.

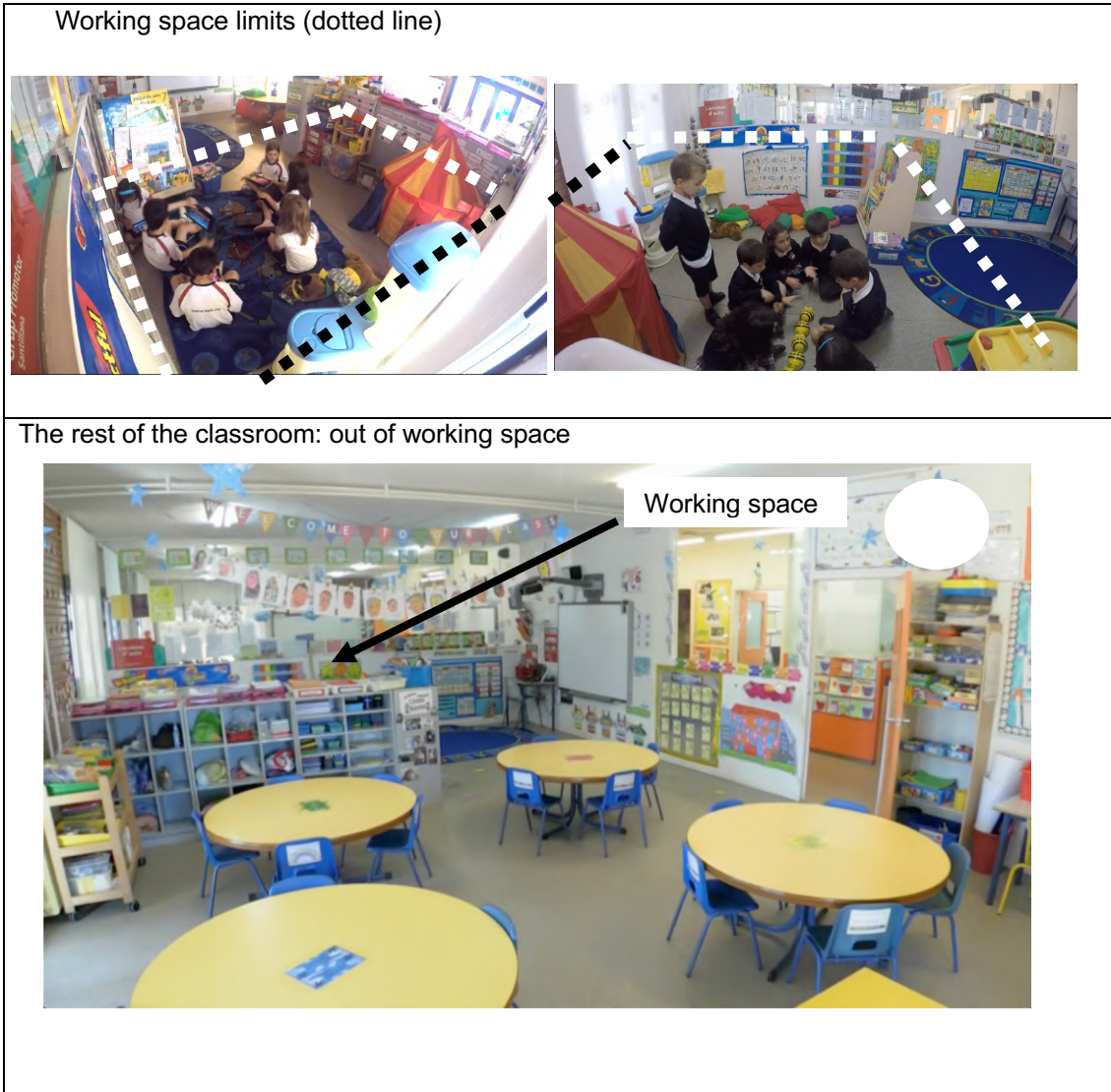


Figure 5.3. Working space and out of working space area.

In the episodes analyzed, the preschoolers' movement, as well as the teacher's, were identified and described. The analysis demonstrates that preschoolers **move around the space** and **change their position** in the working space in relation to their **focus of attention** and **invested interests** in the interaction. This movement may be limited to a body torque or gaze turn or even extended to include walking, standing up or even playing. This type of movement is common in all of the interactions and has been observed throughout the different sessions and groups (for the most salient examples refer to episodes: 4.3, 4.4, 4.6, 4.9 4.10, 4.11, 4.12, 4.21, 4.23,)

The analysis indicates that the preschoolers move around the working space to play with the toy kitchen, to play inside the tent, to play around the working group, to play in the working space or to just move about playfully. Some of the evidences of movement are not related to potential language transformation but they occur at the episode being analyzed and serve to illustrate that while the movement at times might be an interference, it does **not always interfere with the preschoolers' orientation to task**. In fact, the evidence shows that preschoolers are **inclined to move and play** even during the task process. One of the characteristics observed is that **movement is dynamic**: it is short in duration, occurs at various moments in the session (and the episode) and most preschoolers move at some point during the task. However, it has to be noted that some preschoolers tend to be more active in terms of movement than others, thus demonstrating that there are individual preferences related to movement.

To illustrate some of the findings, for example, figure 5.4, is one of the multiple instances of substantiation found in the extracts, in which a preschooler moves while **maintaining a potentially transformative language exploration**, thus not interfering with the preschooler's orientation to the task. In this case the preschooler moves around the working space but manages to use the target language while interacting with the preschooler that is managing the iPad. In figure 5.5, to show another example, **all the group moves** but the orientation to the task is maintained. In this example, the preschooler hopping and singing around the circle of other preschoolers is singing the letter sound she is planning on doing in her turn, while the group organized in a circle formation is mutually oriented to the iPad screen and another preschooler is pointing at the whiteboard with all the letter sounds. Hence, although **chaotic in appearance**, and at first appearance seemingly off task, all the preschoolers are actually on task.

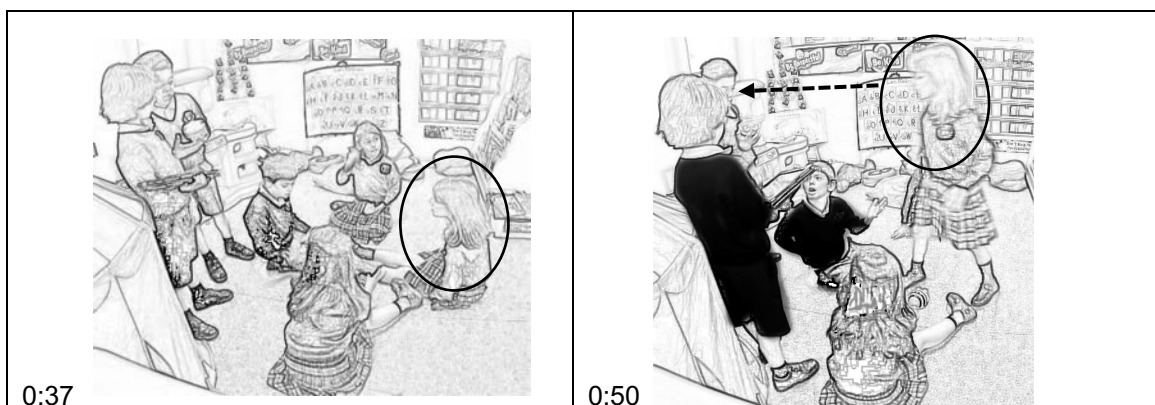


Figure 5.4: Preschoolers moving across the working circle to join another preschooler (episode: 4.23 and 4.6).

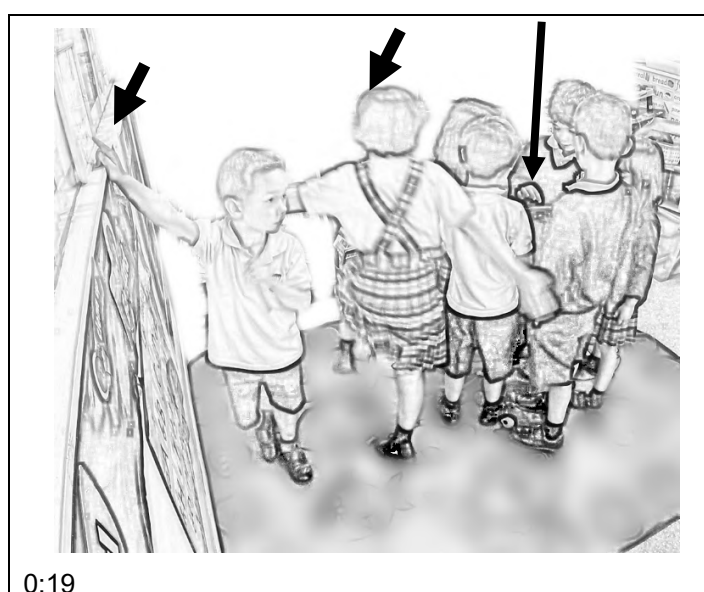


Figure 5.5: The working group moving dynamically: standing in front of the whiteboard; hopping and singing (task-related) around the working interaction group.

It has also been observed that preschoolers move around the working space to **use the visual elements and the materials** available in the working space. The analysis pinpoints, for instance, how the preschoolers use the Catalan ABC poster, the displays on the wall, the whiteboard with the letter sounds and the bookshelf as resources to help accomplish the task. As can be seen, in one of the examples (figure 5.6), a preschooler makes use of the display on the wall, a set of classroom rules written in English, and draws other preschoolers' attention to the display. In the same episode she is seen making use of the classroom library and other preschoolers also make use of books during the task. Thus, her movement in space is oriented to the task completion and seems related to **self-directed collaborative**

learning, in which, as Dooly (2008) argues, the responsibility of learning is shifted to the learner as part of the collaboration.



Figure 5.6) preschoolers engaging with the ABC poster, books and the bookshelf (episode: 4.14)

As for the teacher, she is seen as a **model of dynamic movement**. She **enters and leaves** the working space for very short periods of time, making use of **gestures and body movement** (body torque and bending) at various points during the task. Such movement presents no discernible pattern except for usually interceding with **brief interventions** related to the accomplishment of the task. There are not many examples of the teacher in the corpus as the research interest is on autonomous tasks, without adult presence (refer to episodes: 4.1, 4.14, 4.16). However, as can be seen in figure 5.7, in one of the examples that includes the teacher, she is in the working space and at some point, bends towards one preschooler, points at her and leaves soon after.

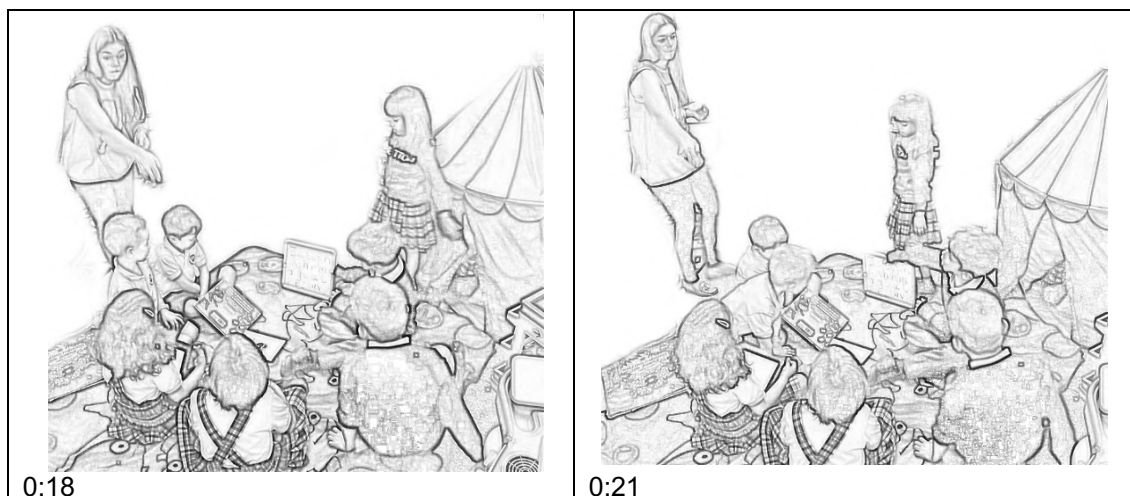


Figure 5.7: Teacher entering the working space for a brief space of time and giving brief instructions and leaving “say it/ up/ + beautiful up/ up/ ++ come on up/” She bends down during the instruction. (episode 4.16)

The **social moral order of the classroom** (to be further explained in another subsection) seems to **influence the movement** of some preschoolers during the task interaction. For instance, there is evidence that the selection of the adult teacher of a “narrator” for the iPad task, and a (student)“teacher” for the Beebots task, influences motivated movement from the appointed teacher and appointed narrator and from the other preschoolers that want to interact with these appointed preschoolers according to their given role. For example, Figure 5.8a, makes visible that the appointed narrator moves around the space to get closer to the camera and narrate to it what is happening during the task. This takes place in various episodes (refer to episodes: 4.1, 4.21). Similarly, figure 5.8 b/c presents evidence of the appointed teacher moving around the working space to find a better angle to take pictures or record videos. This movement makes visible instances of preschoolers moving around the space as part of the interaction dynamics. It also demonstrates their awareness of and reaction to the camera angle requirements (which is placed high up in a corner of the working space) both when recording and when being recorded as the narrator. The research indicates that preschoolers seem to have knowledge, to a certain extent, of the affordances of the camera (digital technology) and the iPad as a gadget with an incorporated camera (refer to episodes: 4.22, 4.23).

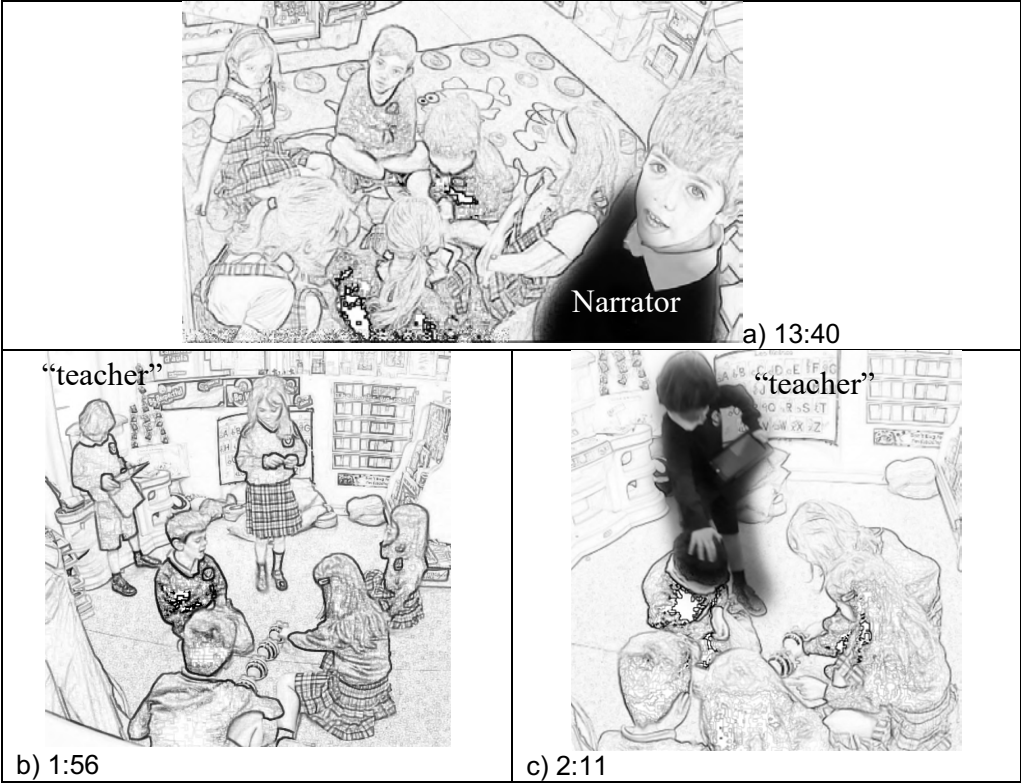


Figure 5.8) Preschoolers moving from his position to a position with a better angle to record a video.

The episodes establish that preschoolers move dynamically around the working space according to their intentions. It is interesting to note that, although there are instances of out-of-task movement, movement on the whole is far from being an obstacle to collaborate; it seems to **respond to fulfilling an interest related to the task** and to stay on task. This is salient as most of the instances of movement point to its **strategic use**.

5.2.2 Preschoolers' peer interaction dynamics: Physicality

In this research, **physicality** is used to refer to the action of **using physical contact** during the interaction as part of the **communicative intention**. It has been suggested that young children's use of physical contact, directed to other children in interaction, is related to their engagement skills, developmental needs and **cultural context** (what is considered to be appropriate in the child's context) (Fleck & Chavajay, 2009). It has been observed that 5 year-old preschoolers' social, verbal and communicative skills can be sufficiently developed to allow them to gradually use less physical contact during their communicative actions although physicality is still very present at that young age (Johnson, 2000; Lindon, 2003).

In this research, it has been observed how preschoolers use physical contact to **request someone's attention** if other modes, such as speech, have not oriented the other preschooler to her or him (figure 5.9). The use of physical contact as a marker of **emphasis in disagreement** is also evident. Furthermore, the use of physical contact is also related to the need to **get closer** to something in the working space, for instance the **iPad**, or to **someone** (refer to episodes: 4.6, 4.8, 4.15, 4.12, 4.17, 4.23).

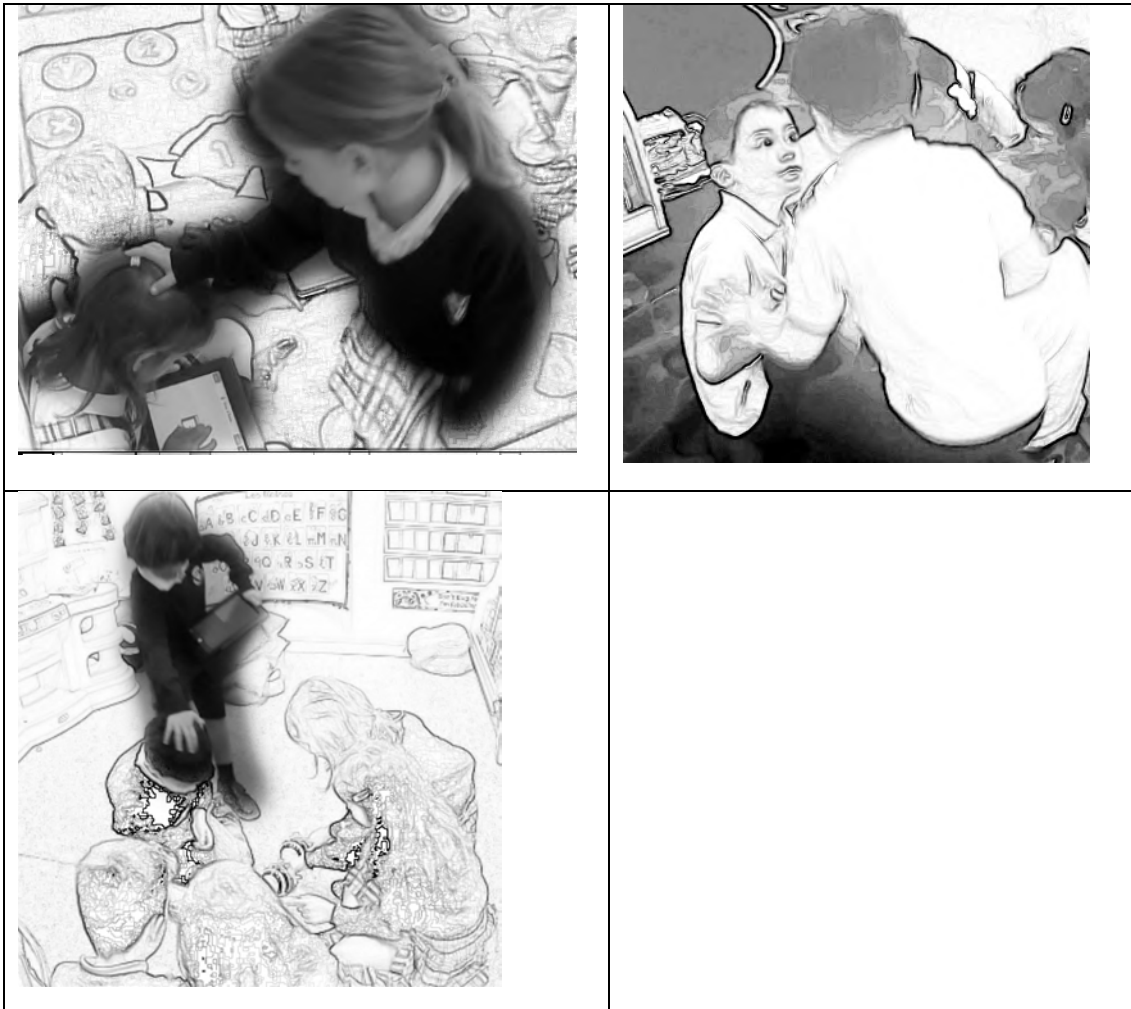


Figure 5.9) A preschooler using physical contact as a communicative act. (episode:4.6, 4.12, 4.23)

It is interesting to observe that **physical contact and closeness** seems to be **accepted in the interaction as natural**. It is also relevant that physical contact is seen in various occasions during and **as part of the interaction** thus the relevance to include it in a subsection. Also, physical contact has been regularly observed when other modes, previously used, have not fully served the preschoolers' **communicative intention**.

5.2.3 Preschoolers' peer interaction dynamics: Participation Framework

In the research framework a subsection was dedicated to **participation framework** which is the "alignment we take up to ourselves and the others present as expressed in the way we manage the production and reception of an utterance" (Goffman, 1981 p.128). Goffman's participation framework was defined with adult's interaction and thus generally applied to subjects that have already assimilated social norms of turn

taking and sequentiality. However, this is not the case for very young learners thus the need to adapt the theory to very young learners' peer interaction, from a multimodal perspective, and to these research findings. The results are a significant contribution in this area of study as research around multimodal participation frameworks in child language literature is scarce (Cobelas Cartagena & Prego-Vázquez, 2019).

In this sense, this research focuses on how preschoolers' show **orientation to different interaction (sub)groups** and how this orientation is **self-motivated and energetic** (group is understood as the whole group, interacting in the task, and subgroup as any subgroup from the main group). There is no evidence at all in the research *corpus* of unratified participants. This is evident as preschoolers' gaze orientation; bodily orientation or speech turn's addressee serve to make evident the preschoolers' engagement and thus where their attention is placed and which interaction subgroup they are joining if they are joining any. Crichton (2013) argues that Goffman's "unratified participants" such as "overhearer" and "bystander" concepts are problematic in analyzing classroom discourse as learners might be **engaging actively by listening** in an interaction although not contributing through speech to it. In this research this argument is corroborated, and it is furthermore argued that **preschoolers engage**, apart from active listening, **through various modes** such as, but not limited to, **gaze, position in space, body posture**. This further substantiates that the concept of *unratified* participant is problematic in this context. Larson (1996), in a study with preschoolers carrying out a writing activity found that a preschooler's writing competence is positively influenced by her role as an "active overhearer" during the teacher's instruction to another preschooler (p.148). From our perspective, such preschooler would be recognized as a *ratified participant*; one that does not engage with speech but with gaze and body posture. In this sense, this stance supports Larson's aim: "this reconceptualization of classroom language practices attempts to disrupt monolithic definition of literacy by challenging the sanctity of dyadic (T/S) interaction in classrooms" (Larson, 1996 p.217). However, our study takes a further step of regarding the preschooler from a more **active and self-motivated** stance in which participating and **engaging through other modes and not only speech is also ratified**.

The preschoolers swap **quickly and fluidly** from interaction subgroup to interaction subgroup, joining in and leaving the discussions **freely and seemingly randomly**. In this sense, as Goodwin (1996) argues “A speaker can quickly and powerfully change the social organization of the moment by shifting to a (...) new participation framework and thus reorganizing how those present are aligned to each other” (pp.374-375). However, as our micro-analysis endeavors to underscore, the young learners’ interactions are not as random as they might appear at first glance and close observation affords insight into emergent patterns of participation. One of the principle characteristics of the interaction is that preschoolers are always **ratified participants** even though they might **incorporate into a discussion at different points** and **without any evident prefacing** or attempts to gain the other recipients’ attention in order to enter into the interactional space.

In this sense, it has been observed that preschoolers engage interaction groups or subgroups **according to their interests** which change in time very quickly. The interest can be generated by the **preschooler** herself or by the **action of another preschooler**. The participation framework is negotiated during and through the interaction by the use of various modes (Cobelas & Prego-Vázquez, 2019). In the episodes analyzed this interest is often related to language exploration or task-completion orientation given that the episodes were selected to analyze language exploration (refer to episodes: 4.1, 4.2, 4.6, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.20, 4.22, 4.23).

For example, in figure 5.10a, in the same episode it is visible how starting at 0:00 the group is divided in three different interaction subgroups, all separated in space. At 0:17, the three subgroups join in whole group interaction (figure 5.10.b). This action is triggered by the interest of the preschoolers on the object that the iPad manager is going to draw on the iPad. There are no rejections nor objections to the various shifts that occur from 0:00 to 0:17 (refer to the episode 4.6). Cekaite (2016), in a study of teacher-student interaction aiming to observe the use of touch to manage and control children’s participation, argues that in a participation framework in which more than two participants share the interactional space, touch and other modes can be used by adults to exclude participants, thus treating them as unratified participants.

However, in this study of preschoolers' peer interaction, touch nor closeness has been used by the preschoolers to exclude other preschoolers from the participation framework. For example, in figure 5.10b, the closeness of three preschoolers is not a barrier to other preschoolers to join the interaction as these join through gaze, position in space and body orientation.

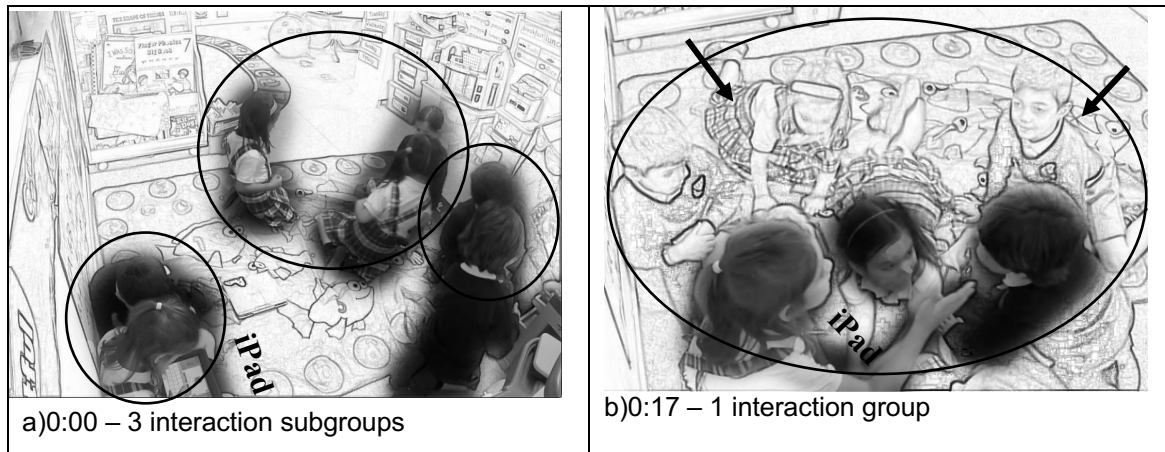


Figure 5.10a + 5:10b: Three interaction subgroups and one interaction subgroup; the dynamic movement generated in 17 seconds is triggered by the interest of the preschoolers on the object chosen for representation (episode 4.6).

Figure 5.11 is another example in which five preschoolers are sitting in a circle formation very close together and two preschoolers are standing outside the circle, however the two preschoolers standing participate actively through speech mode (refer to the episode 4.5).

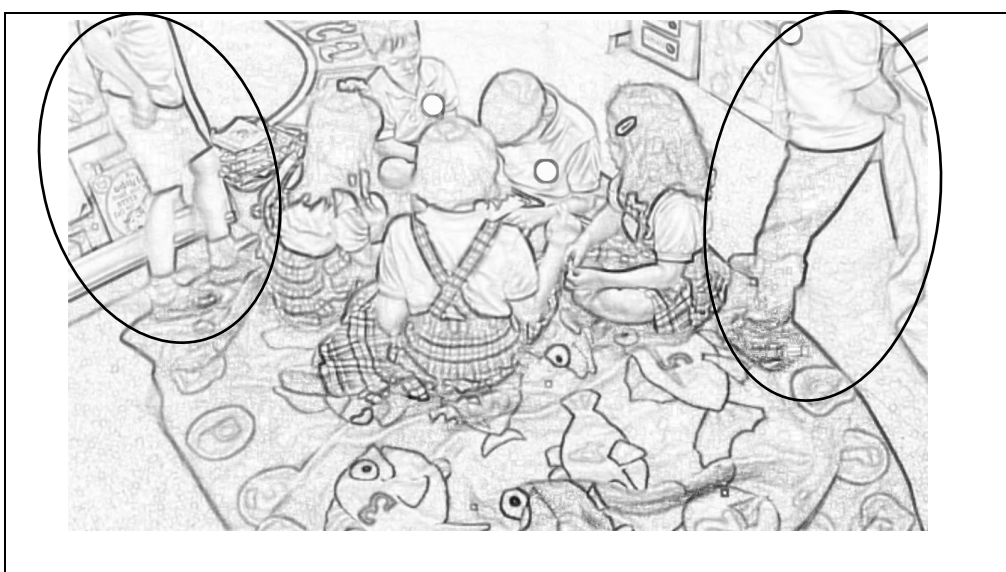


Figure 5.11. All the preschoolers engaged in a multiparty interaction around the iPad at 0:18 (episode: 4.5)

It has also been observed that preschoolers engage in **smaller interaction subgroups**, such as dyads or triads, according to their needs for **more intimate interaction**. These interactions seem to attend to **alliances** that seek to share more closely: play; playfulness; suggestions or request of help. These **alliances transform** in accordance with the development of the situation that is being dealt with (Maynard, 1985, 1986). The example in figure 5.12a presents a preschooler dyad in which one preschooler is requesting help, and 5.12b, a dyad in which the iPad manager engages with a suggestion made by the other preschooler.

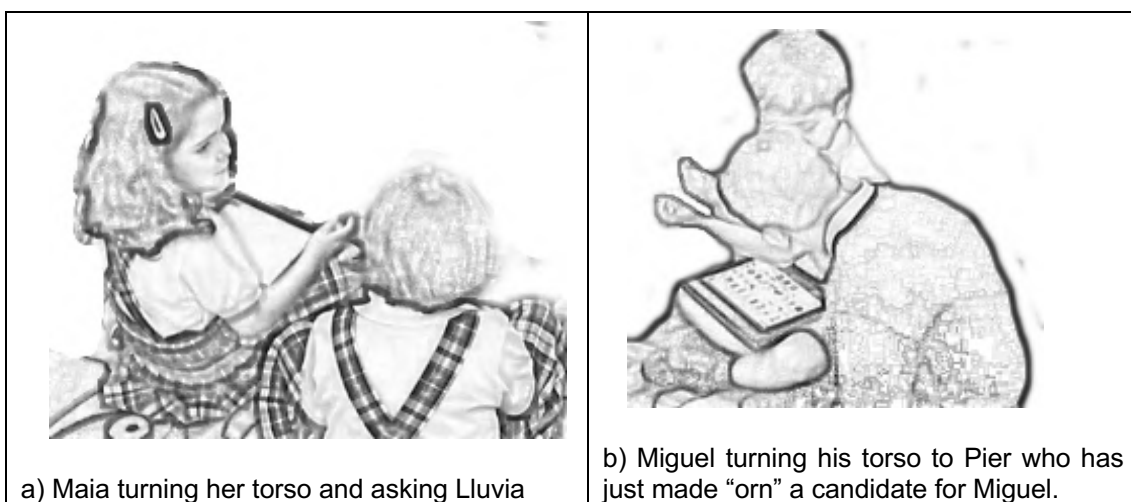


Figure 5.12a/5.12b) Two different dyads in which preschoolers engage in smaller interaction subgroups (episode 4.16).

There is evidence of multiparty interaction generated around the iPad screen and the iPad manager, thus presenting a **mutual orientation** towards the artefact as seen in the example in figure 5.11. Mutual orientation, as Mondada (2009) describes, is understood as a **common focus of attention**. In this case the iPad screen activity is the mutual focus of attention. The preschoolers create an interactional space through the use of their bodies and semiotic resources (gaze, gesture, body posture, position in space) in order to become **co-participants in the joint action** of the observation of the iPad's screen (Mondada, 2009). Goodwin (2007) refers to this as an alignment of the participants through their body posture and position in space that frames the interaction, creating a **joint attention** by which the different participants attend to the same object (refer to episodes: 4.2, 4.5, 4.6, 4.8, 4.10, 4.14, 4.15, 4.16, 4.23). This demonstrates that on the one hand the size of the iPad seems not to be an obstacle for multiparty interaction and on the other it seems that it acts as the epicenter of the

interaction, triggering **mutual orientation towards the iPad screen**. There are no instances of whole group interactions that last the whole episode.

Furthermore, it has been observed that **social moral orders** influence the interaction. On the one hand, when the teacher appears in the working space and directs herself to the preschoolers, she generates a whole group interaction in which preschoolers engage with her through gaze and other modes as in figure 5.13 (refer also to episodes: 4.1, 4.14, 4.16, 4.21, 4.23). As St John and Cromdal (2016) argue, the task's instructions are **complex and organized collaboratively** between the students and the teacher through mutual engagement by which the teacher, through her orientation ,can “**reassemble the students into a single body**” (p.267).

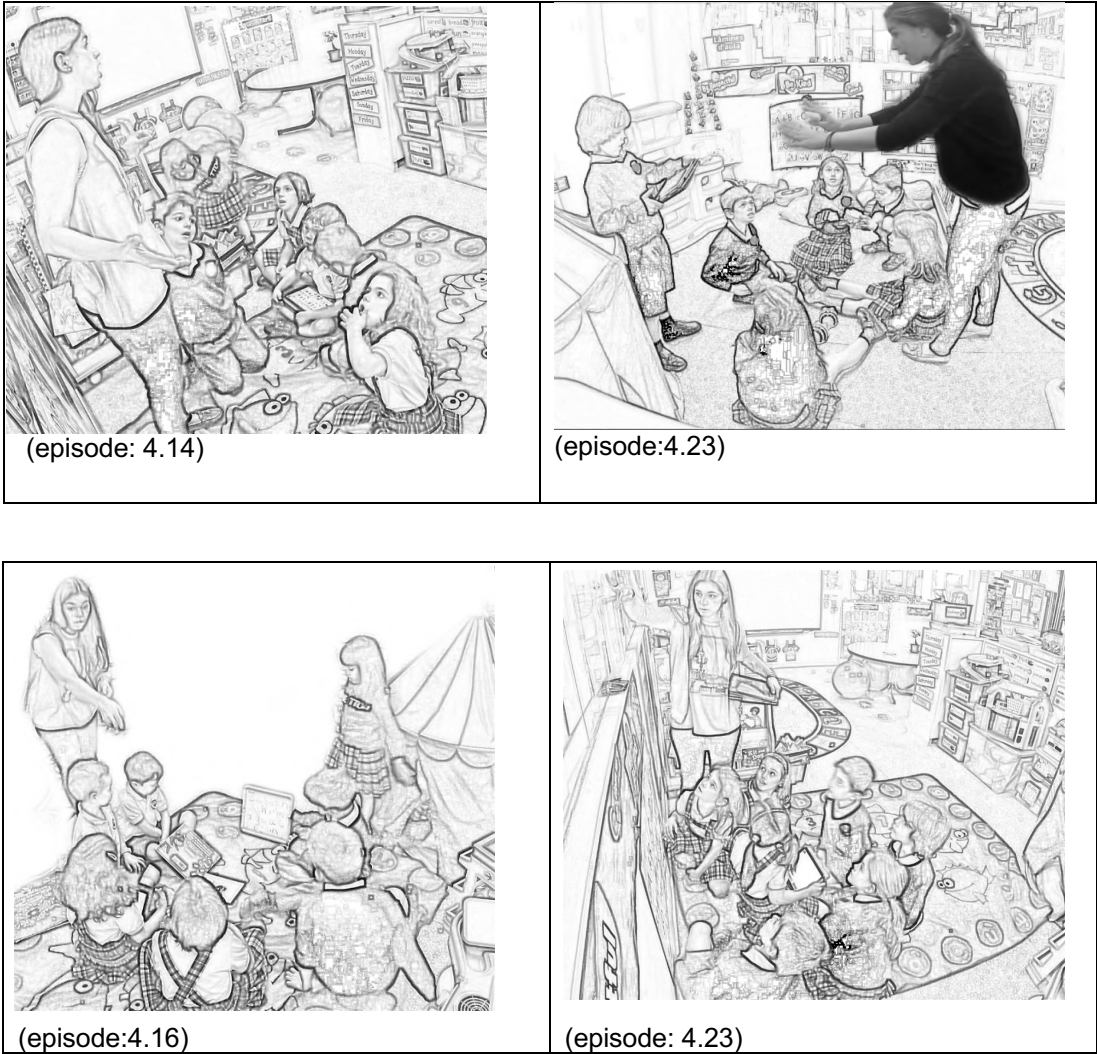


Figure 5.13: The teacher generating a whole group interaction at various points.

On the other hand, it is also interesting to note that the preschoolers appointed as ‘teacher’ or ‘narrator’, by the (adult) teacher, often participate, at specific moments, segregated from the task as seen in figure 5.14. The analysis of “personification of the camera” (episode 4.21) addresses the personification of the camera and shows how the camera narrator segregates himself, at various points during the 15 minutes extract analyzed, to fulfill his role of narrating to the camera. The narrator engages with the camera by self-motivation or reminded by others of his duties (this role was only appointed in one group and one session). As for the role of appointed teacher there is evidence that the role supported the generation of interaction in subgroups in which other preschoolers seem to be drawn to interact with them, because they are exerting the role of teacher (refer to episode 4.22).

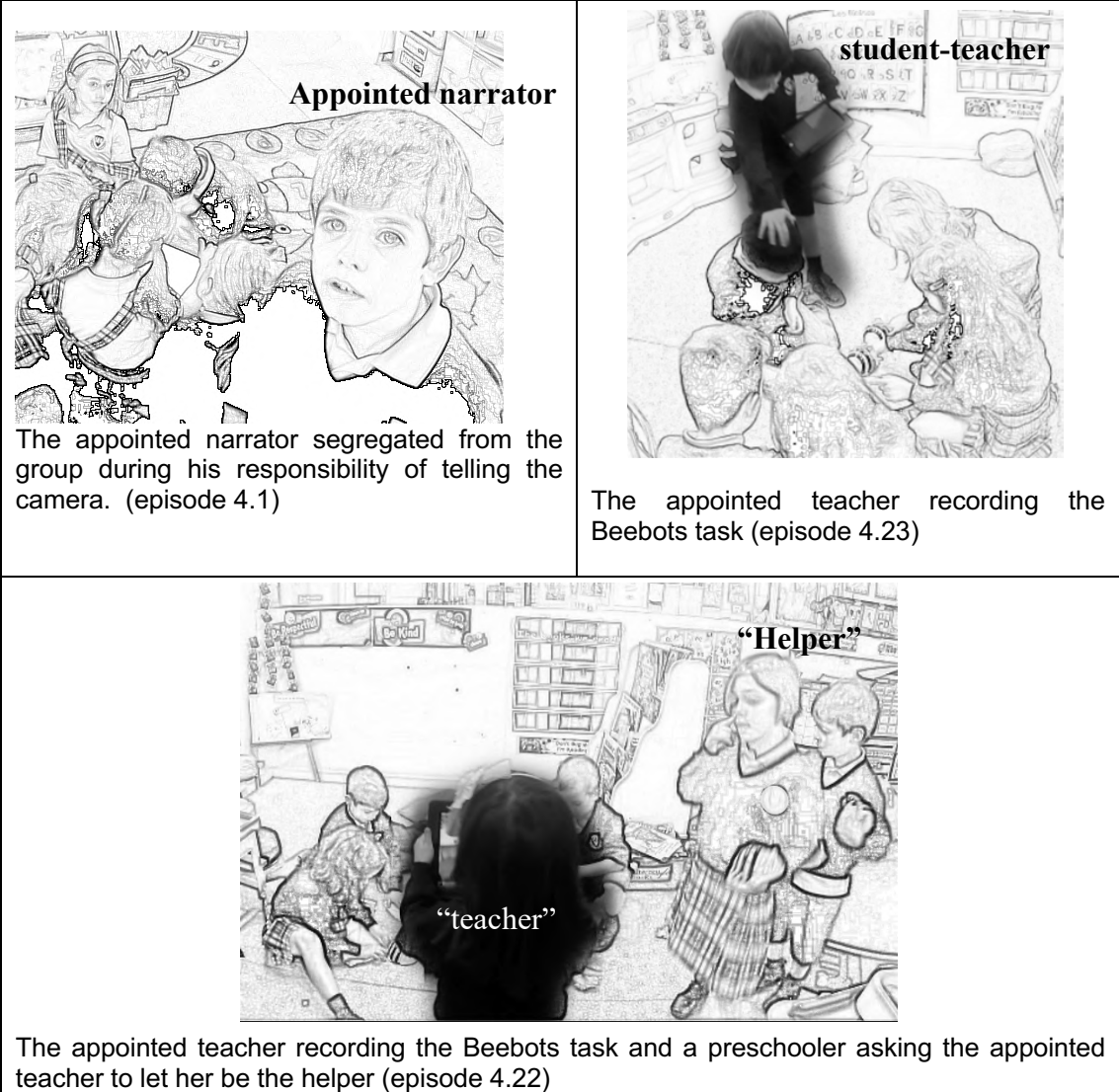


Figure 5.14: classroom social order influencing the interaction in the interaction groups or subgroups

In general, it can be observed that the preschoolers' participation framework is **fluid and very active**. Preschoolers engage in different interaction subgroups, **shifting naturally across subgroups according to their interests**. The changes are accepted by the subgroup and there is no evidence of a preschooler being rejected or expelled from an interaction subgroup. In this sense, Goffman's classification of *unratified* participant has not been found in the episodes analyzed. All the participants were *ratified* and treated as part of the interaction group or subgroup, even if they just suddenly joined in a subgroup. Given that a multimodal approach evidences all the modes in interaction such as gaze, gesture, body posture, position in space, the study allows us to see whether the participant or participants joined in with speech, gaze, body posture or position in space. Moreover, corroborating the arguments made by Cobelas and Prego-Vázquez (2019), a child can initiate an interaction through different modes and be active in such interaction even without the use of speech. This problematizes, as well, the use of Goffman's (1981) concepts of *overhearer* and *bystander*. All the preschoolers that engage through speech are accepted and ratified and the preschoolers that engage through different modes are not rejected; as is evidenced in the way in which preschoolers engage with each other through gaze, body posture or position in space.

Taking all of this into consideration, in this study the use of Goffman's (1981) participation framework has been adapted. Firstly "ratified" and "unratified" participant are problematic concepts, as this binary opposition is not found in our data. What is repeatedly found is that preschoolers are always ratified and that they change from different interaction subgroups fluidly. It is possible that this is a characteristic of the collaborative and autonomous task design of this research in which a **collaborative social order is co-constructed** in which all preschoolers are ratified participants. As Karrebæk (2011) argues, "It depends on one's position within the larger community which position in the participation framework one is being assigned or how one can realize that particular position" (p. 2912). Thus if preschooler's position is that of a **ratified collaborator** from the very initiation of the task, their position in the participation framework will also be ratified. Hence, the participation framework observed in this research on **collaborative** and **autonomous** preschoolers' task points to the **preschoolers' orientation to interaction subgroups or groups** as

being **fluid, self-motivated** and **energetic** and structured by a **collaborative social order** in which all the preschoolers are treated, *always*, as **ratified participants**.

5.2.4 Preschoolers' peer Interaction dynamics: Classroom social order and Collaborative social order

In this study, **social order** is used to refer to the rules or structures known by a community that, although unwritten and implicit, organize social interaction, obligations and duties. Garfinkel's (1967, 1970) ample body of work establishes that social order is constructed in and through action. The members of a community co-construct social order through their interaction and participation in the same community. Thus as vom Lehn argues (2017) "participants momentarily constitute social order, not by assuming that the social world is organized but by producing actions" (p.255). There is a dual relationship in social order: firstly there are structures (or rules), participants abide by; these are the social orders active in their context; and dually, by acting and interacting in accordance to such social order they create and maintain the social order (Sewell, 1992). It is to be expected that if people follow certain social norms these will be maintained but if people reject this same social order, they will eventually be changed. The change can be abrupt or slow but it is through its reproduction in the social practice that it is co-constructed.

In preschools there is also a **social order**. Children learn from a very young age that they go to school to learn, that there is a responsible figure, the **teacher**, that there are rules in the **physical space of the classroom** and that they have **to share the space** and time with other children in various activities, organizations and spaces. This social order is **co-constructed by the preschoolers** and the adults that interact with them and shaped by the context, the classroom, the participants and the school. At the same time, these social norms can also be disrupted, challenged or changed. In a research on preschoolers breaking rules and negotiating moral orders during free play, it was observed that in peer culture children actively transform and challenge the social order of their context and in doing so co-construct new social orders (Karlsson, Hjärne, & Evaldsson, 2017). Preschoolers have been observed to follow, disrupt, challenge and transform adult and social orders (Corsaro, 1997; Kyratzis, 2004; Martin & Evaldsson, 2012).

In this research there is a visible **classroom social order** in which the teacher is seen as the responsible adult and preschoolers recognize this through their actions. The teacher is seen entering the working space for very brief periods of time, usually to give instructions. The instructions of the teacher are engaged with by the children, who orient to her as the responsible figure as seen in Figure 5.15 (also discussed in the previous subsection on participation framework). The instructions of the teacher are usually followed by the preschoolers, thus the **classroom social order** that portrays the teacher as the responsible figure is maintained and enacted throughout the extracts. This position is maintained even when the teacher is not present. For example, when a preschooler brings her in a discussion as an argument in his favor: “**but it has to begin with /o/ and as Miss Nathaly said in a word or senten(ce)**”. The preschooler uses the authority of the highest hierarchically responsible adult in the moral order of the classroom, even when not physically present, to remark the task’s order (as given by the teacher).



Figure 5.15: the teacher giving instructions and preschoolers orienting to her

It has also been observed that some preschoolers engage in a discussion regarding how they interpret the teacher’s perception of the preschoolers’ use or not use of English in the task thus making evident that the preschoolers regard the teacher as not only the responsible adult but the monitor of both the task and the English learning; “*and the teacher we would have to do *** and she would think that we don’t know how to do it in English and besides that that*”; “*No::: that she would be upset a*

bit because because because this class is in English" (refer to episode 4.8). Hence, it is visible how in an episode, preschoolers connect the use of English to the teacher knowing or not knowing that the preschoolers know English. There is also evidence that the English lessons are seen as a frame for the use of English in which the teacher as a responsible adult can get "upset" if this social order is not fulfilled; the **classroom social order** being such that it includes the teacher as a **monitor of English use during English lessons, even at times when she is not physically present.**

The use of English as part of the **classroom social order**, however, is at times challenged and transformed by the preschoolers' actions. In the field notes it is annotated that the teacher asks the preschoolers to use English during the task. Preschoolers are seen **using English in the presence of the teacher.** Indeed, in all the moments in which the teacher is present, the preschoolers use English. However, when the teacher is not present, the preschoolers only use English strategically thus transforming the **classroom social order.** However, the use of English is also enacted by preschoolers when they direct themselves to the "appointed teacher", thereby endorsing the implicit social order. Hence, the **classroom social order** seems to imply that in presence of a "teacher" (either the appointed or the adult) English has to be used but not when she is not present.

The same seems to be the case with the camera. The preschoolers are often seen using English if they direct themselves to the **camera**, which seems to act as an **extension of the teacher** or simply as a figure to which **English** has to be used to talk to. The teacher is seen including the camera in the **classroom social order.** Within this order, the first consideration to note is that the camera is placed higher than the students, so it is out of their reach. Secondly, the teacher appoints a "narrator" in one of the groups and asks him to tell the camera what the group is doing "*Eh:m, Fabian you are in charge of telling the camera now we are doing this because of this and because of that okay*" and encourages a group to talk to the camera "*Can you tell that to the camera*". During the teacher's instruction to include the camera she looks and points at it as if it were a person (refer to episode 4.21). Thus, in the episodes it has been interesting to note that during the task, **the camera**

has been included in the **classroom social order** as a “teacher” or “monitor” as **preschoolers speak in English when they are aware of the camera** and by the way they gaze directly to the eye camera (figure 5.16).



Figure 5.16) The appointed narrator gazing and talking to the camera.

The teacher also appoints a “teacher” during the Beebots task. In one of the episodes the teacher is seen appointing the student-teacher of one group “*Nuno *** you are the teacher*” (refer to episode 4.23). In the other group, while not recorded in the video, this action is made relevant by the comments of the preschoolers and the field notes. It is clear that the role of **appointed teacher** affects the **classroom social order** and the **collaborative social order**. It can be seen, as explained in the previous subsection (participation framework), that the appointed teacher or narrator is observed regularly engaging with her or his responsibility and not with the completion of the task *per se*. We can also observe how some preschoolers orient themselves to “helping” the appointed teacher, self-selecting themselves explicitly or implicitly as helpers and it has also been documented how, during their self-imposed helping duties, they engage with the appointed teacher and not with the task (figure 5.17).

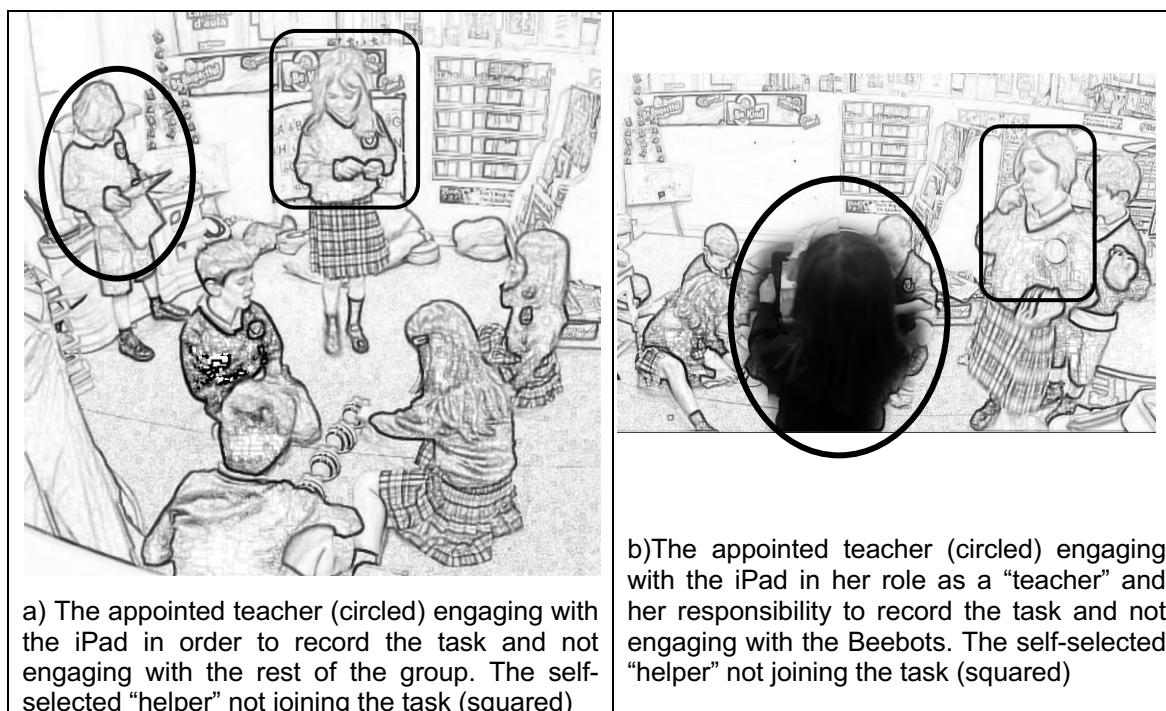


Figure 5.17: a) Group A- episode 4.23 b) Group B- episode 4.22

The teacher is seen, as well, giving the **responsibility of the task's organization to the preschoolers** so instead of taking all control of the task process she relegates to them a monitoring role. Preschoolers orient to and enact this responsibility by constantly suggesting the letter sound they plan on doing next. This and the collaborative and task-completion orientation of the preschoolers suggests that there is not only a **classroom social order** but that during the task a **collaborative social order** is also co-constructed. This seems to corroborate the notion that "(w)ithin shared social spaces, children and young people competently negotiate and construct local social and moral orders with peers and adults as they go about their everyday activities" (Danby & Theobald, 2012 p. xvi). This **collaborative social order** shapes preschoolers' actions and is transformed *through* preschooler's actions. They are seen working together and collaborating; orienting themselves to the task-completion; agreeing and disagreeing with others in relation to the task; orienting themselves to the iPad's screen or to the Beebots; engaging with others' letters or object-illustration suggestions; engaging with others' drawings; orienting to the time left; orienting and making available to others rules that are considered as being broken. In the field notes, it is annotated that the teacher often makes mention to "you have to work together" or "you have to talk about it"; which is then seen in one of the episodes by a preschooler "*but I was just telling them to talk about it*". Through

his comment, he makes reference to his previous action in order to justify himself to another preschooler who is complaining about him to the appointed teacher (refer to episode 4.23). Combining this data and analysis with the lack of evidence of unratified participants suggests that the design of the task has supported the creation of a **collaborative social order** by which preschoolers abide during the collaborative and autonomous task. This coincides with Dooly's (2008) description of **collaborative** learning as a process by which "**students are responsible for one another's learning as well as their own** and that reaching the goal implies that students have helped each other to understand and learn." (p.21). The **autonomous** and collaborative tasks in our study corroborate Czura's (2013) assertion (in a study with older students) that "an **autonomous learner takes over the responsibility** for taking all decisions concerning the learning process as well as their practical implementation" (p.84).

In general, it is interesting to note that the **classroom social order** influences the use of the target language. Preschoolers **use the target language** when there is a "monitor" figure present whether it is the teacher, the appointed teacher, the narrator or the camera. It is also interesting to note how the preschoolers collaborate and the way in which a **collaborative social order** is established and maintained through the task.

5.2.5 Preschoolers' peer interaction dynamics: Spontaneous play

In this study **spontaneous play** is understood as the **spontaneous** and **self-initiated** action commenced by the child to fulfill her or his need to experience **enjoyable activities**. Vygotsky (1978) distinguishes play from other activities by arguing that *in* play children create **imaginary worlds** and situations. Free play has also been regarded as activities **not initiated or guided by adults** and with a relaxed organization that allows children to explore concepts, language, social skills and to **create** her or his **own social orders** (Björk-Willén & Cromdal, 2009). In this research we refer to **spontaneous play** as natural and unplanned activities initiated by the child that, as Ivarsson (2003) describes in his research in a Swedish preschool, are **outside instructional events**.

Specifically, in this research we refer to spontaneous play as **out-of-task play**, making reference to play that was **not designed or guided by the adult or the task's design** and that happens **spontaneously**. This research does not analyze spontaneous play in-depth as a central focus of the study but the analysis of the episodes brought to the fore that preschoolers were often found playing with the toy kitchen, the tent, the cushions, or simply with their bodies during the sessions and in the working space (refer to figure 5.18 to see the toys in the space). Although, play was not analyzed as a separate focus, the in-depth look at **language-related episodes** showed that **spontaneous play** was not always an interference with task orientation. There is evidence of children playing while remaining engaged actively on the task. This is relevant as it shows that **spontaneous play** is **not** always a **barrier to orientation to task**. There is ample documentation of children engaging in spontaneous play while actively participating in the task (refer to episodes: 4.5, 4.6, 4.11, 4.13, 4.15, 4.17, 4.18, 4.19, 4.21) although there is also evidence of times when the children do **disengage from the task**.

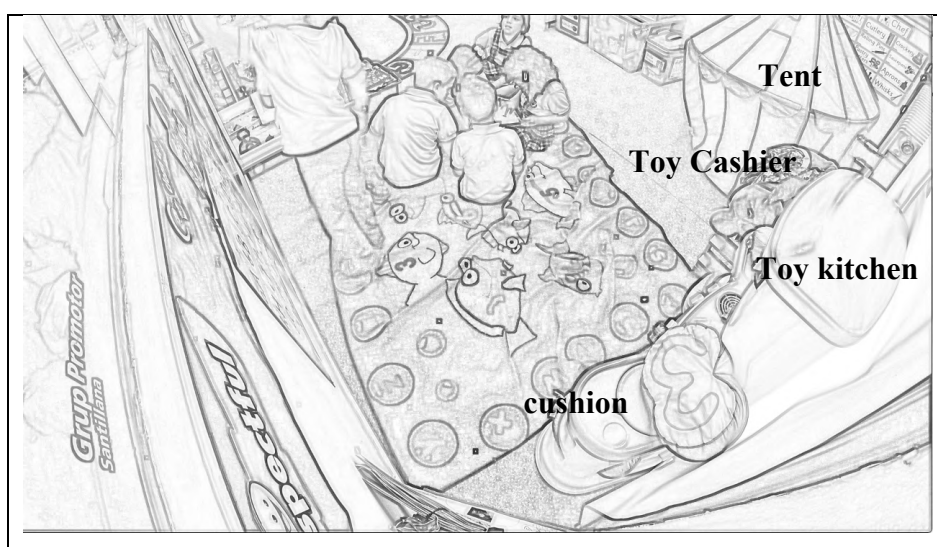


Figure 5.18) Toys in the classroom that the preschoolers are seen playing with.

To show one of the examples, in figure 5.19a, it is possible to see a preschooler playing with the toy kitchen but still being very active in the interaction, providing a suggestion for a word: “/k/ /k/ /k/ /kə'kɒdrl/”. While seemingly focused on the toy kitchen he is also being active in the co-construction and exploration of the pronunciation of the word crocodile. However, as aforementioned, there is also evidence of preschoolers disengaged from the task and solely playing (figure 5.19b).

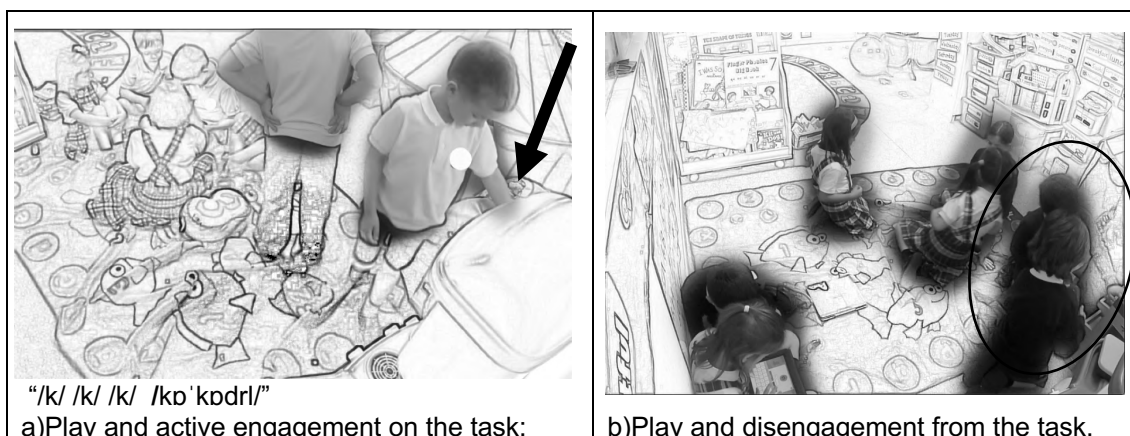


Figure 5.19a) Episode 4.5, 5.19 b) episode 4.6

It is worth noting that the engagement with **play is not prolonged in time**. The play usually lasts for a short period of time and then the preschoolers return to a bodily orientation to the task and the interaction. Given the documentation of the type of spontaneous play captured, it can be argued that **play seems to attend** to the need to **move, stretch the body, change their attention focus** or attend to **more pleasurable activities**. In a study focused on the relation of off-task behavior and the ratio of preschoolers in a working space it was found that in spaces that were shared by a large quantity of preschoolers or in which the resources were scarce preschoolers tended to stay more time off-task (Kantrowitz & Evans, 2004). Taking into consideration that in our study there were a limited number of preschoolers and ample resources, our findings might also point at a **sensible task design**, including the ratio of preschoolers, the designated working space and the resources, in order to ensure successful engagement in the task.

In general, the analysis offers evidence that **preschoolers do play out-of-task**, but that they are **capable of maintaining their engagement** in the interaction and the **task**. Spontaneous play is usually for a **short period of time** and is not always a sign of disengagement. The preschoolers demonstrate that they can play and maintain their engagement on the task, however, if they disengage, they return to their orientation to the task quite quickly.

5.2.6 Preschoolers' peer interaction dynamics: A summary

The evidence gathered in this research and the analysis make visible that in preschoolers **autonomous** and **collaborative language learning tasks** supported by iPads and Beebots the **nature of preschoolers' peer interaction** is **complex** and **dynamic**. Figure 5.20, resumes what has been visible in the preschoolers' peer interaction by describing **key points** found through the analysis of what happens and how it happens in interaction.

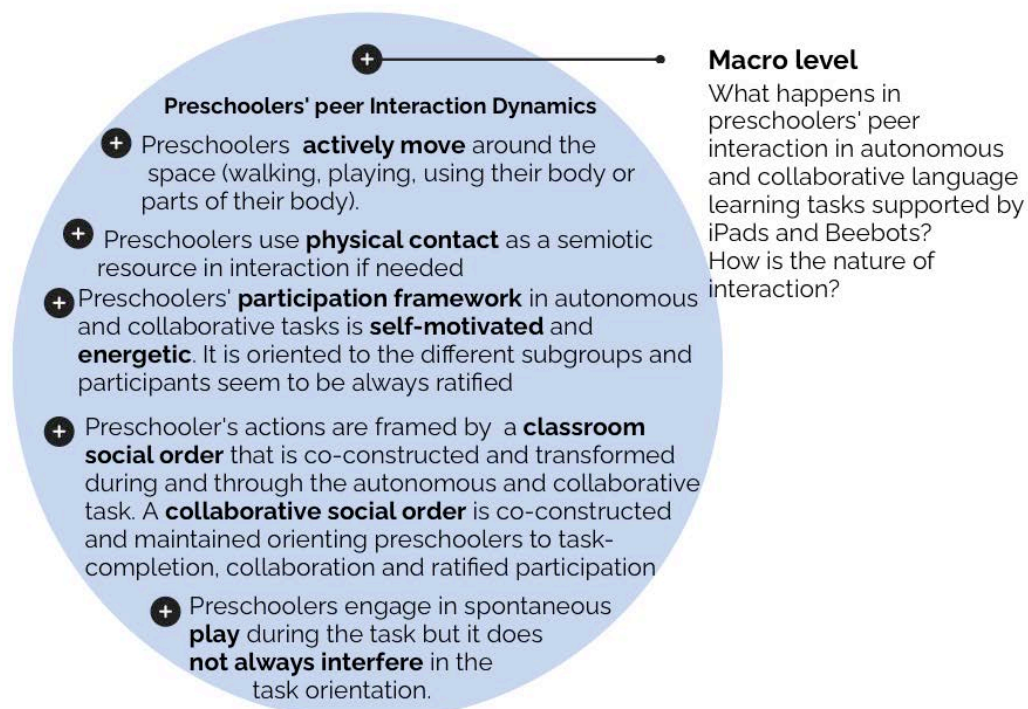


Figure 5.20) key points of preschoolers' peer interaction: a view at the macro level

5.3 MESO-LEVEL: TRIGGERS THAT OCCUR IN INTERACTION

On a meso level, the **language exploration triggers that occur in the interaction** are considered. Language exploration triggers refer to the point where, in the interaction, a **stimulus generates a discussion related to language**. Thus, at this level what is observed is *what* triggers, generates or initiates language exploration. *What* makes preschoolers' talk and engage in discussions related to language in autonomous and collaborative language tasks.

The analysis of the selected language-related episodes has shown that there are **salient** and **recurring** prompts that appear to frequently **trigger language**

exploration and thus represent a **potentially transformative** engagement. The most salient feature that appears to trigger language exploration in interaction is signs of **engagement**. If the preschooler engages, through any mode or modes simultaneously (gaze, gesture, speech, body posture, position in space), there is a sign of interest. The **engagement** can be towards **language exploration** itself or towards **other preschoolers' language exploration**. The most salient qualities of this type of engagement are: **disagreement; agreement; suggestion; argument; repetition; self-task organization; task-completion orientation** and the use of **embodied interaction** (identified through **multimodal signs (sign complexes)**).

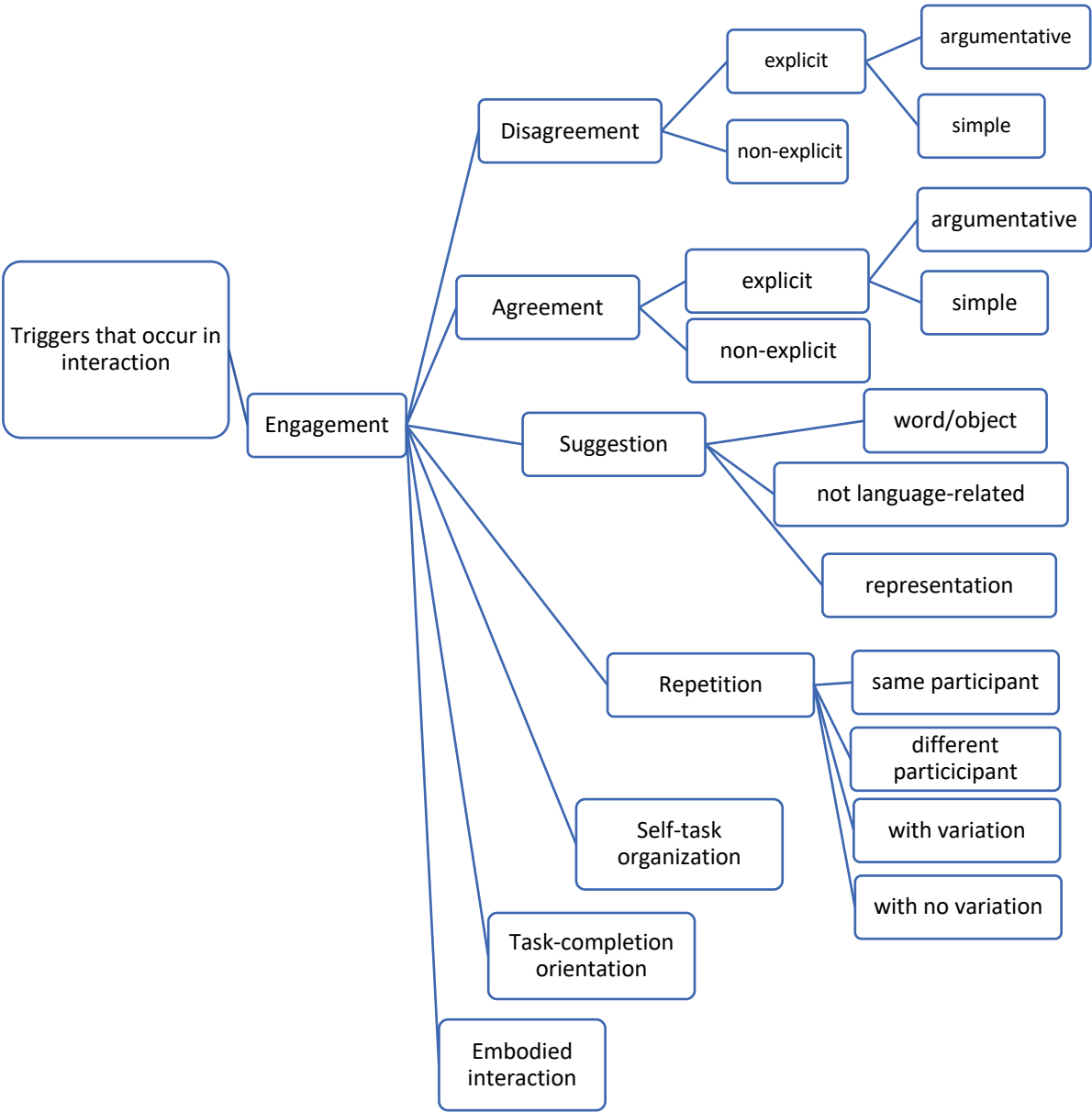


Figure 5.21) Salient and recurring triggers of language exploration found in preschoolers' peer interaction

5.3.1 Engagement

Engagement is understood here as the act of getting involved, by reacting with someone or something. When a preschooler is engaged her **attention and focus** is directed to a **stimulus** that comes from **something or someone**. In the extracts analyzed there is evidence that preschoolers engage with different and varied stimuli **according to their interests**. The evidence of engagement in this research is very wide as the **interaction itself is an act of engagement**.

The focus of our analytical approach is on the **engagement related to language exploration**. Through the observation of the stimuli or triggers that make preschoolers **switch their engagement** focus to a language exploration related focus it is possible to identify what captures preschoolers' attention in an autonomous and collaborative language learning task and to unveil possible **triggers of language exploration** (refer to episode: 4.2, 4.4, 4.5, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.23)

We can observe that the preschoolers engage with **elements in the working space** such as the displays (Catalan ABC poster, classroom rules); toys (tent, toy kitchen); whiteboard; books; bookshelf; iPad and Beebots. For example, in figure 5.22, a preschooler engages with the classroom rules poster as part of her action to find an object beginning with the letter sound the group is working on.

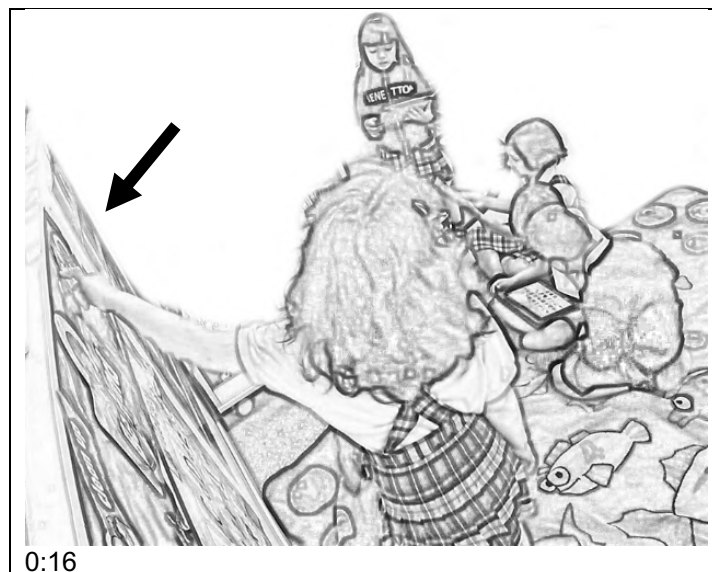


Figure 5.22) Lluvia engages with the classroom rules poster entitled “offer help” (episode: 4.14)

It is also evident that the preschoolers **engage with other preschoolers' arguments, choices and suggestions**. For example, in figure 5.23 (continuation of 5.22), it can be seen how the preschoolers engage, through gaze, with the suggestion made by another preschooler. Thus, in Figure 5.22 and 5.23 the sequence shows first a preschooler that engages with an element in the classroom and then how her suggestion to the other preschoolers triggers further engagement.

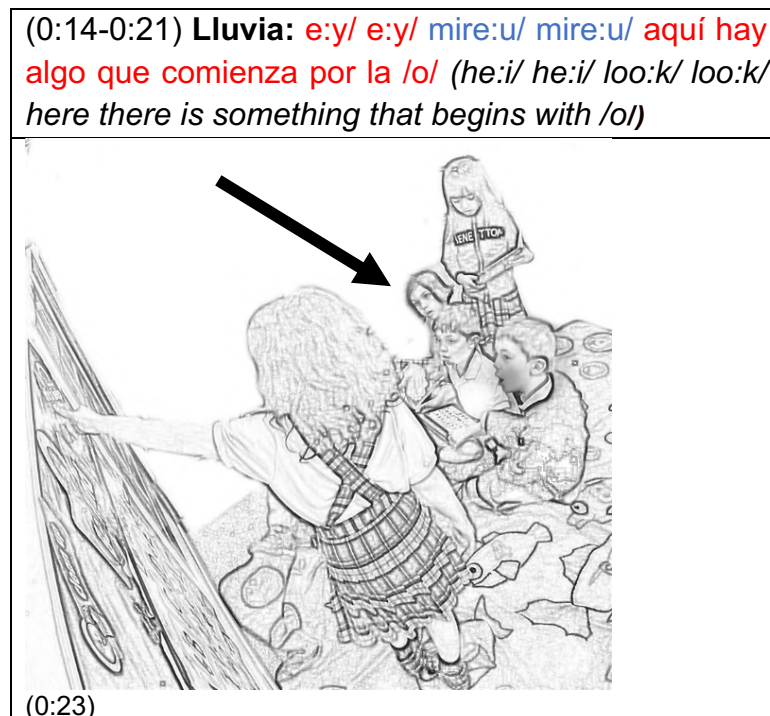


Figure 5.23: A preschooler making available a suggestion and the preschoolers engaging with her through gaze. (episode: 4.14)

It is also visible that preschoolers engage with **other's actions on the iPad screen** and with the **iPad's screen**. There is ample research on the various ways preschoolers' engage with the iPad screen and the way such engagement influences preschoolers' actions; many of which are corroborated in this research: preschoolers communicative repertoires are influenced by the affordances of the iPad (Daniels, 2017); preschoolers talk and negotiate meaning while using the iPad in collaborative tasks (Falloon & Khoo, 2014); tablets can promote preschoolers literacy learning but such is influenced by the scaffolding given by teachers (and parents) (Gray et al., 2014); the affordances of creative apps shapes the creative activity (Kucirkova & Sakr, 2015); open-ended apps promotes preschoolers' engagement and exploratory talk (Kucirkova, Messer, Sheehy, & Fernández-Panadero, 2014); the inclusion of the iPad for literacy learning and the use of informal feedback (by the teacher) in

preschool can promote phonological awareness (Reeves, Gunter, & Lacey, 2017); preschoolers are able to transfer their personal experience and literacy knowledge to literacy activities at the school (Sandvik, et al., 2012). The data of this study also shows that the preschoolers engage with what the iPad manager or the Beebot manager is doing or plans on doing; supporting the argument that the technology becomes an integral part of the knowledge construction.

In general, preschoolers are very active during the interaction and engage with the stimuli made available in the environment that **attend to their interests**. Children **engage through different modes**: gaze (Flewitt, 2006; Lancaster, 2001); gesture (Klerfelt, 2007; Majlesi, 2015; Nacher, Jaen, Navarro, Catala, & Gonzalez, 2015; Rosborough, 2014), speech (Ahearn, 2001; Falloon & Khoo, 2014a; Mercer, 1994, 2010), position in space, body posture and orientation (Goodwin, 2007; Goodwin, Goodwin, & Yaeger-Dror, 2002) and **swap their attention fluidly**. It is also relevant to note that preschoolers engage naturally with the triggers. The evidence shows that there are no barriers in terms of who is ratified to engage with a trigger or not as was commented in the subsection on participation framework.

5.3.2 Multimodal interaction; multimodal sign and multimodal turn (embodiment)

A **multimodal** approach to **interaction** is a holistic approach to interaction (Davitti & Pasquandrea, 2017). This approach recognizes interaction and engagement as **embodied** through the different semiotic resources involved in making meaning. Furthermore, the way in which semiotic resources are integrated into the embodied meaning-making process is emergent and contextually-bound. As Mondada (2014) argues

Human action is fundamentally multimodal. Multimodal resources are integrated in a holistic way and make sense together; moreover, they can be seen as not being a priori hierarchized, but as having their relevance empirically and situatedly defined within the context of the activity and its ecology (p.139).

Thus, in a multimodal approach linguistic and embodied interaction are understood as an **interplay between modes** that **makes meaning** complete and **complex**. Following this definition, gaze, gesture, body posture, body orientation, position in space and speech are used by the preschoolers in an **orchestration of modes** to make meaning. By identifying **multimodal signs (sign complex¹⁷)**, so signs made material by different modes in parallel (for example saying 'hello' (speech) waving the hand (gesture) and gazing at someone (gaze) to communicate 'hello' and greet someone), it is possible to identify not only the semiotic resources preschoolers use in interaction but how they use them and orchestrate them.

Although the use of modes is salient in communication per se, the identification of multimodal signs offers detailed information on how the different modes (embodied and linguistic resources) are used by the preschoolers to make meaning. In particular, the analysis of the different episodes foregrounds, through various examples, the deployment of sign complexes in the preschoolers' interaction. The analysis also clearly demonstrates that the preschoolers' interaction is multimodal. The identification of multimodal signs has unveiled some key characteristics of preschoolers' interaction. In the first place, preschoolers embody communication; they use gesture, gaze, speech, body posture, body orientation, position in space and movement to communicate. (refer to episode: 4.1, 4.3, 4.4, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.23)

In the second place, in the preschoolers' communication, **physical interaction** is clearly salient. There is evidence that touch and physicality are commonly used as **attention grabbers** and that its use is accepted as natural. Moreover, the analysis shows that speech is not always the preferred or main mode for communication during interaction.

¹⁷ In Social semiotics multimodality, the terminology used is 'sign complex'. For sake of clarity in this research we use 'multimodal sign' to refer to sign complex. So, a multimodal sign is a sign (meaning and form) made material by different modes (gaze, gesture, speech, movement...) Signs and sign complexes are explained in more detail in chapter 2.



	
<p>*use of gesture to describe what a net is (1)</p>	<p>*use of touch as attention grabber (3)</p>
<p>(1) Pier: net haré una net, una una rac esa eso para caza:r s/ (net I'll do a net a a rac those that for catching s/)</p>	
<p>(2) Jan: mariposas (ok/ butterflies) =vale/</p>	
<p>(3) Jan: es así que, te la enseño Pier porque yo las estoy dibujando Pier *** (it is like this do I show it to you Pier because I am drawing them Pier ***)</p>	

Figure 5.24) Pier using gesture, speech and gaze as a multimodal sign and Jan using touch, speech and gaze as a multimodal sign. (episode 4.12)

It is also relevant to note that **gesture is very salient** in the co-construction of meaning; it is often **used and re-constructed by others** (figure 5.24). The preschoolers are able to avail themselves of multimodal signs (sign-complexes) used by others and to co-construct them to fit their own needs. For example, in figure 5.25, three preschoolers use the same multimodal sign to communicate 'win': they use their arms, waving them cheerfully (gesture), they use speech (saying something related to win), and they use gaze and body orientation. Thus the multimodal sign of 'win' is mutually co-constructed as each preschooler sequentially re-uses the modes previously deployed by others to communicate meaning while at the same time they all adapt it to their own communicative needs.

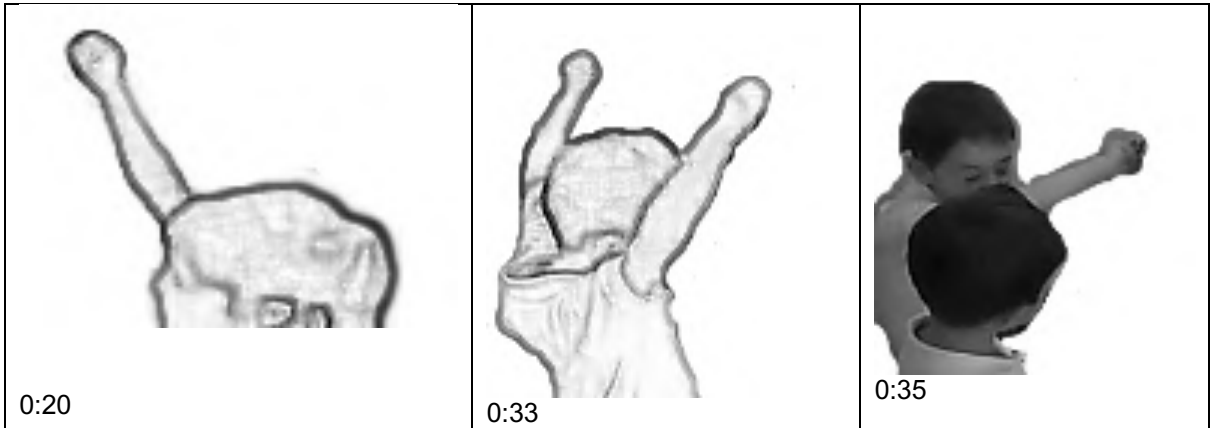


Figure 5.25) Preschoolers embodying "win". The gesture is co-constructed, each preschooler uses the previous referent and modifies it (episode 4.20)

Gaze is also salient; preschoolers use gaze and position in space to engage in the interaction. There is evidence of preschoolers actively engaged in an interaction but not making themselves available to others by deliberate choice of their position in space and by participating exclusively through gaze and not through speech (figure 5.26). This is relevant as gaze was found to be key in identifying preschooler's silent engagement.

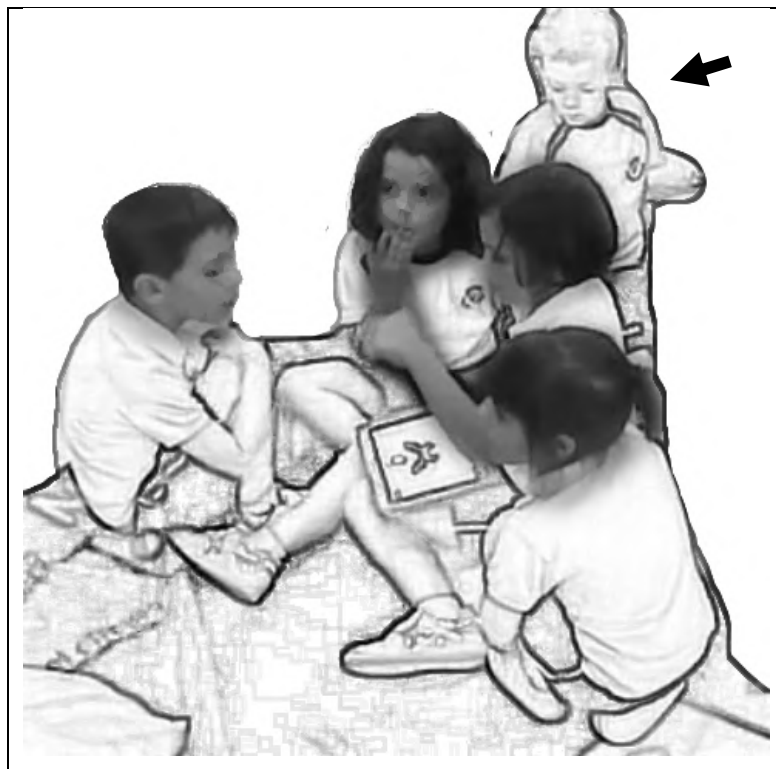


Figure 5.26) A preschooler actively engaging through gaze and position in space but not making himself available to others. (episode: 4.18)

In general, preschoolers embody communication very **actively and dynamically**. Their use of touch, gesture and position in space, including movement, is very salient to the overall mutually organized interaction. The preschoolers seem comfortable and used to the use of gaze, gesture and movement during interaction, it seems natural an integrated in their interaction. As Taylor (2014) argues, the use of embodied interaction in young children is spontaneous and intertextual and is not in any case incoherent or random. She maintains that this should be conscientiously taken into account in research that studies young children's classroom interaction.

5.3.3 Triggers that occur in interaction: Disagreement

In this study disagreement is referred to as the situation in which a preschooler **does not share** the same **perspective, point of view or thinking** of another or a given situation. Preschoolers are able to **identify the stance of others** and **position themselves** either by **opposing or aligning**, and are able to use their semiotic resources to express their stance (Shiro et al., 2019). Goodwin and colleagues (2002) state that there are two ways in which children show disagreement in interaction; by **opposition** and by **replacement**. Through opposition children might use negations, accounts or demonstrations of the appropriate/inappropriate actions. Through replacement children replace the disagreed item with something that they agree with (Goodwin, Goodwin, & Yaeger-Dror, 2002).

The disagreements analyzed in this research are either **explicit**, that is there is explicit communication of the disagreement (usually the use of negatives such as “no” in speech or gesture), or **non-explicit**, in which the disagreement is made available through the cause or argument of the disagreement but there is no use of negations. Furthermore, the disagreement can be **simple** through negatives or non-lexical interjections (merely a “yes”, “no” or shout either in speech or gesture) or be **argumentative** and be accompanied by an argument in which the reason, cause or solution of the disagreement is shared. In their study on a preschooler’s peer talk, Zadunaisky and Blum-Kulka (2010) describe it as “*argumentative event*, defined as a form of *social practice* in which at least two parties take alternative positions on the same issue and develop their adversative positions in various ways by providing justifications, grounds, support, explanations, stories, and so on” (p.214).

In the episodes analyzed it is visible that there are moments of disagreement related to **language correction**. Preschoolers engage with the task and make visible their disagreement with language features such as: pronunciation; letter formation; beginning sound; identification of phonemes; comprehension and actions related to following the rules of the task. Figure 5.27 shows a selection of the different types of disagreement found in the corpus and analyzed. Given the focus of the study only the disagreements related to language exploration were analyzed; the rest were considered to be out of the scope of this research.

Explicit	Simple	(Episode 4.8) Nerea: Bueno però també tenim *** (well but we also have ***) Sofia: =No::: (no:::)
	Argumentative	(Episode 4.18) Pier: esa es la /d// (that one is /d//) Maia: <u>no/ la /d/ /d/ va así</u> (no /d/ /d/ is like this)
Non-explicit	Simple	
	Argumentative	(Episode: 4.20) Diana: o una copa/ pondrás una copa porque alguien ha ganao *wan és ganar (or a cup/ you will put a cup because someone won *wan is win) Genaro: win/ <u>eso es win/</u> +++ wi::n: wi::n: (win/ that is win/ +++ wi::n: wi::n:)

Figure 5.27) types of disagreement

It was found that the preschoolers disagree in relation to **suggestions** made by others or in **word or representation choices** made by others. Preschoolers also disagree with situations or **actions** in which they think the other or others are not following the task rules. Disagreements related to the task-order (preschoolers making available the letter sound or representation they plan to do) are common. There is also evidence of the teacher disagreeing with not following the rules (figure 5.28) and the use of the teacher as an argument to support a disagreement (figure 5.29).

?: yo la m primero (me /m/ first)
Teacher: No it it has to go in order, ha/

Figure 5.28) Teacher disagreeing with a preschooler.

Pier: Aquí/ + /b/ /oo// k/ book/ (here/ /b/ /oo/ /k/ book)
Maia: Pero: es con la /o:// (but: it is with /o://)
Jan: Pero tiene que empezar con /o// y como dijo la Miss Nathaly en una palabra o en una fra(se) (but it has to begin with /o/ and as Miss Nathay said in a word or senten(ce))

Figure 5.29) A preschooler using the teacher as an argument and creating an alliance with another preschooler.

It is worth highlighting that there is evidence of preschoolers agreeing with the disagreement of others and creating **alliances** to further co-construct and support the motivations or reasoning underlying the disagreement. This validates that acts of disagreement as well as agreement can be used to co-construct social order and that preschoolers are highly capable of creating alliances to transform situations through these enactments (Karrebæk, 2011) (for disagreements refer to episodes: 4.1, 4.2, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.14, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23)

In general, disagreement is a common occurrence in the extracts analyzed. In almost all the episodes there is disagreement. It is interesting to note that disagreement is one of the features in which language exploration most appears, providing support for the hypothesis that disagreement (in this set of episodes focused on language exploration) is usually a marker of potential trigger for language exploration. This resonates with Kruger's (1993) research on children's collaboration and conflict in which he found that various studies imply that disagreement is not merely an act of opposition but an **active exploration** that triggers cognitive development.

5.3.4 Triggers that occur in interaction: Agreement

In this study, agreement is referred to as the situation in which a preschooler **shares the same perspective, point of view or thinking** as another or a given situation. Agreement is related to cognitive development as it is argued that **collaboration** is based on agreement, **clarification and extension of ideas** and points of view (Kruger, 1993). This same author states that agreement also involves **the child's encounter with a perspective** which implies that the child **explores** such perspective and either **creates a new** one, in collaboration with the other party, or **supports** it, or **integrates** it in her perspective (Kruger, 1993). Gjems (2013), based on research on preschoolers' conversations, argues that there is **effort in comprehending others** and that in agreeing there is an **active engagement** with that comprehension.

Along similar lines, the agreements analyzed in this research are either **explicit**; there is explicit communication of the agreement (usually the use of affirmatives such as "yes" in speech or gesture), or **non-explicit**, in which the reason or argument

supporting the agreement is made available but without an explicit affirmative. Furthermore, the agreement can be simple (usually a “yes” or “no” either in speech or gesture) or **argumentative** and be accompanied by an argument in which the reason or cause of the agreement is shared. As commented in the subsection of disagreements, it is worth highlighting that there is evidence of preschoolers agreeing with the disagreement of others and creating **alliances** to further co-construct the agreement. Hence, agreement and disagreement might both be present in an interaction in a complex **net of agreements on disagreement** that create alliances (refer to episodes: 4.1, 4.3, 4.4, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.18, 4.19, 4.20). As Mercer (1996) argues, statements and arguments that are made available for others to co-construct **promote progress** that arises from the joint agreement of different parties.

In the analyzed extracts there is evidence of agreement or **acceptance of suggestions** made by other preschoolers. It is clearly visible in the data how preschoolers engage with suggestions made by others, often **agreeing in the use or adequacy of the suggestion** as in figure 5.30. For this study, the agreements presented are related to language exploration in that one or more preschoolers make a suggestion, related to language, and the other preschooler accepts it.

Genaro: uno/ uno/ (one/ one/)
Diana: o una copa/ pondrás una copa porque alguien ha ganao *wan és ganar (or a cup/ you will put a cup because someone won *wan is win)
Genaro: win/ eso es win/ +++ wi::n: wi::n: (win/ that is win/ +++ wi::n: wi::n:)
Pier: I win/ I win/ I win me/
Genaro: Yo pondré la /w/ (I will put /w/)
Diana: w:i:n wi:n
Genaro: <u>si yo haré que alguien está ganando win</u> (yes / will do that one is wining win)

Figure 5.30) A co-construction of the representation for “w”. Genaro agrees, explicitly, with Diana on what to represent (episode 4.20)

However, the extracts analyzed more often present **agreement on disagreement** than an **acceptance of a suggestion**. This has been interpreted as a process of

creating alliances by the preschoolers as part of the exploration of language through the **co-construction of a net of agreements and disagreement** (as seen in figure 5.31). In relation to children’s social development, Geary and Berch (2016) state that children’s alliances are based on the need to have **allies** that take **one’s stance during conflict**. In relation to language exploration, the evidences show preschoolers agreeing with agreement/disagreement related to letter formation; beginning sound; pronunciation and corrections. This corroborates Geary and Berch findings in that, in language-related agreements/disagreements, preschoolers seem, as well, to create alliances and take other’s stances during such and support the agreement/disagreement of others on language-related features, aspects, or actions.

Pier: <i>esa es la /d/ (that one is /d/)</i>	Disagreement with the representation
Maia: <i>no/ la /d/ /d/ va así (no /d/ /d/ is like this)</i>	Disagreement with the correction/suggestion
Lluvia: <i>La /d/ va del revés (/d/ goes the other way around)</i>	Agreement with the disagreement with the correction (alliance)

Figure 5.31) A co-construction of the correct letter formation of b through a net of agreements. Lluvia makes an alliance with Maia and supports her disagreement with Pier’s disagreement. (episode 4.18)

It is also relevant to note that there is evidence of the teacher agreeing with correct actions related to the task completion as in Figure 5.32.

?: <i>yo la m primero (me /m/ first)</i>	
Teacher: No it it has to go in order, ha/	Disagreement with a preschooler’s suggestion
Sofia: me /s/	
Teacher: yes okay, it has to go in order do you have/, do you know how you are going to do it?	Agreement with a preschooler’s suggestion

Figure 5.32) the teacher disagrees with a suggestion and then agrees with a suggestion that complies with the rules of the task “follow the order” (episode 4.1)

In general, agreement is a common and salient feature in preschoolers’ peer interaction. Preschoolers agree and **create alliances**. It has been argued that alliances created by preschoolers are often **influenced by friendship** and that they

become **part of the social order** of the activity at play, influencing in turn the activity per se (Karlsson et al., 2017). In contrast, it is interesting to note that the majority of the agreements found in our data are related to disagreements on language-related questions and not necessarily due to prior friendships as evidenced by the rapid creation and dissolution of alliances. In our study, agreement is a salient feature similar to disagreement and moreover **agreement on disagreement** often affords the opportunity for the **co-construction of a point of view** or correction.

5.3.5 Triggers that occur in interaction: Repetition

Repetition in this study is applied to the **act** of doing something, in **any mode**, in a **similar way** as **someone or one's self** in a previous moment. There has been ample research in the uses of repetition in interaction. Tannen (1987) argues that repetition contributes to the **coherence** of the discourse and that it is commonly used: to be more **effective** when there is a great deal of **overlapping in interaction**; to facilitate comprehension by using the same wording; to connect utterances to previous utterances; to **influence others**; to be more efficient in the use of words; to **gain time and fluency** while organizing what to say and; to connect the participants to what one is saying (Tannen, 1987). Atoofi (2011) states that repetition is also used to express **agreement or disagreement**. Our study extends these concepts of repetition and as can be seen in the analysis, it is not only relegated to speech, **repetition of gestures** is also relevant in the interaction. This supports Yasui's (2013) argument that the repetition of a gesture connects the participants to a previous moment in the interaction by creating **connection to a previous meaning**. The repetition of the **gesture can be modified** not only in its **form** but in its **meaning** during the interaction and in this way is both mutually **elaborated and co-constructed** during the interaction. This, in turn, is of value and contributes in the **collaborative construction of meaning**. Thus, a repetition is an act of engagement, involving the preschooler who repeats it, *what* is being repeated, or *who* said whatever is being repeated (Yasui, 2013).

The repetitions that are observed in this research are those in which the repetition and its referent appear in the same episode. This responds to the use of episodes as units of analysis and spanning more than one episode goes beyond the scope of this

research. The research reveals that the repetition can be made by the **same participant** or by a **different participant**. It can also be made by **one or more than one participant**, and the sign can be **repeated once or more than once**. Hence there is evidence of a **chain of repetition** in which, in the same episode, more than one repetition can be found whether by the same participant (more than once) or by various participants (once or more than once). The repetition can be **identical**; include **variations** or be a **reformulation**. This coincides with Kaur's (2012) findings in a literature review which classifies repetition according to who repeats (same or other); the repetition's form (exact, variation or reformulation) and the time-lapse (immediate or delayed).

In consonance with the literature, the extracts in our study have shown that the repetition (made through a word, sentence, gesture or any other mode), with variations made by different preschoolers in a chain of repetitions often triggers co-construction of meaning. The referent in such orchestration might suffer various variations or might be included in a new context thus becoming partially or completely transformed in interaction. Repetition by the same participant, or self-repetition, is also very recurrent in the extracts. It is said that self-repetition plays a powerful role similar to other-repetition (Kaur, 2012). For instance, in our data, repetition is used to create alliances based on the co-construction of a meaning (figure 5.33).

A) Repetition in chain with variation (variation of the word pronunciation)	B) Repetition in chain with reformulation (reformulation of the argument) (alliance)
Miguel: /k/ /k/ /k/ kə'kɔdrɪ/	Sofia: No\ perquè comença amb la /aɪ/ /aɪ/ i, i i té de ser amb la /i/ (No\ because it begins with /aɪ/ /aɪ/ and, and and (it) has to be with /i/)
Genaro: /k/ /k/ /k/ /ki:/ /kəkɔdrɪ/	Nerea: /ɪstɪr ɪfəl/ si no es diria /ɪstɪr ɪfəl/. (/ɪstɪr ɪfəl/ if not it will be called /ɪstɪr ɪfəl/)
Miguel: /kəkɔreɪl/	Gerika: No/ porque la /tɔre ɪfəl/ comienza por la /aɪ/ (No/ because the /tɔre ɪfəl/ begins with /aɪ/)
Miguel: /kəkɔreɪl/	Nerea: si no es diria /ɪstɪr ɪfəl/ (If not it will be called /ɪstɪr ɪfəl/)
Pier: /'kɔkɔdrɪ:/	
Genaro: /'kɔ'kɔ'drɪ:/	
Diana: /'kɔk.ə.drɑɪ/	
Jan: /'kɔk.ə.drɑɪd/	

Figure 5.33) Repetition as a trigger of co-construction and language exploration. (episodes, a)4.5 and b)4.10)

Furthermore, repetition is not only relegated to speech, there is repetition of gestures. It is interesting to observe that repetition of gestures is used with small variations and with slightly different meanings and in different modes (e.g. speech and gesture; gesture; gesture and body posture). Hence, it is relevant to observe that the co-construction of meaning, through repetition, is not solely relegated to speech. For example, in figure 5.34, the same gesture is repeated, with slight variations, and although its meaning varies it shows how precise ‘tiny’ means for the participants which, in this case, ranges from small to almost invisible (refer to episode 4.7).

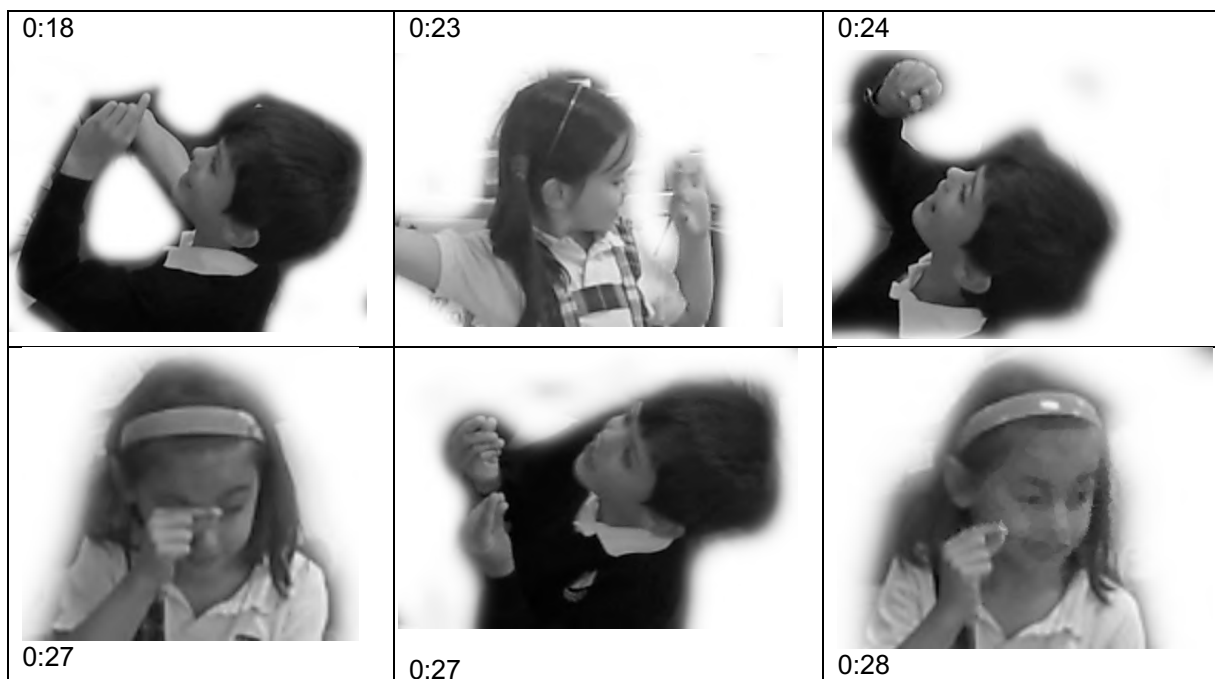


Figure 5.34) Repetition in a chain with variation of a gesture. The repetition is used to co-construct the preciseness of “tiny”.

In general, there is evidence that repetitions, especially with variation, tend to point to a **co-construction of meaning**. **Repetition** in language-related explorations shows a **potential transformation** situation. According to Kaur (2012), repetition is common in contexts in which the participants are learning a foreign language and this is seen in our data as well. Indeed, in this EFL context, it can be observed that the phenomenon of repetition is **very common** and used by several different participants. It is worth highlighting that it appears in most of the extracts and often triggers **rich** language exploration (refer to episodes: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.10, 4.13, 4.14, 4.15, 4.16, 4.17, 4.19, 4.20).

5.3.6 Triggers that occur in interaction: Self-task organization

Self-task organization refers to preschoolers’ **orientation** to **organize their participation turn** in the task; this is understood as **self-regulation**. In this sense, it is a dual orientation: an orientation towards **organizing the self** and **deciding what to do** and an orientation to organizing oneself in order to **accomplish the task**. (refer to episodes: 4.4, 4.7, 4.11, 4.13, 4.17, 4.20). Self-regulation is defined as **engagement** in meaning-making and involves strategical **planning, monitoring** and **regulation** of cognition, motivation, behavior, actions, thoughts and feelings (Robson, 2016).

The analysis has shown that preschoolers are **constantly organizing themselves** and suggesting what letter sound or representation they want to manage. It is relevant to point that the evidence of such suggestions do not coincide with the preschoolers' final digital book of sounds. Preschoolers engage in multiple suggestions in each session. As Dooly (2011) argues, there is a difference between the **task-as-workplan**, or how the task is supposed to unfold and the **task-as-process** or how it actually progresses. In the extracts, it can be observed how the preschoolers make available to the other participants the letter sound and the representation they want to do. These instances are salient, given the great volume of instances, and tend to show an orientation to collaboration and to seeking other's approval; as seen in figure 5.35. It is also visible that preschoolers do not only make suggestions but ask for suggestions from their classmates.

Diana: Pas:ta yo voy hacer pasta. (<i>pas:ta I'm going to do pasta</i>)
Jan: dibuja una patata (<i>draw a potato</i>)
Maia: No tu no puedes hacer pasta:/ (<i>no you can not do pasta:/</i>)
Jan: No porque yo voy hacer la /p/ + lo dije yo (<i>no because I'm going to do /p/ + I said it</i>)
Diana: Yo nat/ net/ (<i>I nat/ net/</i>)
Pier: No/ yo lo dije a qué sí/ Jan/ (<i>no/ I said it didn't I/ Jan/</i>)
Diana: Cat/
Jan: Qué/ (<i>what/</i>)
Diana: Yo voy a hacer cat (<i>I'm going to do a cat</i>)

Figure 5.35) Diana showing a self-task organization orientation by proposing different letter sounds or representations, triggering language exploration as other preschoolers engage with her suggestion and assess it and reject it.

It is interesting to note that self-task organization triggers language exploration when there is engagement in a suggestion as it generates discussion around the letter sounds and the representation.

5.3.7 Triggers that occur in interaction: Task-completion orientation

Task-completion orientation refers to the preschoolers' **orientation to complete the task**. This orientation differs from the self-task organization in that it is related to the direct orientation to complete the task, thus directly corresponding to a **co-**

regulation between peers, whereas the former is related solely to the organization of the self and while also affecting the task-completion, it is related to **self-regulation**. As Rojas-Drummond and colleagues (2020) argue, based on their research on co-regulation in a primary school, **collaborative learning** promotes learner's management and coordination of own and other's participation by **co-regulating** their actions through planning, monitoring, reflection and strategic thinking through joint engagement (Rojas-Drummond, et al., 2020). Similarly, in this research we refer to co-regulation as a **collaborative engagement** in which preschoolers plan, monitor and regulate the task process as well as their own actions in the task. Thus, the **autonomous** and **collaborative** approach of this research is key in this orientation. Aligning with Robson's (2016) finding in a research with 28 preschoolers (4-5 year-olds) which focused on the relation of the presence of the adult and children's metacognition and self-regulation, children are more likely to **self-regulate** if the **adult is not present**. This is because preschoolers were seen to pay more attention to the adult and to yield the responsibility to her to resolve social issues, including the activities' organization, goals and progress (Robson, 2016). It is not surprising, then, that in this research preschoolers are visibly **self-regulating and co-regulating themselves** during the task given the prominent absence of the teacher during most of the episodes (refer to episodes: 4.1, 4.2, 4.3, 4.4, 4.6, 4.8, 4.9 4.10, 4.11, 4.13, 4.14, 4.15, 4.16, 4.17, 4.22, 4.23).

As commented in the previous sub-section (self-task organization), preschoolers announce, make suggestions and ask others about the letter sound they plan on doing in an act of self-regulation. However, the preschoolers that engage with such utterances often agree or disagree with the utterances, making visible if a preschooler is doing something that is correct or not (according to them); thus they are co-regulating. The task-completion orientation includes correction or comments related to language relevant aspects, time management, task rules or even aesthetics.

It can be observed that the preschoolers remind others of the rules regarding time; beginning sounds; use of English; order; representation of objects and incorrect actions. It is also visible that preschoolers ask others for suggestions or ideas for

representation (illustration) for a given letter sound. Hence the co-regulation is **multidirectional**; it is not only used to regulate others but to ask for other's help in self-regulation.

Preschoolers share their ideas, without being asked, of letter sounds or objects others are working on. In this sense, it seems that there is a sense of belonging and a group cohesion through the actions related to task-completion and self-task organization (figure 5.36). Preschoolers are said to commit to their groups, remain loyal to them and value how the group functions thus proving to be able to develop a sense of **group belonging** (Over, 2016). As seen in figure 5.36, preschoolers orient to the task-completion by discussing other's actions in relation to the task. In the case presented, preschoolers discuss the need and the consequences of using or not English in the task. This shows a sense of group belonging in which preschoolers seem entitled to assess, monitor and discuss other's actions. It is also visible how Nerea and Sofia, although talking about another preschooler's action use the plural tense including themselves in the consequences of using or not English so making evident that they function as a group which aligns with Over's findings.

Nerea: <i>Però té que ser en anglès si no ens renyarien</i> (but it has to be in English if not we will get told off)
Nuno: <i>Ja:/ (ri:ght)</i>
Nerea: <i>Si no es pensarien que que que ens agrada més el el el el a tot el* equip ens agrada més el castellà o o o o el català +++ Llavors tenim que fer algo en anglès *** ens renyarien.</i> (if not they would think that that that we like more we we we we all the team we like more Spanish or or or or English +++ then we have to do something in English *** we would be told off)
Sofia: <i>No/ no ens renya:ri:en</i> (No/ no they would not tell us: off:)
Nerea: <i>=Sí/ perquè es pensarien</i> (yes/ because they would think that)
Sofia: <i>=No:::/ (No:::/)</i>
Nerea: <i>=Es pensarien que ens agrada més el català i el castellà</i> (They would think that we like more Catalan and Spanish)

Figure 5.36) Nerea and Sofia oriented towards the task completion, discussing about the use of English. (episode 4.8)

In general, it is visible that preschoolers mutually orient to task-completion, displaying **co-regulation**. The interaction related to this orientation and regulation usually presents a potential language exploration trigger. The collaborative and autonomous aspects of the task and the openness of some of the task's rules (for example how preschoolers can organize their turn), allows the preschoolers to organize themselves. This is key in promoting task-completion orientation and self-task organization, indications of **self- and co-regulation** taking place. These findings align with Amerine and Bilmes's (1988) claim that participants' task orientation and progress depend on their capacity to see themselves as being able to manage the task independently. Through the analysis we can see that preschoolers work autonomously, in a large part supported by the task design and the teacher's instructions; all of which promote the preschoolers' development of agency. Bearing in mind that young children's sense of agency is contextually tied and is not the same across children's different activities (Hilppö, Lipponen, Kumpulainen, & Virlander, 2016), the relevance of the task design is evident. The design can trigger rich interaction and reciprocally potential language exploration is triggered through the task's interaction.

5.3.8 Triggers that occur in preschooler's interaction: Summary

The observation and analysis of the preschoolers' **autonomous** and **collaborative language learning tasks** supported by **iPads** and **Beebots** provides evidence that there are potential triggers for language exploration. Preschoolers' language exploration was seen triggered in the first place, in their **engagement**, which is **interest-oriented**, and which is usually **complex and multimodal**. Based on our data, we conclude that preschoolers engagement is necessary for exploration triggers to be possible. In the second place, what was observed to trigger language exploration was preschoolers' engagement in interaction through **disagreements, agreements, repetition** (especially **with variation**), **self-task organization** and **task-completion orientation**. **Suggestions** were also found to be a trigger, however preschoolers usually engaged with suggestions through disagreements (rejecting them), agreements (accepting them) or repetitions, thus suggestions seem to indirectly trigger language exploration through disagreement, agreement or repetitions. Language exploration triggers are in turn potentially transformative

engagements since the exploration itself can promote knowledge transformation. Figure 5.37 resumes the **key points** of what has been observed in this study to trigger language exploration and thus potentially transformative engagement.

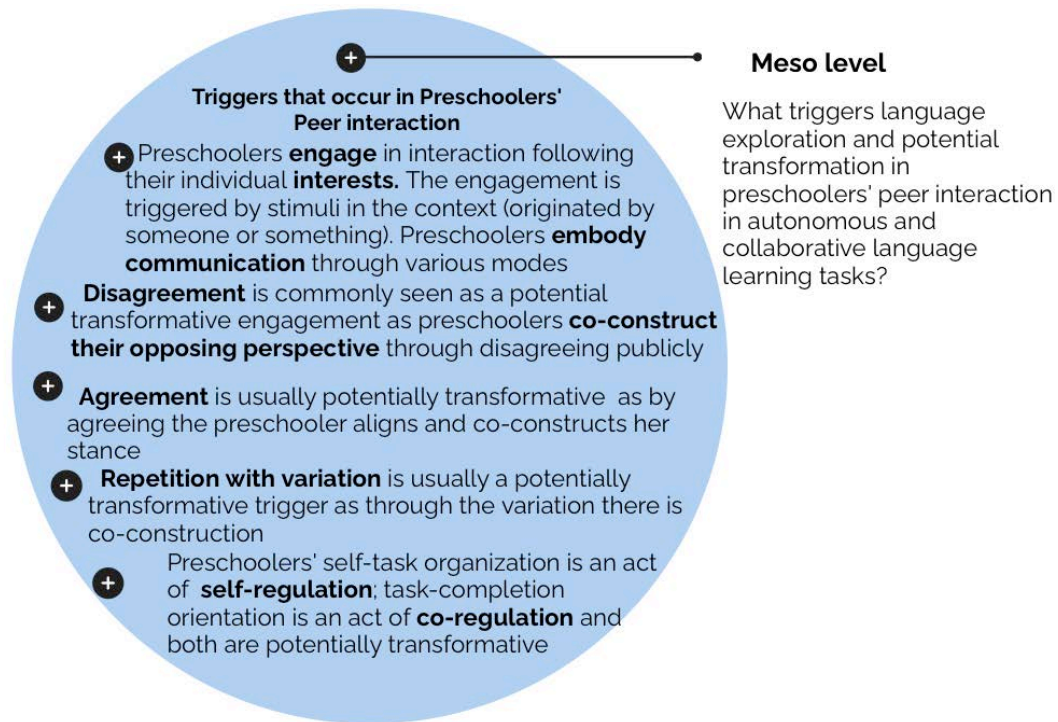


Figure 5.37. Key points of what triggers language exploration and potential transformation: a view at the meso level

5.4 MICRO-LEVEL: POTENTIAL TRANSFORMATION

At the micro level all the language-related exploration instances have been analyzed to identify the **potential transformation engagements**. The analysis focuses on the salient **language features, aspects or actions** explored by preschoolers. This language exploration is seen as influenced by the learning objectives of the task, the affordances of the iPad or the Beebots, the design of the task, the preschoolers' target language knowledge and interests and the dynamic interaction of the preschoolers.

The language features, aspects or actions identified are considered potential transformation triggers because there is a **potential** learning experience of the same features, aspects and actions the participants are engaged with during the interaction. The 23 episodes offer evidence of the language features, aspects and

actions that have been identified in the preschoolers' peer interaction in this study: (figure 5.38)

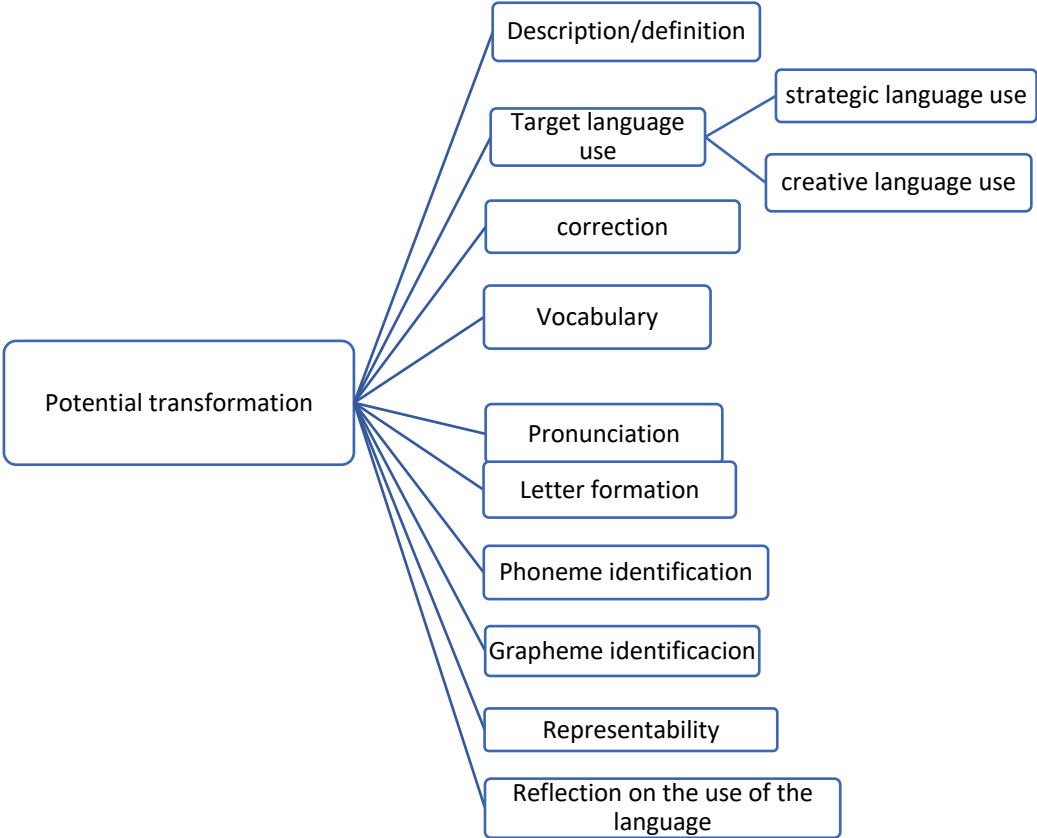


Figure 5.38) Salient language features, aspects and actions exploration: potential transformation.

5.4.1 Potential transformation: Description and definition

The ability to provide relevant, varied and ample descriptions is considered fundamental in early years communication (Weisberg, 2020). The descriptions and definitions offered by the preschoolers during the observed interaction are all related to the representation (illustration) of an object for the digital book of sounds they have been tasked to complete. Preschoolers describe what they want to represent, what they want others to represent or what they are representing. This often occurs as a form of negotiation of what to represent, seen for example in figure 5.39. It is relevant to this study to highlight that the description or definition is often presented in a multimodal sign including gesture and speech.

In figure 5.39, Lluvia asks what ‘men’ means, prompted by the iPad manager’s sharing of information regarding the ‘object’ that he is going to illustrate. Jan, the iPad manager then offers a definition of ‘men’ to Lluvia. Thus, we can observe how the definition are triggered by the task requirement of representing a letter sound for the book (refer to episodes 4.7, 4.12, 4.13, 4.14, 4.20).

Lluvia: un monkey/ Qué es me:n/ (a monkey/ what is me:n/)
Jan: es hombre (+ 1 seg) son dos hombres o muchos (is man (+1 seg) it is two men or many)

Figure 5.39) Jan offers a definition of “men” to Lluvia after she asks what the word is. (episode 4.13)

5.4.2 Potential transformation: Strategic and creative language use

From a plurilingualism perspective, which has been adopted for this research, languages are not considered as distinct repertoires rather as a unique repertoire that is made up of multilingual (or multimodal) resources. Each person is considered to draw from their own individual and unique (semiotic) repertoires (Vallejo & Dooly, 2020). For the research analysis, we have made a distinction between **strategic use** of the target language and **creative use** of the target language. In different frameworks, the strategic use of the language(s) is sometimes referred to as code-switching. However, the concept of code-switching “assume(s) the existence of different languages as structural and cognitive entities and focus on structural configurations of the form seem(s) unable to fully capture the creative and critical dimensions of these expressions.” (Wei, 2018 p.13). However, as Vallejo and Dooly (2020) argue, “it seems ineluctable that documenting plurilingualism and translanguaging requires the use of the very same categories these concepts seek to debunk” (p.8). It is not within the scope of this study to contribute further to this particular debate. For the sake of simplicity and clarity, the terms found in the analysis are language use and language switch since the focus of the analysis is on the multimodal actions taken by the preschoolers which seem to be best categorized as strategic and creative use.

Thus, **strategic use** here refers to a moment in which a preschooler strategically draws from her individual and unique multilingual repertoire and then deploys, in her communication, a different language (for example using a key word in the target language embedded in an utterance in the home language). As this research focuses

on EFL, ‘strategic *target language* use’ signals the use of English, although home language(s) and target language are considered, on a broader level, to be part of the same and unique individual repertoire. However, for the sake of clarity in this research, it is necessary to use language names and identify them. Within strategic use two typologies have been observed: extended use and key use. The **extended strategic** use of the target language refers to the use of English across an entire, or almost complete utterance or turn; thus the use of English is extensive as seen in figure 5.40a. The **key strategic** use refers to the use of English in a single word or concept in a turn or utterance; it is usually embedded in a longer turn or utterance in a different language, predominantly the preschooler’s home language as in figure 5.40b. A **creative use** of the target language refers to the *innovative, resourceful or imaginative* use of the preschoolers’ semiotic resources. In this research the creative use has been identified in instances of ‘approximation’ or when a preschooler uses her understanding of the target language norms and creates a new word, sentence or expression as an approximation to a word, sentence or expression in the target language (see figure 5.40c). Creative use also includes the use of the language (either language) to prove a language-related point, thus a **language-test**. Preschoolers are often seen using ‘tests’ as arguments to support their stance on language-related aspects as in figure 5.40d.

<p>a) Lluvia: Miss: Nathaly =I’m going to do =/əmbrelə/= with a a persona= what is your name + I’m going to do= lloviendo = ++ raining = with= one with += with: one with one + girl *** =that that. (person) (raining)</p>	<p>extended strategic use</p>
<p>b) Maia: yo te he dicho /Λp/ (I told you /Λp/)</p>	<p>key strategic use (up)</p>
<p>c) Pier: net haré una net, una una rac esa eso para caza:r s/ (net I’ll do a net a a rac those that for catching s/)</p>	<p>Creative use (approximation)</p>
<p>d) Pier: esa es la /d// (that one is /d//) Maia: <u>no/ la /d/ /d/ va así</u> (no /d/ /d/ is like this). *finger tracing the letter Lluvia: <u>La /d/ va del revés</u> (/d/ goes the other way around) *finger tracing the letter</p>	<p>Creative use (language-test)</p>

Figure 5.40) the referred parts are underlined: a) extended strategic use of the target language (episode 4.17). b) key strategic use, just one word in a turn (episode 4.17). c) creative use, approximation of ‘*raqueta*’ to racket (episode 4.12). d) creative use, language-test to show that ‘d’ is written correctly by means of writing the letter in the air and making explicit that the directionality of ‘d’ is opposite to ‘b’ (episode 4.18)

5.4.3 Extended strategic language use

The episodes in which **extended strategic language** use is observed are mainly triggered by the presence of the teacher, the acknowledgement of the camera or the student teacher or if assigned the role of narrator or student-teacher. Thus, it appears that the classroom social order and the collaborative social order imply the use of the target language in the presence of such figures (refer to episodes: 4.3, 4.11, 4.15, 4.17, 4.21, 4.22, 4.23). This also seems to be directly related to the participation framework (see discussion above). However, there are also a few instances of extended strategic use that does not seem to be influenced by the presence of any of such figures, although this only occurs in one episode, and are mainly enacted by the same preschooler (refer to episode 4.23).

5.4.4 Key strategic language use

The episodes in which **key strategic use** (in the target language) is mainly triggered are when preschoolers select their turn or letter sound to represent; when making reference to the object they or others want to represent or repeating the object selected or made candidate by another preschooler. The key strategic use is often one word, embedded in the turn, or various words dispersed in the discourse as in example 5.41. In this study, this use has not been found to affect preschoolers understanding of the meaning (refer to episodes: 4.1, 4.4, 4.11, 4.12, 4.13, 4.17, 4.18, 4.6, 4.7, 4.10, 4.16, 4.19, 4.20)

Pier: net haré una net, una una rac esa eso para caza:r s/ (net I'll do a net a a rac those that for catching s/)
Jan: vale/ mariposas (ok/ butterflies)

Figure 5.41: Pier uses English just for the object he wants to represent and the rest of the turn is in Spanish. Jan shows he understands and completes the information gap in Pier's discourse (episode: 4.18)

In relation to language learning tasks, Dooly (2011) argues that learners rely on the use of the home language to manage the process of the task (task-as-process), although there is presence of the target language such as the use of a target word in the task. According to the author, this multilingual process is not seen as disengagement but as part of the learners' process, who prove to be able to

eventually complete the task in the target language. Dooly's findings are replicated here. Preschoolers do use their home language during the task-as-process and while they organize themselves although they also use the target language for the word to be represented. Ultimately, they present the final outcome completely in the target language (refer to use of target language).

5.4.5 Creative language use: approximation

The episodes in which **creative language approximation** is observed are mainly triggered by the preschoolers' need to use the target language to refer to a word they want to represent or the words others are representing for the digital book of sounds. Approximation is considered as the creative act of using a word in Catalan or Spanish (the preschoolers' home language) and adapting it to the target language by using some features they might consider pertaining to English. Approximation is visible in three different episodes: we observe *rac* (raquet), (*h*)*ippopotamus* (no h) and *orn* (oven) used as if these were English words (refer to episodes: 4.11, 4.12, 4.14).

This action is interesting as preschoolers need to make use of their knowledge of English norms to identify some of the English language's features in order to adapt the words they know to the words they need in the target language; thus they are using creatively their semiotic resources in the different languages to accomplish the target language task.

5.4.6 Creative language use: of language-tests

The episodes in which **creative language-test** is observed are mainly triggered in situations in which preschoolers disagree with an argument or suggestion (or agree with a disagreement) and offer arguments to support their points of view. The arguments are based on a creative use of all the semiotic resources of the preschoolers. In the data there are instances where preschoolers use gestures, exaggerated articulation, descriptions, replacements of letter sounds; often

expressed through multimodal signs (gaze, gesture, speech, position in space, body posture...)

For example (figure 4.42), there is evidence of creative use when a preschooler disagrees with a proposed object. According to her it does not begin with the intended letter sound. The preschooler then offers the same word adapting it to include the correct beginning sound in the beginning position (changing the beginning sound to the 'correct' letter sound). This resource implies an initial assessment of the proposed word, in which the preschooler realizes it is not the correct beginning sound (according to her), and the further use of a strategy to prove the other's choice is incorrect. This creative language use is interesting as the argument presented by the preschooler is solid, and far from being a mere explicit disagreement, she offers evidence that the word is wrong to support her argument (refer to episode 4.10).

Nerea: /ɪstɪr ɪfəl/ si no es diria /ɪstɪr ɪfəl/. (/ɪstɪr ɪfəl/ if not it will be called /ɪstɪr ɪfəl/)

Figure 5.42) Nerea offers a language-test to prove 'Eiffel Tower' does not begin with the letter sound /i/ (episode 4.10)

Another salient episode is also observed in a preschooler's action to support a suggestion made by one preschooler that gets rejected by another preschooler. In this case, the preschooler offers an exaggerated and signaled articulation (using her index finger) as an evidence-backed test to prove her point and to contradict the rejection of the preschooler. The articulation is offered as proof that the word 'dog' begins with 'd'(figure 5.43) (refer to episode 4.19).



Sofia: /d/ /d/ /dɑ:g/

Figure 5.43) Sofia offering a test to prove that 'dog' begins with /d/ by exaggerating the articulation of the beginning sound and pointing at her teeth (episode 4.19)

5.4.7 Potential transformation: Phoneme identification

In the episodes there is ample evidence of phoneme identification. This is logical, given that the task's major learning objective is the identification of beginning sounds. It is visible that preschoolers do engage with the different words proffered by the classmates through the correct or incorrect identification of the beginning sound. Furthermore, the sole act of making a word suggestion implies that the preschooler has identified, correctly or incorrectly, the beginning sound. Hence, preschoolers show evidence of identifying the beginning sound by proposing a candidate or by engaging with other's candidate proposals (refer to episodes: 4.4, 4.5, 4.7, 4.11, 4.10, 4.14, 4.15, 4.19). There are also two instances of the identification of a phoneme not in initial position (refer to episodes: 4.3, 4.14, 4.15). These engagements and identification of phonemes point at a potential language exploration trigger.

It is relevant to note that preschoolers often use the task cue of reproducing the beginning sound in isolation before articulating the word. The use of an exaggerated articulation is also often used to provide proof or support a suggestion. Hence, preschoolers seem to use the articulation of the sounds as a support for their argumentation.

5.4.8 Potential transformation: Grapheme identification

In the extracts analyzed there is evidence of identification of graphemes with phonemes. This does not occur often but does indicate that such action is a potential language exploration trigger as preschoolers identify them (correctly or incorrectly) and relate a grapheme with a phoneme. It could be argued that the sole act of following the order of the letter sounds, which is displayed on the whiteboard (in which the teacher displays all the letter sounds, to be included in the digital book, in order), is a grapheme-phoneme identification given that preschoolers have to identify the grapheme and its phoneme to organize the illustration in the digital book of sounds (refer to episodes: 4.9 4.10, 4.12, 4.12, 4.15, 4.18).

5.4.9 Potential transformation: Representability

Representability refers to the act of reflecting on **how to illustrate or represent a word** which can be an object, a verb, or an adverb. In the analysis we can observe that preschoolers think about the representability of the words chosen. Preschoolers ask others for help or co-construct the representation of a given word with other preschoolers. It is interesting to note that **the affordances of the iPad and the app** seem to have **an effect on this orientation** towards the representability. Preschoolers use the affordances of the app and their representation is often influenced by this. This is considered a potential language exploration trigger as preschoolers engage in co-construction of meaning, identification of the aptness of some words to be represented and the description of representation. However, the instances found are short although common and very rich and do highlight that the task design based on drawing the object is relevant and can be further expanded (refer to episodes: 4.4, 4.11, 4.15, 4.12, 4.16, 4.20). Figure 5.44 demonstrates how two preschoolers co-construct the representation of 'net' which is the word that one of them (Pier) plans on illustrating when it is his turn as iPad manager. The co-construction is relevant as it shows preschoolers describing how they are going to illustrate the object.

Pier: net haré una net, una una rac esa eso para caza:r s/ (net I'll do a net a a rac those that for catching s/)
Jan: =vale/ mariposas (ok/butterflies)
Jan: es así que, te la enseño Pier porque yo las estoy dibujando Pier *** it is like this do I show it to you Pier because I am drawing them Pier ***)
Pier: es así, así y es haces also así (it is like this like this and is you do something like this)
Jan: no exactamente así, lo tienes que hacer conmigo, del lado *** del cuadro hay que hacer esto mira un palo así y después bajas como *** y después haces así y después *** y después *** (not exactly like that you have to do it with me, from side to side of box you have to do this look a line like this and then down like *** and then you do like this *** and then ***)

Figure 5.44) Pier and Jan co-construct the representation of 'net' (episode 4.12)

5.4.10 Potential transformation: Pronunciation

In the analysis there are three (visible) displays of pronunciation exploration. In two of the instances, preschoolers explore the pronunciation of words by using repetition with variation. It is interesting to note that there is no explicit correction but a playful exploration in which preschoolers modify slightly the pronunciation made available in the previous turns of the interaction. For example, in one of the episodes, more than 6 different pronunciations can be perceived as candidates for the correct enunciation of one single word (figure 5.45). It is also relevant to note that a preschooler might modify the pronunciation he or she makes available upon hearing a different pronunciation (refer to episodes: 4.5, 4.17).

Miguel: /k/k/ /k/ /kə'kɔdrɪ/
Genaro: /k/ /k/ /k/ /ki:/ /kəkɔdrɪ/
Miguel: /kəkɔreɪ/
Miguel: /kəkɔreɪ/
Pier: /'kəkɔdrɪ:/
Genaro: /'kə'kə'drɪ:/
Diana: /'kək.ə.drɪ/
Jan: /'kək.ə.drɪdɪ/

Figure 5.45) Preschoolers exploring the pronunciation of the word 'crocodile' (episode 4.5)

The third documented evidence is a case in which a preschooler explicitly corrects the ending phoneme of a word (refer to episode 4.19). As aforementioned, the pronunciation exploration instances are scarce but they present a compelling potential language exploration trigger as preschoolers play with how they pronounce a word and how others do so as well.

5.4.11 Potential transformation: Vocabulary suggestion

In the analysis there are several indicators of the preschoolers exploring vocabulary in the target language. The exploration is displayed through suggestions of words (objects), co-constructing word suggestions, reading words, translating or offering approximations in the target language (refer to episodes: 4.2, 4.4, 4.6, 4.7, 4.11, 4.12, 4.13, 4.15, 4.17, 4.19).

We can observe, for instance, that preschoolers explore the vocabulary in the search of words beginning with the letter sound selected. This act is considered a potential language exploration trigger as the sole act of recalling, searching or engaging with a word made available by others or by themselves in the target language, even if known or unknown, might trigger language exploration. It is also relevant to point out that the activation of vocabulary is recurrently visible in the extracts. The suggestion of words is closely related to the key strategic language use: preschoolers almost always offer the suggestion in the target language, as seen in figure 5.41, and if not, such word is translated to the target language by the same preschooler or other during the episode.

5.4.12 Potential transformation: Letter formation

There are two instances of preschoolers engaging with letter formation. It can be observed that the preschoolers, by engaging with the activity taking place on the iPad’s screen, are able to identify and assess the physical formation of the lettersound being worked. The analysis shows that, in both cases, a preschooler opens a discussion by complaining or rejecting the tracing of the letter sound and that the utterance triggers further assessment of other preschoolers to accept and support or reject and disagree with the initial rejection (refer to: 4.2, 4.18). The arguments to support or reject are made in multimodal signs as can be seen in figure 5.46.

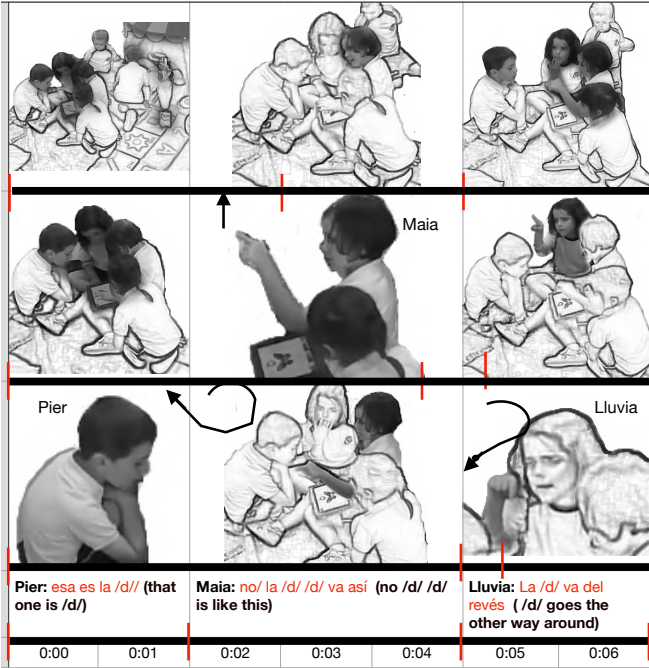


Figure 5.46) preschoolers engaging in the assessment of the letter formation of ‘d’. (episode 4.18)

5.4.13 Potential transformation: Co-construction

In the extracts there is substantial evidence of co-construction of meaning. **Co-construction** in this study refers to the act of engaging with what is made discursively or semiotically available by others and elaborating it by modifying or adding to it. It can be observed that preschoolers participate in the co-construction of arguments, suggestions, representations and instructions, for instance as in figure 5.47 (refer to episodes: 4.2, 4.4, 4.7, 4.10, 4.12, 4.14, 4.15, 4.19, 4.23)

Nuno: Yo haré un\ yo haré\ yo haré un diez\ un diez\ + /t/ /t/ ten [risas] (<i>I will do a\ I will\ I will do a ten/ a ten\ /t/ /t/ ten</i>) [laugh]
Sofia: Pero solo un ten no puedes hacer *** (<i>but only a ten you cannot do ***</i>)
Fabian: Ah/ se puede hacer /t/ /t/ /t/ tiny + pequeño (<i>ah/ you can do a /t/ /t/ /t/ tiny + tiny</i>)
Sofia: Ah/ un diez pequeño\ ++ /t/ /t/ /t/ tiny (<i>ah/ a tiny te:n\ ++ /t/ /t/ /t/ tiny</i>)

Figure 5.47) A co-construction of a representation. (episode 4.7)

These documentations of evidence are considered a potential language exploration trigger because there is engagement and exploration pertaining to the act of transforming, adding or adapting what has been made available.

5.4.14 Potential transformation: Correction

There is evidence of explicit language-related corrections in the analyzed extracts. The preschoolers engage with what is made available by the other and they are able to offer corrections. The episodes of explicit corrections are not very common; it is more common to observe co-construction. For example in figure 5.48, a preschooler explicitly corrects the suggestion of another preschooler and then provides him the reason for his rejection of the prior proposal (episodes: 4.3, 4.10, 4.11, 4.14, 4.19).

Pier: o:rn o:rn. {*approximation of oven from 'horno' in Spanish}
Pier: Un horno, sí, puedes poner a veces en la cocina (<i>An oven, yes, you can put it sometimes in the kitchen</i>)
Jan: Pero Pier (1s) estas estas diciendo todo en español que empieza por la /o/ y que en inglés no empieza: (<i>But Pier (1s) you are, you are saying everything in Spanish that begins with /o/ and that in English does not begin:.</i>)

Figure 5.48) Jan explicitly correcting Pier's suggestion 'orn' (which is an approximation). Some turns have been omitted. Refer to episode 4.14.

There is also evidence of a self-correction in which a preschooler discovers an object to illustrate but then self-corrects upon finding that her first suggestion is an ‘approximation’ and not how the word is actually pronounced in the target language (figure 5.49). She then consequently redeems her ideas as incorrect (refer to episode: 4.4).

Gerika: Estar/ estar\ /s/ ((e)star/ (e)star\ /s/)
Gerika: no/ es:tar és amb la S (no/ (e)star is with S)

Figure 4.49) Gerika self-correcting herself. Approximation of ‘star’ as ‘estar’ adding the initial ‘e’ that the word has in Spanish and Catalan.

5.4.15 Potential transformation: Reflection on the use of language

There is one singular demonstration of reflection on the use of language. In the identified episode two preschoolers discuss the implications of using or not using the target language. This demonstrates how preschoolers make relevant connections between English use and the English lesson on the one hand; and English use as proof of liking and/or knowing the target language on the other. This is considered a potential language exploration transformation because the discussion is a reflection of the social implication of the use of the target language (refer to episode 4.8). In the episode (figure 5.50) the two preschoolers are discussing the need to use English in the task and in doing so discuss the implications of making visible their use of the target language. For the preschoolers there is close relationship between the implications and the public use of the target language; the preschoolers have different understandings regarding this point and thus it becomes the topic of the discussion.

Sofia: No::: això s’enfadarà una mica perquè perquè perquè aquesta classe es angle:sa (No::: that she would be upset a bit because because because this class is in English)
Nerea: i a la mestra tindriem que fer *** perquè es pensaria que no ho sabem fer en anglès i además que que (and the teacher we would have to do *** and she would think that we don’t know how to do it in English and besides that that)
Sofia: Ja ja sap que sabem anglès i que si ens agrada un altra idioma no passa res ++ no s’enfadarà (right she already knows that we know English and if we like another language nothing happens ++ she will not get upset)

Figure 5.50) Two preschoolers’ discussion of the need to use the target language in the digital book of sounds. (refer to episode 4.8)

5.4.16 Language exploration and potential transformation in EFL tasks: summary

The observation and analysis of **preschoolers' peer interaction** episodes in **autonomous** and **collaborative language learning tasks** supported by **iPads** and **Beebots** show that language-related exploration occurs through exploring **language features, aspects** and/or **actions** (figure 4.51). The exploration observed in the data is related to: **descriptions/definitions**, usually of objects being or going to be represented; the **use of the target language** either as a strategic language use (key or extended strategic use) and creative use (approximation or language-test); **phoneme or grapheme identification** in words; exploration of the **representability** of a word or concept; **pronunciation** of words in the target language; suggestion of objects (**vocabulary**) in the target language, as words beginning with a given letter sound; **co-construction** of suggestions, disagreements with others, agreements or representation ideas; **explicit corrections of self or other's** mistakes in the target language and; **reflection** on the implications that using or not using the target language in the digital book of sounds have.

This points to an exploration that is to a great extent influenced by the task but not limited to it. For instance, phoneme and grapheme identification, use of the target language, representability of the words chosen for illustration and co-construction and corrections related to these aspects are closely related to the tasks' requirements or design. Aspects such as pronunciation are not surprising but are not always clearly related to the task. However, there are interesting aspects that were not expected such as reflecting on the implications of the use of the target language, the numerous suggestions of objects (many of which were not even materialized by the preschoolers nor included in the book of sounds), the active co-construction of various different aspects including the collaborative social order of the task. Thus, the findings have shown rich and varied exploration and has highlighted the agency of preschoolers in foreign language exploration, in particular without the presence of the teacher.

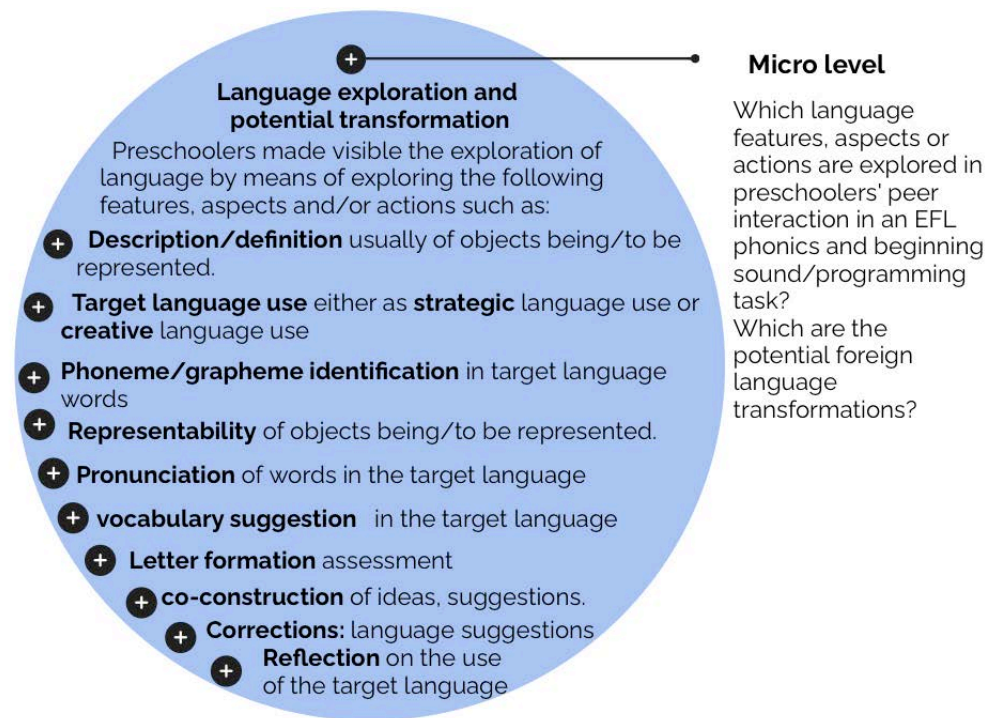


Figure 5.51) Language features, aspects or actions explored in preschooler's peer interaction: a view at the micro level.

CHAPTER 6 - CONCLUSIONS

In this chapter we will see the main findings of this research project and the contributions to the aims previously outlined in chapter 3. This research aimed to:

- Identify, describe and analyze the **nature of preschoolers' peer interactions in language-related episodes** in autonomous and collaborative EFL tasks supported by iPads and Beebots.
- Identify **language exploration triggers** in preschoolers' autonomous and collaborative interactions in EFL tasks supported by iPads and Beebots.
- Identify, describe and analyze **potentially transformative engagements in preschoolers' peer interaction** in autonomous and collaborative EFL tasks supported by iPads and Beebots.

The findings are based on a fine-grained micro-analysis of preschoolers' interactions. The analysis focuses on modes, and the orchestration of modes, in fragments of 2 seconds x 2 seconds. This timing and segmentation of the fragments was selected as a first entry into the highly complex context of multiple modality and movement found in the data. The analysis is framed within a mixed-methods approach in which Social Semiotics Multimodality, Multimodal Conversation Analysis and Multimodal Ethnomethodology are intertwined with the intention of focusing on preschoolers' meaning-making, action sequentiality and the context and location of the research as explained in detail in chapter 2.

The findings are related to the framework presented in chapter 1 in which the topics of foreign language and literacy learning in the early years, agency and digital technology provide the theoretical background for the study. The conclusions are drawn from the analysis of 23 episodes presented in chapter 4 and the final discussion of the cohort of episodes in chapter 5. This chapter is organized in four sections: 1) outline of conclusions; 2) contributions of the study and reflections; 3) recommendations for practical applications and; 4) suggestions for future research.

6.1 CONCLUSIONS

In this section the findings for the three aims posed by the study are presented. The findings, as argued in chapter 2 and 3, are contextually situated and thus the results are transferable, to a certain extent, to similar situations but are not to be expected to be identically reproduced as they stem from naturally occurring social action. The findings attend to the *observed* preschoolers' peer interaction in autonomous and collaborative EFL tasks supported by iPads and Beebots in a context-bound situation.

6.1.1 The nature of preschoolers' peer interactions

One of the aims of this research is to identify, describe and analyze the nature of preschoolers' peer interactions in language-related episodes in autonomous and collaborative EFL tasks. The tasks have been designed to include the use of iPads and Beebots. The analysis tries to answer *what* happens in such interactions. It is assumed that by getting closer to understanding the nature of preschoolers' peer interactions it is possible to unveil key aspects that will serve in the design of sensible, adequate and effective EFL practices when working with young learners. It also helps recognizing the dynamics of preschoolers' peer interaction as valuable.

The analysis has demonstrated that preschoolers *move around the space* and change their position in the designated working space in relation to their focus of attention and interests, which can be directed to elements and materials, to others, to others' actions or to their own needs. Movement has been seen in a variety of manifestations from walking across the space, jumping or playing to body torques and gaze shifts. It has been observed that movement does not always interfere with the preschoolers' orientation to the task and that it is often dynamic, happening regularly for short periods of time. It has also been found that movement is influenced by the space layout and by the classroom social order. In relation to digital technology, the preschoolers move to orient to the iPad or Beebot, showing motivated interest to engage with the activity around the Beebots and the iPad screen and to the iPad's manager's actions. In sum, preschoolers' movement

although at first apparently random and chaotic is actually strategic and contextually framed.

As for *physicality* or the use of *physical contact* in the interaction it has been observed that preschoolers use physical contact in their interaction with communicative intentions. Physical contact is accepted in the interaction as natural. It has been observed that physical contact is also influenced by the social and cultural context. In relation to digital technology, the preschoolers use physical contact to get closer to the iPads or the Beebots and to claim their use of the gadget. In sum, preschoolers use physical contact as a communicative resource including negotiating their use of the digital gadget.

In relation to the *participation framework* it has been seen that the preschoolers' orientation to other's and to other's actions and interactions is fluid, self-motivated and energetic. Preschoolers incorporate into the discussions initiated by others at different points and without evident prefacing and in our data there has been no evidence of rejection of others regarding such incorporation, leading us to the conclusion that in this study all participants at all points are 'ratified'. These integrations or dissolutions of/to subgroups is generated by the preschoolers' own interests or by the actions of other preschoolers. Integration to small subgroups, such as dyads or triads, are often seen to attend to the creation of alliances between preschoolers.

The collaborative social order, co-constructed during the task, seems to influence the co-regulation stance of the preschoolers and thus the acceptance of the preschoolers' orientation to the task completion and to self-task organization. This, in turn, generates engagement with the whole-group and sub-groups at various moments. In relation to digital technology, the iPad brings about moments of mutual orientation to the iPad's screen and despite its small size, this is not seen as an obstacle. The Beebots also generate mutual orientation to the task. It has been observed in the data that the gadgets act as the epicenter of the interaction at various points. In sum, preschoolers' orientation to others is active and self-motivated

and the evidence shows that they are always 'ratified' participants although this might be influenced by the co-construction of the collaborative social order.

As for the *classroom social order* and *the collaborative social order* it has been observed that these are enacted and co-constructed in the interaction. The classroom social order is visible in instances that display how the preschoolers' orient to the teacher when she enters the working space, the use of English in the task, the use of English when the teacher is present or when they address the camera, or the preschoolers' reference to the task instructions. The collaborative social order has been observed to form part of the preschoolers' multiple orientation to co-regulation as displaying when engaging with others' suggestions and offering their own stance on such suggestions and, by giving reminders to others regarding the task instructions. In relation to digital technology, the preschoolers share the gadgets by turns as iPad managers or Beebot programmers with great respect. In sum, the classroom and the collaborative social order are visible in the preschoolers' interaction and clearly influences their interaction.

In relation to *spontaneous play*, it has been discerned that play is not always contrary to task orientation. Preschoolers have been observed to play with toys or elements in the classroom while maintaining their active participation in the task. It has also been observed that preschoolers do occasionally disengage from the task during play. Engagement with play is not prolonged in time and it seems to attend to the preschoolers' need to change their focus of attention, to stretch or move their body or to attend to more pleasurable activities. Engagement with play has not been seen to affect the preschoolers' general orientation to the task but rather, if disengagement occurs, for brief moments, there is a subsequent re-engagement with the task. In summary, preschoolers do engage with out-of-task play, but it does not always imply complete disengagement from the task, and if it does it is for a short period of time and engagement with the task is renewed once the playing action is concluded.

In general, the nature of preschoolers' peer interaction in technology-enhanced EFL autonomous and collaborative tasks shows that preschoolers move around the working space according to their own interests; use physical contact as a

communicative resource and accept it as a natural occurring feature of their interaction; change dynamically their orientation to others and are seemingly always ratified participants; engage in spontaneous out-of-task play which can imply brief disengagement from the task or not and; that the nature of play seems to be influenced by both the classroom and the collaborative social order, validating the argument that their play is contextually tied interaction.

6.1.2 Language exploration triggers

The second aim of this research is to identify language exploration triggers in preschoolers autonomous and collaborative interactions in EFL tasks supported by iPads and Beebots by trying to answer *what* triggers language exploration in such interactions. It is hypothesized that by identifying what triggers language exploration it is possible to unveil stimuli that potentially promote preschoolers' engagement in language exploration thus informing the design of EFL practices in preschool by highlighting effective stimuli or types of stimulus that appear to generate language exploration.

The preschoolers' language exploration triggers have been observed when preschoolers *engage with language-related aspects*, features or actions. Interaction is per se an act of engagement given that by interacting preschoolers are directing their attention to something or someone. The preschoolers not only engage with others and others' actions but with elements in the working space (displays, toys, iPads/Beebots, etc.). The preschoolers' interaction is often embodied, thus the engagement is not only visible through speech but through different modes. Language exploration triggers have been identified in the data through the preschoolers' language-related engagement, in any mode or modes, with others, other's action or elements in the working space.

Disagreement and *agreement* on language-related aspects have been pinpointed as triggers of language exploration. Disagreements are the most common trigger found in the episodes; the opposition of the preschooler to others' actions (suggestions or comments mostly) generates the exploration of language-related aspects. This opposition can be *explicit* or *non-explicit*, and *simple* in which preschoolers only

display their negative stance, or it may be *argumentative* in which case, apart from making evident their stance they provide arguments for their disagreement. Through disagreeing, the preschoolers make visible that they have, correctly or incorrectly, engaged with others' actions and consequently explored the exhibited language-related aspects. In disagreement situations it is common to see alliances in which two or more preschoolers support one of the stances made manifest. These alliances are often very rich language-related explorations in which arguments are co-constructed by the preschoolers that engage in the interaction. *Agreements* are common as well although less frequent than disagreement. As with the disagreements, agreements can be explicit or non-explicit and simple or argumentative. In the episodes, agreements are seen as acceptance of suggestions or agreement on the use or adequacy of a suggestion. The most frequent agreement, however, is seen in agreements with others' disagreement resulting in a co-construction of a nexus of agreements and disagreements enacted and displayed through preschoolers' alliances. In sum, disagreements are the most frequent language exploration trigger observed in the episodes although agreement, specially agreement with others' disagreements is also a common trigger.

Repetitions have also been observed to trigger language-related exploration. Repetitions can be found as repetitions made by the *same participant* or by *other participants* or even as a *chain of repetitions* in which two or more turns constitute repetitions of previously made available actions. Repetitions can be with *no variation* or *with variation* or as a rephrase (or remake) of the repeated action. Repetitions with variations are regularly found to trigger language-exploration as there is co-construction of that being repeated. Thus, through the repetition with variations preschoolers are seen to defend their stance, change their stance or to offer a new stance or suggestion which is influenced by the previous referents. Repetition is also interpreted as a co-regulation stance in which preschoolers regulate each other through their actions. *Self-repetition* is deemed to be a language exploration trigger and in the data is usually manifested as a repetition with variation; if observed with no variation it is often seen as a strategy to engage others. To summarize, repetitions are frequently seen in the episodes and repetition in chain and with variation often makes visible rich co-construction of language-related aspects.

Language-related exploration has also been observed triggered by self-task organization. This is seen in the ways in which the preschoolers organize their next turn, decide which letter sound to illustrate, make suggestions for objects or representations and these actions often lead to the engagement by other preschoolers, triggering discussion and co-construction, thus generating language-exploration. Self-task organization is very salient, the preschoolers frequently suggest and engage in others' suggestions; there are a greater number of suggestions than those presented in the final digital book of sounds. Thus, preschoolers self-task organization orientation is not only limited to the 24 letter sounds illustrated but to the multiple suggestions shared by the preschoolers during the sessions; most of which were not materialized in the digital book of sounds. In sum, preschoolers made available to the group various suggestions for objects and representation ideas, not always taken up, but even when not actually realized, they often generated co-construction of such suggestions and thus triggered language exploration.

Task-completion orientation has been observed to trigger language exploration. The preschoolers show orientation to task-completion by making language-related corrections to others and/or comments related to time management, task rules (often related to the language-related instructions) or even aesthetics. This orientation seems to be influenced by the preschoolers' co-regulation stance, which is in turn co-created in and through the collaborative social order. Thus, it is concluded that the preschoolers do engage with others' actions oriented to their task-completion stance. This is often a language-related trigger as preschoolers engage in a discussion or co-construction by correcting others' objects or illustration suggestions or, instruction's understanding or enactment. In sum, preschoolers often engage with others' actions, showing a task-completion orientation, rendering this orientation indicative of a trigger of language exploration.

In general, we have found that it is possible to identify what triggers language exploration in preschoolers' peer interaction by observing their engagement with others' or with elements present in the working space. Language-related exploration is usually triggered by disagreement as preschoolers co-construct alone or with

others opposing perspectives to their initial views or those of others. Agreement also generates language exploration usually in a rich network of agreements on disagreements and creation of alliances to support a language-related aspect or action. Repetition, as well, specially so if with variation, is a trigger through which co-construction of arguments, ideas or stance is seen. Self-task organization also triggers language exploration as preschoolers are seen actively suggesting and organizing their next turns. Doing so then triggers exploration when others engage with these turns. And, task-completion orientation, which involves preschoolers engaging with others' actions oriented to the completion of the task, generally triggers discussion and exploration of what has been manifested previously (suggestions, ideas, etc.).

6.1.3 Potentially transformative engagements

The third aim of this research is to: identify, describe and analyze *potentially transformative engagements* in preschoolers' peer interaction in autonomous and collaborative EFL tasks supported by iPads and Beebots. We argue that by identifying the language exploration triggers it is possible to identify *potentially transformative engagements* at the same time. These can be found in language-related features, aspects or actions. This potential transformation is illustrative as it offers insight into *what* is explored by the preschoolers as well as information on the adequacy/inadequacy and relevance/irrelevance of the task design in relation to the visible exploration and the task's aims. As it is not possible to unveil precisely everything that has been learnt by the preschoolers, as explained in previous chapters this is beyond the scope of this study, this insight points to possible actions and aspects of the task that promote language-related learning. These are considered to be relevant for EFL task designs.

The potential (language-related) transformation engagements that have been observed in our data are mainly influenced by the learning objectives, task design and the affordances of the iPad or the Beebots although not limited to them. Potential transformation is seen in and through preschoolers' displays of *description or definitions*, offered to others, of the objects they want to illustrate (word suggestions) or an illustration idea for a word often embedded in a negotiation or co-construction.

The episodes show that the task requirement for the digital book of sounds, of illustrating digitally an object beginning with the chosen letter sound promotes the preschoolers' orientation to not only the word or object chosen but also to the illustration. There is at least one example of how the need to illustrate a chosen object has led to a metalinguistic discussion regarding the 'representability' of the selected word. Thus, the illustration requirements and the iPad and its affordances seemingly influence this orientation to the displays of descriptions or definitions of ideas for the illustrations. It is argued that the task requirement of selecting a word/object beginning with each letter sound also influences the description or definition of words/objects.

The use of the target language, either strategic or creative, is also considered a potentially transformative engagement. The strategic use of the target language, whether in the form of key (simple tokens) or extended use, implies that the preschoolers *use* the target language to *communicate*. The extended use (a turn or utterance) is influenced by the presence of the adult, appointed teacher, a turn addressed to the camera, or being the appointed teacher or narrator or as a personal preference (although the spontaneous use of the target language was seen only by one of the members). The key strategic use (one or two words in the target language embedded in a longer utterance in the home language) is seemingly influenced by the digital book of sounds' task instructions as it is recurrently seen in preschoolers' suggestions for words/objects.

The creative use of the target language, through approximations, is also considered a potentially transformative engagement as preschoolers *use their understanding of the target language's norms* to create a new word to fulfill their communicative intentions. The use of language-tests, also a creative use of the target language, is considered, as well, a potentially transformative engagement as preschoolers co-construct and use arguments to support their stance, or the stance they are supporting, to prove a language-related point. The creative use of the language is influenced by the digital book of sounds' task as it requires preschoolers to select words/objects beginning with the chosen letter sounds and consequently to disagree/agree with others' selection of words/objects.

Identification of *phonemes* or *graphemes* is considered a potentially transformative engagement. In the episodes it is visible, repeatedly, that preschoolers identify the phoneme of suggested word/objects or some words/objects that are being illustrated at the moment, by articulating the isolated beginning sound before saying the word. This has been deemed a potential transformation because by doing so, the preschoolers are identifying the initial sound from a list of sounds which constitutes part of the task requirements for the digital book (final output) and overall learning objectives. Such action is influenced by the task instructions. In the episodes there is also a small number of documented evidence of the preschoolers identifying a grapheme *with* its phoneme.

Representability, conceived as the act of reflecting on how to illustrate or represent a word, is also considered a potential transformation engagement given that preschoolers engage in exploring how a 'word' (not always an object) can be represented. This is often part of the negotiating or co-constructing of illustration ideas. In the episodes there is evidence of such engagement and it appears to be influenced by the book of sounds' task instruction to illustrate the object, and by the affordances of the iPad and the app (the illustration is framed by these affordances).

As for pronunciation in the episodes there is scarce evidence of preschoolers engaging in the exploration of how to pronounce words in the target language, but the few moments identified show the preschoolers displaying and sometimes changing their pronunciation of a word, influenced by how others pronounce the same word. Thus, the sole act of transforming or shifting from their previous stance on a language-related aspect is a potential transformation.

Vocabulary suggestion, seen in actions such as suggesting words, co-constructing word suggestions, reading words, translating or offering approximations is seen as an exploration of the target language. This exploration is influenced by the digital book of sounds' requirements because the preschoolers are required to illustrate an object and consequently, they have to select word/objects in the target language and they do so by suggesting candidates for theirs and other's turns to illustrate a given letter sound. This is almost always accomplished in the target language.

Letter formation exploration is rarely seen in the data but it does occur. Its occurrence is considered relevant as it points to the preschoolers engaging in the process of how others are writing a given letter sound. This participation is seen as closely influenced by the preschoolers' engagement with the activity happening on the iPad's screen. Upon seeing others form a letter and consequently recognizing the letter, the preschoolers offer their disagreement or agreement on the process of the letter formation, thus exploring and triggering exploration and engagement from others.

Correction is also visible in the episodes. The preschoolers are seen engaging with what others make available and offering corrections to them. This is considered a potentially transformative engagement: by doing so the preschoolers have to engage with what has been put forward, analyze it and offer public correction thereby enacting language exploration. This is not very common in the episodes but the evidence found is relevant. Corrections seem to be influenced by the co-regulation stance and collaborative social order, which is in turn closely related to the collaborative and autonomous task design. The preschoolers demonstrate orientation as a group to complete the task, thereby ostensibly entitling all the preschoolers to engage with others' actions.

Reflection on the use of the target language is also regarded as a potentially transformative engagement. It is only seen once in the cohort of episodes but the preschoolers are seen engaging in the social implication of the use of the target language. They are able to develop a rich and relevant discussion, especially for such young ages. The discussion is influenced by the task instructions and by two preschoolers' perspective on the implications of using or not using the target language in the task, inducing them to explore such perspectives and consequently language-related aspects.

Co-construction in this study is defined as the act of engaging and negotiating with what is already made available by others. This includes modifying, adding or agreeing/disagreeing. These actions are considered a potentially transformative engagement as by doing so preschoolers engage with language-related aspects or

actions and in turn explore the language. In the data, it can be seen that the preschoolers engage in the co-construction of suggestions, representations and reminders to the others regarding the instructions. There is extensive evidence of co-construction and most of the aspects already mentioned in this section are presented as co-construction and negotiation. Co-construction is seemingly influenced by the collaborative social order in which the preschoolers are responsible of the task as a group. This is also promoted by the collaborative and autonomous characteristic of the task that promotes the preschoolers' self- and co-regulation stance.

In general, language exploration and potential transformation is observed when the preschoolers engage with the following language-related features, aspects or actions: offering descriptions or definitions of word/objects for the digital book of sounds; using the target language either creatively, through approximations or language-tests, or using it strategically either in a single word embedded in a longer utterance in the home language or extended in an utterance in the target language; identifying graphemes or phonemes; exploring the pronunciation of words in the target language; suggesting words/objects for the book of sounds; correcting others in language-related aspects; reflecting on the implications of the use of the target language and; co-constructing ideas or suggestions of others and with others. Through such engagements the preschoolers explore the target language by the sole act of engaging and thus such engagement is a potential language transformation.

6.2 CONTRIBUTIONS OF THE STUDY AND REFLECTIONS

Based on the main findings pointed out in the previous section the contributions and reflections of this study are outlined in this section.

Movement is scarcely an obstacle for task-orientation; rather it allows the preschoolers to get physically closer to what has caught their attention. This is often task-related and consequently related to the task's learning objectives. The design of the working space, together with flexibility of movement as an intrinsic part of the classroom social order appears to influence positively the preschoolers' interaction.

Spontaneous play, often in combination with movement in the working space, is not normally an impediment for task-orientation. Spontaneous play usually takes place at various points during the task process and only for brief periods of time. If there is disengagement it does not generally constitute an obstacle for the general outcome of the task and the preschoolers always renew their engagement to the task successfully. This spontaneity appears to attend to preschoolers' very young age and nature.

Unratified participation was not observed. Our analysis suggests that there is a relationship between the collaborative social order and the co-regulation stance of the preschoolers that promotes an interaction in which the preschoolers are always considered ratified participants. It also appears that sharing one iPad is not problematic; instead it creates space for social interaction and for the development of a sense of group belonging.

Language exploration triggers are visible if preschoolers engage either with others, others' actions or elements in the classroom. The most common and valuable triggers (based on the analysis) found in this research are disagreement, agreement, self- or other's repetition, self-task organization orientation and task-completion orientation. It appears that disagreements, agreements, self-task organization orientation and task-completion orientation are closely related to the collaborative and autonomous design of the task. Arguably, by placing the responsibility of the task process and organization on the preschoolers, negotiation and co-construction is encouraged, which in turn promotes the most frequent triggers observed in our data. This shift in responsibility to preschoolers for the task process and the autonomous and collaborative design promotes agency, which is visible and accountable through their actions and interactions. Active co-construction and participation in interaction is seen in this research as a support to preschoolers' agency and development of agency, corroborating findings by Kumpulainen and Lipponen (2010) in a similar context with preschoolers.

The potentially transformative engagements observed in our data point to a clear link between the task design and aims and the language exploration. In the digital book of sounds' task, supported by the iPads, the task instructions required the

preschoolers to engage with beginning sounds (phonemes), the process of identifying which one promoted phonological awareness. The instructions also required them to select vocabulary in the target language and decide on the digital representation of the chosen words (not always objects). The design required the preschoolers to organize themselves to illustrate all the sounds in order (following the order of the letters written on a whiteboard thus implying grapheme identification and promoting alphabet knowledge) and to work collaboratively and autonomously, thereby promoting agency.

The digital book of sounds task triggered potentially transformative engagement, identified in the preschoolers displays of descriptions or definitions, the use of the target language, creatively or strategically, identification of phonemes and graphemes, reflection on the representability of words/objects, pronunciation exploration, vocabulary suggestions promoting emergent writing (through reading), letter formation exploration promoting print understanding, language-related corrections and reflections on the implications of the use of the target language that promoted metalinguistic skills of written and oral language and, co-construction. Thus, the triggers are related to the demands of the task except in the case of reflections regarding the implications of the use of the target language, which seem to be related but are not as clearly determined by the task itself. It seems that the design of the task greatly influences the exploration and thus the type of potential transformative engagement. The collaborative and autonomous aspects seem to bolster the negotiation and co-construction promoting oral language use for written language understanding. This aligns with Dooly's (2008) perspective on collaborative learning: "students are responsible for one another's learning as well as their own and that reaching the goal implies that students have helped each other to understand and learn" (p.21).

The Beebots challenge task was designed to require the preschoolers to collaboratively solve cognitive difficulties with the Beebots while using the target language to communicate in the process. However, the development of the process required little verbal interaction. Thus, the target language is used but not as often as was expected given the age and competence of the preschoolers. However, although

of no interest to this study, the social interaction is very rich which in turn makes visible that the tasks' aims are clearly relevant in the promotion of the potentially transformative engagements. Thus the task with Beebots, which had just one aim in the target language (its general use), has few language-related episodes due to the limited requirement in the target language, although the interaction is very rich in other areas. This is a point that needs to be taken into account for design purposes.

Still, the use of the digital technology, iPads and Beebots, also clearly influenced the interaction. The iPad and app's affordances influenced the task development and promoted interactivity understanding and multimodal meaning-making. The use of the selected app allowed the preschoolers to decide whether to use stickers or drawing tools for illustration. One group clearly preferred stickers for various letter sounds thus the vocabulary was 'framed' by such stickers (refer to the annex for the complete digital book of sounds). The use of the drawing tools, on the other hand, allows flexible drawing, and preschoolers were able to easily erase parts or the whole drawing if needed thus allowing the preschoolers to negotiate their illustration during the drawing process. The preschoolers were observed orienting to the iPad's activity as seen on the screen and consequently engaging with the task. The size of the iPad generated participation frameworks in which the preschoolers were very close together and the engagement was active and dynamic. The device also allowed the recording of the preschoolers' voices and this app's affordance triggered pronunciation exploration. As for the Beebots, the preschoolers collaborated as they manipulated the Beebot; the challenge which was imposed on them also influenced the collaboration. Another device found in the workspace was the camera. It was used for collecting data and also influenced the preschoolers' use of English. When they addressed the camera, the target language was often used. Thus, the use of digital technology to support the EFL tasks does influence the interaction and certainly can offer more engaging opportunities such as recording their own voices and creating their own movie or digital book. This connects with Marsh and colleagues' argument for iPads as learning tools for promoting creativity and curriculum content (Marsh et al., 2018) as well as Czura and Anklewicz's (2018) view that foreign language and content integrated teaching and learning, if age-appropriate and learner oriented, are perceived as useful and enjoyable by students.

And, it further connects with Dooly's (2010) view of understanding digital technology in the classroom as an 'added value'.

All the previously argued points appear to promote, to different extents, the outlined literacy skills (refer to chapter 1) through the tasks' designs of both the iPad's digital book of sounds and the Beebots challenge. The tasks promote phonological awareness; print understanding; alphabet knowledge; emergent writing (Neumann, 2018); oral language use for written language understanding; metacognitive and metalinguistic skills of written and oral language (Goodman, 1986); interactivity understanding and; multimodal meaning-making (Beschoner & Hutchison, 2013). In relation to target language use specifically, the preschoolers have been observed to use their home language during the task-process while using very strategically the target language. This aligns with Masats, Nusbaum and Unamuno's (2007) findings, presented in chapter 1, that foreign language learners gradually incorporate the use of the target language by first using it at key points during the task, evidence which is seemingly replicated here.

In sum, this research has revealed that movement and spontaneous play are infrequently obstacles to the task achievement and learning process. It has also made visible that collaboration and the collaborative social order can promote participation that is always ratified. Moreover, it has been documented that language learning triggers and potentially transformative engagement are influenced by the task design and aims. And finally, the use of digital technology to support EFL tasks seems to positively influence the engagement; the participation is influenced by the affordances of the app, or gadget and the design of the use of the gadget; neither of which does not have to be used in solitary. In the following section the recommendations based on the research are presented.

6.3 RECOMMENDATIONS FOR PRACTICAL APPLICATION

Based on the analysis, discussion and conclusions, we offer these contributions, reflections and recommendations for practical application:

- The design of the working space influences the interaction, careful attention has to be paid to it.
- Allowing movement in the working space can have a positive influence and as such it has to be taken into account in the task design, contemplation and incorporation of opportunities for movement is suggested.
- Spontaneous play is common and it does not imply prolonged out-of-task disengagement. It is suggested to regard it as part of preschoolers' nature and to be flexible with its spontaneous appearance.
- Collaboration and the co-construction of a collaborative social order positively influences group work, conscientious effort to promote it is recommended. Autonomous work bolsters collaboration as well as the collaborative social order co-construction.
- EFL triggers and potentially transformative engagement is closely related to the task design and aims. The above-mentioned points influence the task process positively. The aims have to be clear and diverse for a richer language exploration.
- The use of technology-enhanced gadgets can positively influence preschooler's interaction. The affordances of the gadgets give useful information on the potential influences. iPads and Beebots appear to be suitable for collaborative and autonomous EFL tasks.

6.4 SUGGESTIONS FOR FUTURE RESEARCH

In this section the suggestions for future research are proposed. In the first place and given the situatedness of this research design it is suggested to invest effort on other contexts to assess similar points in different contexts thereby helping determine those that are clearly influenced by the context and others that can be extrapolated. For example, it would be relevant to observe similar situations in formal education

contexts in which English as a foreign language has less presence (50% in this study context) in the preschoolers' timetable.

A different language focus and thus a different task outcome can be further explored. This research focuses on sounds and letters and language use, a focus on writing texts or target language comprehension can broaden the understanding of collaborative and autonomous EFL tasks.

In relation to the use of technology-enhanced gadgets, the Beebots challenge task can be widened and explored. As argued previously, an ampler set of language learning objectives might have promoted greater language exploration. This would not only provide evidence with the Beebots but with the relationship between the design of language learning objectives and the triggers and potentially transformative engagement. On the other hand, variations with the use of different apps or different gadgets could offer further information on the influence of technology-enhanced gadgets for EFL tasks.

Lastly, these findings have posed an interesting question related to the participation frameworks in preschoolers' interactions. It would be essential to explore the role of 'unratified' participants in preschoolers' interaction and specifically in autonomous and collaborative tasks. These findings can move the theory forward and offer more information on the difference between adults' and preschoolers' interaction.

EPILOGUE¹⁸ “CAMERA YOU BRING ME A LOT OF MEMORIES”

This dissertation aims to advance and value preschoolers’ peer interaction and consequently contribute to EFL task design supported by digital technology in preschools. This research is done *with* preschoolers *for* preschoolers. It seems sensible then to include the perceptions of the preschoolers to recognize not only their perceptions but them as agents of their own learning. This epilogue includes the voices of the now young learners on their perceptions of their participation in the project, adding value to the findings based on the analysis of their interaction.

4 years after the data collection the young learners, now 9 to 10-year-olds, in the same groups as during the study except three members that were not available (figures 7.1, 7.2), were shown two of the episodes¹⁹ analyzed in this research and they were asked about their perceptions on different aspects. The young learners were recorded, with the same GoPro camera as during the data collection, during an interview of approximately 20 minutes directed by the same teacher/researcher. Excerpts from the conversation are presented here.



Figure 7.1 Group A in order left to right: Nuno, Nerea, Sofia, Fabian, Tatiana, Curiel (missing Gerika)

¹⁸ This epilogue was written (including the selection of turns presented here) after writing all the chapters of this thesis.

¹⁹ Group A watched episode 4.23, Group B watched 4.22.



Figure 7.2 Group B in order left to right: Lluvia, Diana, Pier, Maia, Genaro (missing: Miguel and Jan)

In first place it seems relevant to highlight the young learners' laughter, joyful gazes and comments while watching the selected episodes (figure 7.3, 7.4, 7.5). It is evident how watching themselves in the videos and their actions is pleasant and triggers "a lot of memories" as will be seen in the different extracts presented. From their comments it is apparent that they easily recall the project and that they are able to connect to some extent those past experiences with present experiences.

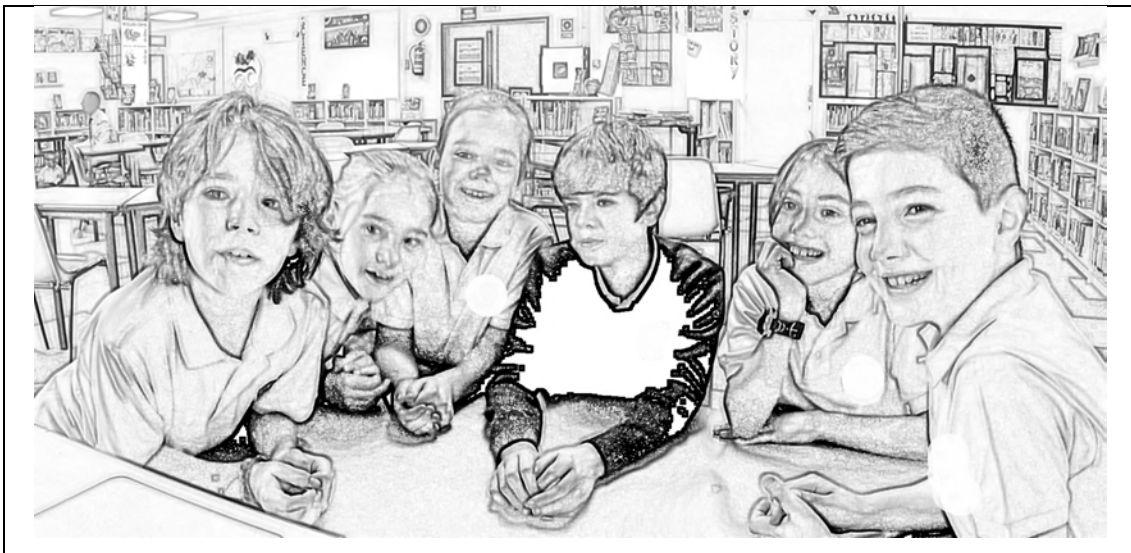


Figure 7.3 Group A watching the episode.



Figure 7.4: Group A watching the episode.



Figure 7.5 Group B watching the episode.

In relation to agency and to the young learners' perception of their 'capacity to do, say, try and practice' during the task, they discuss how they were learning through play (extract 1). In turn 2, Curiel explains that they "learn like playing" in response to the teachers' question (line 1). It is interesting to see how the answer to a question directed to unveil the young learners' notion of agency is connected to the concept of play. This suggests that for young learners the capacity "to do a lot of things" is equivalent, to some extent, to play and consequently it shows the importance play has for them even when seen retrospectively. In group B (extract 2), there is a very similar answer. The teacher asks the young learners their perception on what they were doing during the extract they watched, making explicit reference to "do you

think that was playing” (line 1), and their answer is “playing and learning” (line 3). So both groups, which were interviewed separately and with questions presented from different angles connected playing and learning.

1	Teacher: What do you think about you when you were in P5 / if you were able to do a lot of things + if you were able to do and say everything you wanted to say, if you were able to try and practice
2	Curiel: Ah eh we learn like playing

Extract 1 (Group A)

1	Teacher: Do you think that was playing/
2	Curiel: yes
3	Sofia: a little bit
4	Fabian: playing and learning

Extract 2 (Group A)

This perception is interesting as the questions were not intended to scrutinize young learners’ perception of learning but their capacity “to do and say everything they wanted to do and say”. In a further turn, presented in extract 3, the teacher reconducts the interview and reformulates the question making explicit mention (line 1) to the young learners’ “capacity to do or not do things”. In being given a simple affirmative answer “yes” (line 2) the teacher asks for more information “like what/ tell me/” (line 3). The answer provided by the young learners’ is coherent with the previous answer in extract 1 “**ah eh we played and had fun at the same time**” (line 7) and “we were having fun and learning” (line 8). This implies that these learners connect doing what they want to do (agency) with playing, having fun and learning. However, the young learners also connect agency, having fun and playing more explicitly when they reference to their capacity to “**trying to find what was happening**” (line 9) and “trying to find the problem” (line 11). This observation highlights an aspect that seems to be relevant for the young learners which is the design allowed them to experiment and discover. This connection ties the autonomous and collaborative design of the task with the young learners’ positive perception. This reflects Dooly’s (2018; 2008) perspective: the core of collaborative learning is the active construction and transformation of knowledge by students and it seems very much appreciated and acknowledged by the students themselves. These reflections also align with the recommendations for practical applications (see previous chapter) which suggest the careful design of the working space, the inclusion of opportunities

for free movement during the task and the need to regard spontaneous out-of-task play as part of preschoolers' nature and part of the learning process.

1	Teacher: What about what I asked you about your capacity to do or not do things, what do you think about that when you were in P5 where you able to do things that you wanted to do/
2	Sofia: Yes
3	Teacher: like what/ tell me/
4	Sofia: eh::: (+++)
5	Nerea: [laughs*]
6	Sofia: We don't know
7	Curiel: <i>ah es que jugábamos y a la vez nos divertíamos</i> (<i>ah eh we played and had fun at the same time</i>)
8	Fabian: we were having fun and learning
9	Curiel: <i>Como intentando descubrir qué pasaba</i> (<i>like trying to find what was happening</i>)
10	Teacher: <i>intentando descubrir qué pasaba</i> I like that (<i>like trying to find what was happening I like that</i>)
11	Fabian: =trying to find the problem

Extract 3 (Group A)

This perception is also shared by the other group, B, who express explicitly this connection between agency, learning and the autonomous and collaborative task design, as seen in extract 3 and 4. In extract 4, in line 6, Pier connects learning with autonomy and Lluvia, in line 8, connects being left alone with having to learn to behave without the teacher being present. This perception is complex as the young learners connect and seemingly appreciate their autonomy during the task with learning, playing and agency. It seems imperative to highlight this connection of learning, fun and *finding* as it offers insight into what the young learners valued about the task, a task with no set answers or outcomes but open to preschoolers' own process as presented in the design.

In extract 5, the teacher delves further into their insight on “Do you think you were learning a lot/” (line 3) in relation to the task and an extraordinary answer is given by Genaro “**freedom**” (line 6). This answer offers a clear connection of learning and agency which is seemingly for these young learners a feeling close to be ‘free’.

1	Teacher: what were you learning/
2	Pier: <i>a regañar/</i> [all laugh] <i>(to tell each other off)</i>
3	Genaro: <i>y a pegar (and to hit)</i>
4	Pier: <i>no:: technology</i>
5	Teacher: <i>technology</i>
6	Pier: <i>pero sin que la profe nos pusiese deberes y esas cosas, disfrutando/ (but without the teacher giving us homework and those things, enjoying/)</i>
7	Teacher: <i>having fun/</i>
8	Lluvia: <i>no no no a a estar solos sin a a comportarnos bien sin la profe (no no no to be alone without to to behave properly without the teachers' presence)</i>

Extract 4 (Group B)

1	Teacher: what do you think, do you think you were learning things here/
2	All: <i>ye::s</i>
(omitted turns)	
1	Teacher: Do you think you were learning a lot/
2	All: <i>yes/</i>
3	Teacher: Maia was saying that she was saying learning about <i>regañosa*</i> <i>(scolding)</i>
4	Genaro: <i>libertad/ (freedom/)</i>

Extract 5 (Group B)

In group B, the teacher explores more this connection to “freedom” and the answers of the young learners offer insight on the difference they are seeing between them during the task (as preschoolers) and themselves in the present. In making the comparison they link their present selves with “boredom” (extract 6 line 5); “*work and do everything they say*” (extract 6 line 9) and “*study and homework*” (extract 6 line 10). This contrasts their recollection of themselves as preschoolers: “*freedom you do whatever you want*” (extract 6 line 9) and “*we were free*” (extract 6 10). This disclosure should not be taken as young learners immersed in a work-loaded and boring education; it has to be understood as preschoolers appreciating and remembering their early years as years of learning while playing and being free. In extracts not presented here, the preschoolers recognized themselves as “having more knowledge” and “being more responsible”. Furthermore, another aspect worth highlighting is that for these young learners’ “freedom” means “working alone” and that by working alone they recognize they were also learning as seen in extract 7.

Thus, the young learners' connection of the task with learning while playing is not surprising.

1	Teacher: you think that <i>when</i> you were in P5 you had libertad ((opening arms)) (<i>freedom</i>)
2	All: yes
3	Genaro: =A lot a lot
	Turns omitted
4	Genaro: si comparamos esa libertad con esta ++ (<i>if compare that freedom with this ++</i>)
5	Maia: =aburrimiento (<i>boredom</i>)
6	Genaro: no, no hay nada de comparación (<i>no, no there's no comparison</i>)
7	Teacher: Por qué/ wait a second why/ (<i>Why/</i>)
8	Genaro: porque en p5 (<i>because in P5</i>)
9	Maia: =hay libertad haces lo que quieres y aquí solo trabajo trabajo y todo lo que dicen (<i>there's freedom you do whatever you want and here only work and everything they say</i>)
10	Genaro: estudias y deberes allí estábamos libres (<i>you study and homework there we were free</i>)

Extract 6 (group B)

1	Teacher: Do you think that's libertad when you working alone (<i>freedom</i>)
2	Maia: =sí (<i>yes</i>)
3	Pier: =sí (<i>yes</i>)
4	Genaro: =sí (<i>yes</i>)
5	Teacher: and do you think you were learning working alone
6	Maia, Pier, Genaro: sí (<i>yes</i>)

Extract 7 (group B)

However, given that this research focuses on *EFL* tasks, the teacher continues to explore the connection of learning, during the task process, with learning English. The answers from both groups are similar and revealing and offer insight into aspects that are relevant and which were not visible during the task. In extract 8 (group A) the young learners' perception of their interaction during the Beebots' task was that they were learning English to different degrees. It is interesting to see how they make a connection between the world of play and imagination, merged with the learning objectives and the digital technology along similar lines to a study of preschoolers playing at home supported by iPads (Marsh, Plowman, et al 2016). This is evident in

Curiel's comment that "the Beebots talk in English" (line 10) which for him is related to learning English. Thus, from Curiel's comment one can argue that for him playing with the Beebots was playing with a 'toy' that spoke in English and that he regards that playing time as 'more or less' learning English. In extract 9 (group B) similar connections are made. Lluvia comments that they were "learning English because we were learning English a little bit of English because you say do that class of English" (line 1) so suggesting that the teachers' instructions to "use English" during the task were present. This seems interesting as part of the reflections on the analysis of the Beebots task is that the evidence on language exploration is limited. This insight, given 4 years later, indicates that there was a sense of "learning English" although it was not visible and that it was triggered by the teachers' instructions to "do that class in English" and the preschoolers' infantile perception of the Beebot speaking²⁰ in English which was shared by both groups. Maia (line 2) asserts "but because we didn't talk in English but the Beebots yes". Their perception is thought-provoking and makes palpable how preschoolers' fantasy and developmental stage has to be *recognized* and *valued* and how designs that take such into account positively influence preschoolers. It also connects, not from evidence in interaction but from the young learners' perception, with Masats, et al.'s (2007) assertion that at a first stage learners use the target language just at key points and that further competence and use develops as the learners' language competence evolves.

1	Teacher: And the last question, what about the English were you learning English while you were doing that/
2	Nerea: No\ (no\)\ ((laughs)
3	Curiel: Bueno sí + más o menos (well yes + more or less)
4	Teacher: más o menos (more or less)
5	Fabian: ah yeah some we were also talking in English
6	Teacher: ah/ you were talking in English
7	Fabian: at least I: was
8	Sofia: =sometimes sometimes
9	Fabian: = at least I was
10	Curiel: is like the + I think the Beebots talk in English I think
11	All: [laugh]

Extract 8 (Group A)

²⁰ The Beebots do not "speak" or talk, the only sound they emit is a bip sound.

1	Lluvia: we are learning English because we were learning English a little bit of English because you say do that class of English blah blah blue/ blah blah blah\
2	Maia: but because we didn't talk in English but the Beebots yes

Extract 9 (group B)

The teacher also explores how the young learners perceive that learning a language happens. In extract 10 (group A) they are asked if they consider that talking in a language is learning that language. Their answers are clear, 'yes' and it is extraordinary how they connect the use of the (foreign) language with its learning. They also indicate that language learning occurs through listening and memorizing as expressed by Sofia, "because we memorize, listening" (line 8). Nerea is even capable of connecting it to her learning of French as a foreign language (line 6). It would seem that the young learners felt they were learning English because the teacher asked them to talk in English, the Beebots talked in English and because they used the target language, and as a result they memorized it by listening to it.

1	Teacher: But/ so Fabian is saying that you were learning English because you were speaking in English, and + do you learn English or do you learn a language while you talk in that language or not/
2	Nerea: yes/
3	Sofia: yes/
4	Curiel: yes
5	Fabian: =yes
6	Nerea: I know little bit of French
7	Teacher: So if you talk in a language you learn, how do you learn when you talk in a language
8	Sofia: because we memorize, listening
9	Nerea: =listening
10	Fabian: we memorize

Extract 10 (Group A)

The other focus of this research is the use of the digital technology as a support in EFL tasks. Interestingly, this point was brought up by the young learners themselves (group B, extract 11) during the interview. In extract 11 (line 2), Genaro explains "we are learning how control the Beebots and technology and a lot of things". And Lluvia connects learning with the computer, making a clear connection with a digital technology they were using at that moment "and now we learn how to **use** this" (line

3; making reference to something she saw in the video). This is further explored by the teacher, in line 6 to inquire if the young learners see a connection between the technology they learnt, through the use of the Beebots, and the technology they are using currently. The answer is unexpected and clever “**all the arrows in the computer**” and triggers the teacher’s laughter. It seems that the young learners not only remember and appreciate the tasks they participated in, including the learning, playing and agentic capacity they mention but that they also see connections to their present learning. This links to the 21st century skills the task design originally aimed to develop: learning how the arrows in a computer function (acquired through learning through play with a robot) and consequently valuing play in the Early Years.

1	Teacher: when you were playing with the Beebots were you learning/
2	Genaro: we are learning how control the Beebots and technology and a lot of things
3	Lluvia: and now we learn how to manejar this (<i>use</i>) [pointing at the computer]
4	Genaro: Liberta::d (<i>freedo::m</i>)
5	Diana: =computer
6	Teacher: and do you think that the things that you learnt with the Beebots helped you to understand how to work with the computer/
7	All: yes/
8	Maia: to* las flechas del computer (<i>all the arrows in the computer</i>)
9	Teacher: [laughs]

Extract 11 (group B)

Lastly, and fascinatingly, this epilogue finishes with the once-preschoolers recollection of a ‘memory’ (extract 12). The teacher, while talking to group B leaves the recording space (another teacher comes to talk to her). She leaves the young learners ‘alone’, similar to the participation frame designed during the tasks analyzed in this research. In being alone, Lluvia’s reaction and comment to the camera is sincere and very personal “**camera you bring me a lot of memories**” (line 2). This makes evident that the young learner remembers the task and that in a way the world of playing and being a preschooler is embedded in her memories.

It is also interesting to observe that an event observed in episode 4.21 which showed how the camera was personalized is still present in the young learners’ interaction 4

years later. In line 4, Pier grabs the camera, the same GoPro camera that recorded their interaction in preschool, and talking to it as if a friend says “**camera you have to see this**” (line 4) and places the camera in front of the computer’s screen and plays the video of the preschoolers (episode 4.22). This ‘relationship’ to the recording device seems natural and friendly even 4 years later and this highlights that a researcher has to recognize a) the right preschoolers have of knowing they are being recorded and b) that a positive interdependence can be developed between digital technology and preschoolers. As a matter of fact, in line 5, Lluvia recognizes that it is the same camera “**but this is the camera that recorded us in this video**” (line 5) as if it were an old acquaintance. This sheds lights on how a sensible design not only promotes positive engagement with digital technology but how it is stored as a memory. And ingeniously this extract is finished by Maia, in line 6, acknowledging how the camera was looking at itself in a past time, just as the interview in which they themselves were doing, as if in a mirror looking at a mirror.

1	[The teacher leaves the group as another teacher comes to talk to her]
2	Lluvia: [stands up and gets very close and in front of the camera] camara me traes muchos recuerdos (<i>camera you bring me a lot of memories</i>)
3	Genaro: adios [touching Lluvia who goes back to her place] (<i>bye</i>)
4	Pier: [grabs the camera from its support] camara tienes que ver esto [places the camera in front of the computer, recording the screen and plays the video of the group] (<i>camera you have to see this</i>)
5	Lluvia: pero esa cámara es la que nos ha grabado ese video (<i>but this is the camera that recorded us in this video</i>)
6	Maia: pero da igual doble cámara *** (but it does not matter double camera***)

Extract 12 (group B)

To conclude, this epilogue’s aim is to emphasize the preschoolers’ agency as learners and to advocate for designs that recognize and promote such agency. It also positively values preschoolers’ nature as a world of play, imagination, exploration, freedom and happy memories that help them construct their own identity as learners.

7. ANNEX

7.1 ANNEX 1: CONSENT FORM



CONSENTIMIENTO INFORMADO PARTICIPACIÓN EN UN ESTUDIO DE INVESTIGACIÓN

Título del proyecto: "Language learning Supported by iPads and Beebots"

Investigador/a: Nathaly Gonzalez Acevedo

Supervisor/a: Dr. Melinda Dooly; Dr. Emilee Moore

Departamento: DIDÁCTICA DE LA LITERATURA, LA LENGUA Y LAS CIENCIAS SOCIALES

Yo, el Sr./la Sra. _____,

con DNI/Pasaporte _____,

- He leído la información escrita que se adjunta sobre el estudio, de la cual se me ha entregado una copia.
- He recibido información verbal sobre el estudio por parte del investigador; Nathaly González.
- He podido comentar el estudio y hacer preguntas a el/la investigador/a responsable.
- Doy mi consentimiento para que mi hijo/a tome parte en el estudio y asumo que la participación es totalmente voluntaria.
- Entiendo que se recogerán datos de audio y/o de vídeo en los cuales participa mi hijo/a, y doy mi consentimiento para que (marque las opciones):
 - El/la investigador/a abajo firmante, el/la supervisor/a del proyecto de investigación muestren los datos de audio y/o de vídeo en el ámbito académico (reuniones del grupo de investigación, conferencias, etc.).
 - El/la investigador/a abajo firmante, el/la supervisor/a del proyecto de investigación reproduzcan imágenes de las grabaciones de vídeo en publicaciones académicas (revistas especializadas, libros, etc.).
 - El/la investigador/a abajo firmante, el/la supervisor/a del proyecto de investigación muestren fragmentos de audio, de vídeo y/o imágenes en sus actividades de docencia en la universidad.
- Entiendo que la finalidad del estudio es el avance de la innovación educativa en relación al uso adecuado de las tecnologías en edades tempranas y al desarrollo de la competencia mediática.
- Entiendo que las intenciones del investigador son para el beneficio de mi hijo/a y de otros niños que puedan beneficiarse con la divulgación de la investigación.
- Entiendo que el investigador no utilizará nombres ni datos reales de mi hijo/a.
- Entiendo que el uso de fotos, audio o vídeos se hará en espacios académicos cuyo interés sea el de apreciar un estudio de investigación.
- Entiendo que el investigador utilizará los datos con respeto y delicadeza y que agradece mi participación y confianza.
- Comprendo lo que se me ha explicado, y los posibles riesgos o beneficios por el hecho de participar en el estudio
- Entiendo que podré retirar mi consentimiento para el uso de la imagen de mi hijo/a en cualquier momento desde que comunico mi retirada en adelante.
- Entiendo que recibiré una copia de este formulario de consentimiento informado.

Mediante la firma de este formulario de consentimiento informado, doy mi consentimiento para que mis datos personales se puedan utilizar como se ha descrito, de acuerdo con lo que dispone la Ley orgánica 15/1999, de 13 de diciembre, de protección de datos de carácter personal.

Firma de el/la participante:

Fecha:

Firma de el/la investigador/a:

Fecha:



7.2 ANNEX 2: TRANSCRIPTION KEY

The transcription key is based on Markee (2000) (Conversation Analysis)

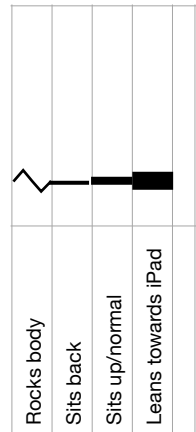
(+)	a pause between .1 and .5 of a second
(++)	a pause between .6 and .9 of a second
(1) (2) (3)	pauses of (1)(2) or (3) seconds respectively
/	rising intonation
\	falling intonation
:	lengthening of the preceding sound; each additional colon represents a lengthening of one beat
***	unintelligible
/o/	sound articulated, to be read as phoneme
A	letter name, to be read as a letter name
[]	Action description
En	English
Sp	Spanish
Ca	Catalan
<i>Italics</i>	Translation to English

7.3 ANNEX 3: TRANSDUCTION TEMPLATE

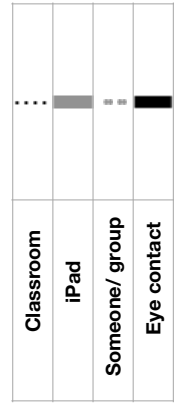
Episode:

Stills	Time	Vocalization	Time	Movement	Time	Gaze
	0:00				0:00	
	0:02				0:02	
	0:04				0:04	
	0:06				0:06	
	0:08				0:08	
	0:10				0:10	
	0:12				0:12	
	0:14				0:14	
	0:16				0:16	
	0:18				0:18	
	0:20				0:20	
	0:22				0:22	
	0:24				0:24	
	0:26				0:26	
	0:28				0:28	
	0:30				0:30	
	0:32				0:32	
	0:34				0:34	
	0:36				0:36	
	0:38				0:38	

Gaze 1-2

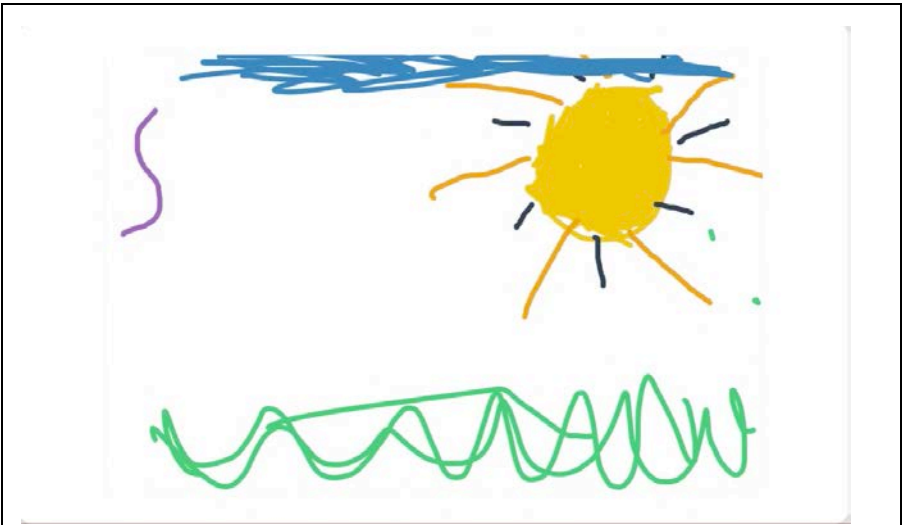


Movement 1-1

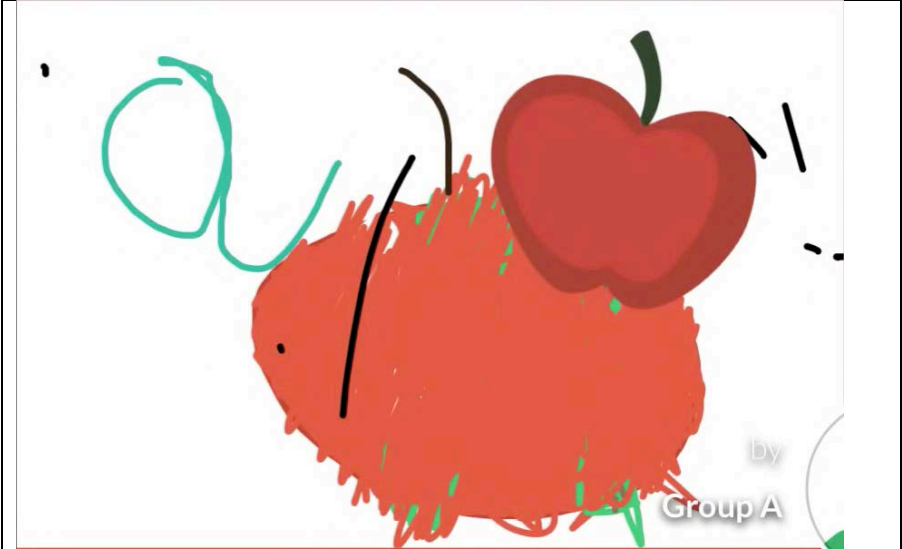


7.4 ANNEX 4: DIGITAL BOOK OF SOUNDS – GROUP A

*Drawings that were lost T: table; I: igloo; P: pig; N: net; C: car, E: egg; J; W; V



S: sun



A: Apple



H: Hat



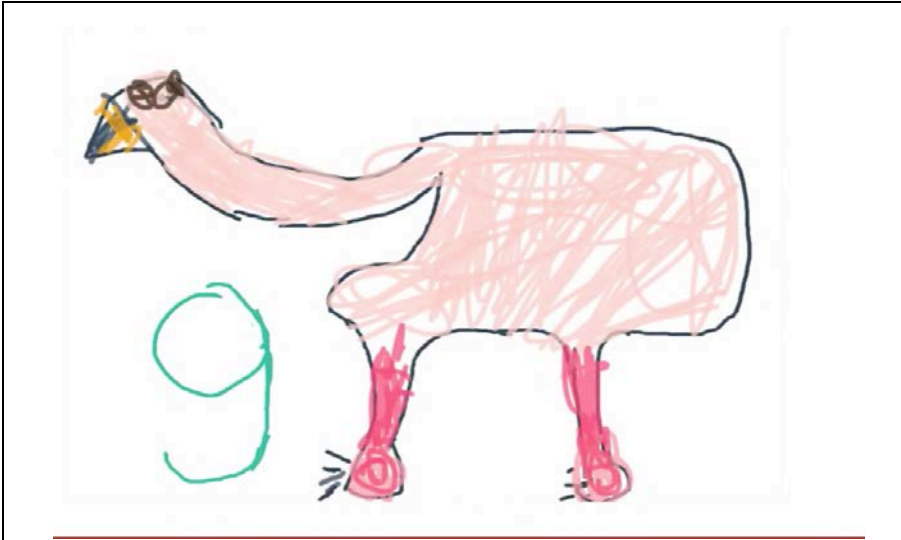
R: Raquet



M: Mommy



D: Dog



G. Gazelle



O: Octopus



U: Umbrella



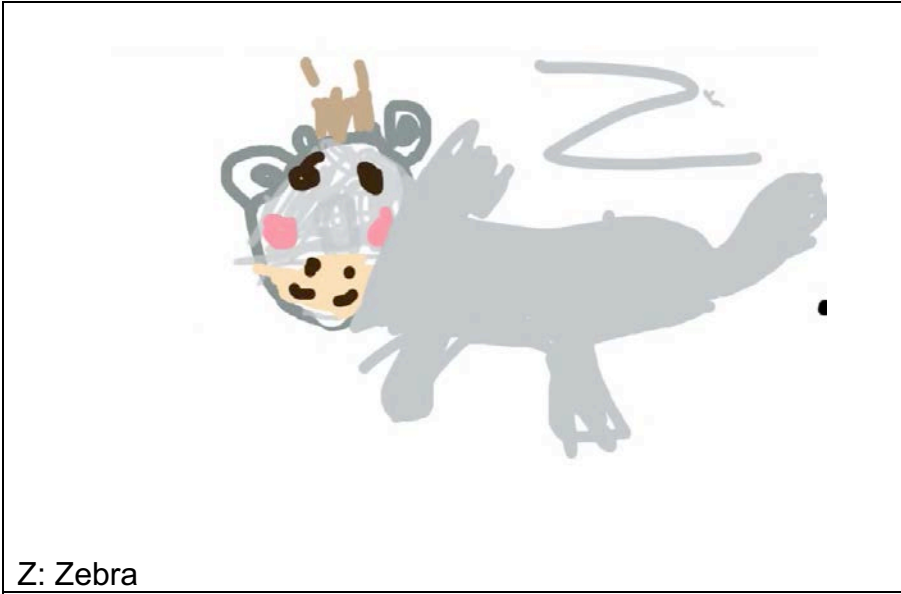
L: Look



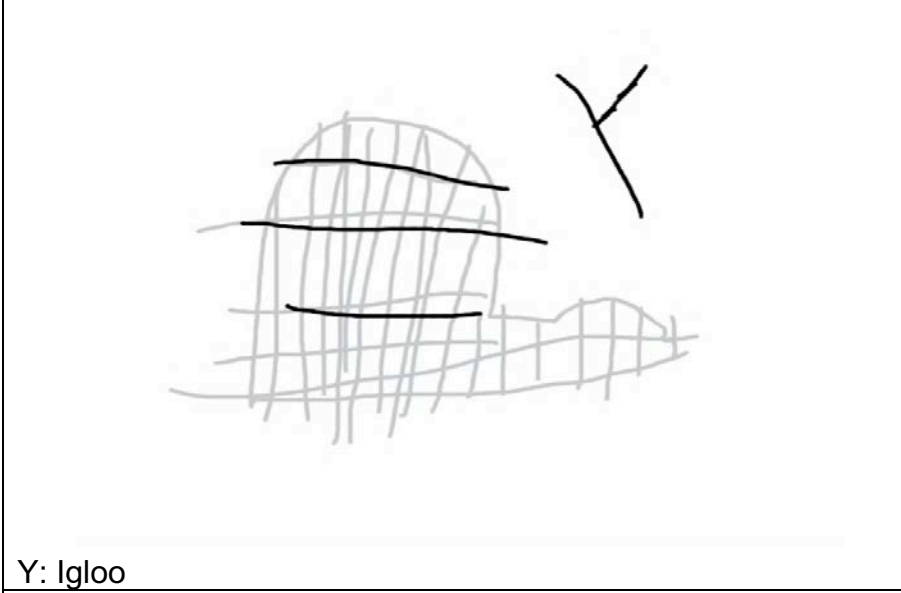
F: Fish



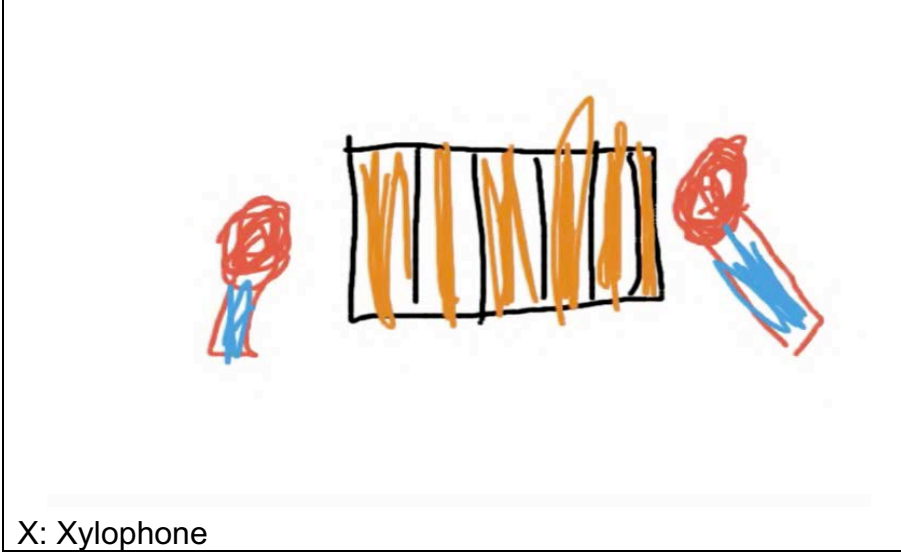
B:Baby



Z: Zebra



Y: Igloo

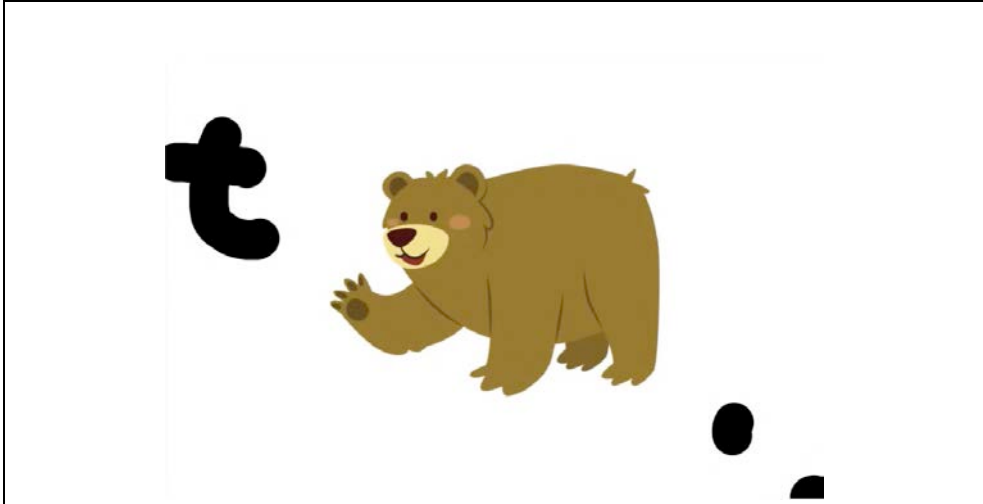


X: Xylophone

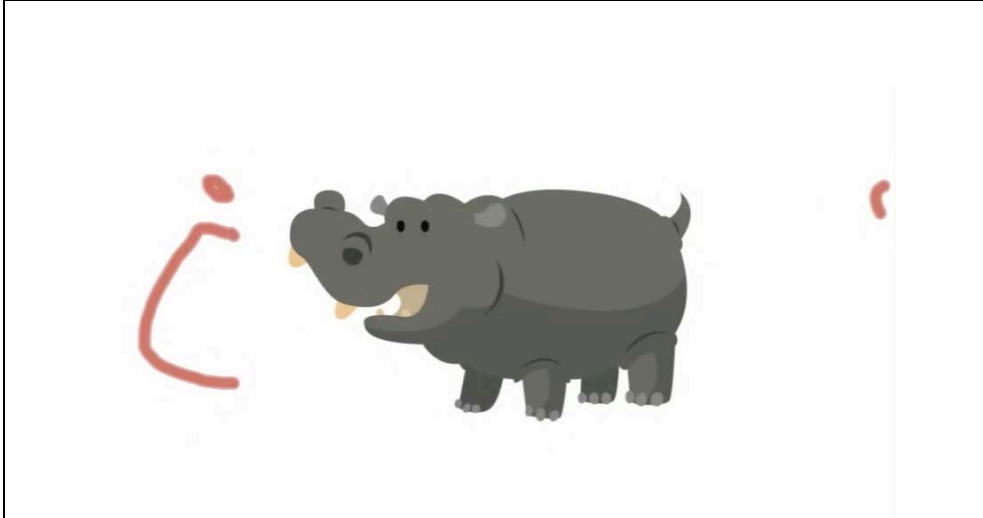
7.5 ANNEX 5: DIGITAL BOOK OF SOUNDS – GROUP B



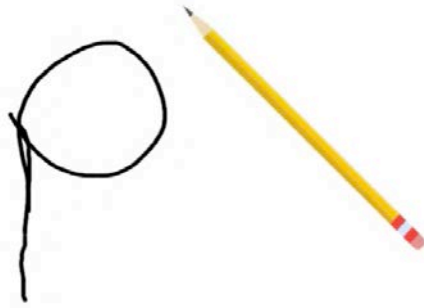
A: ant



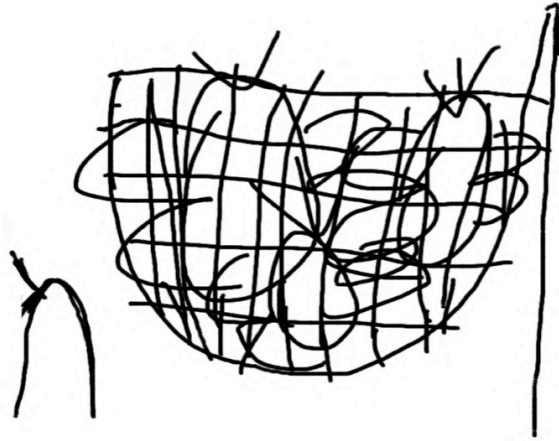
T: teddy



H: hippopotamus



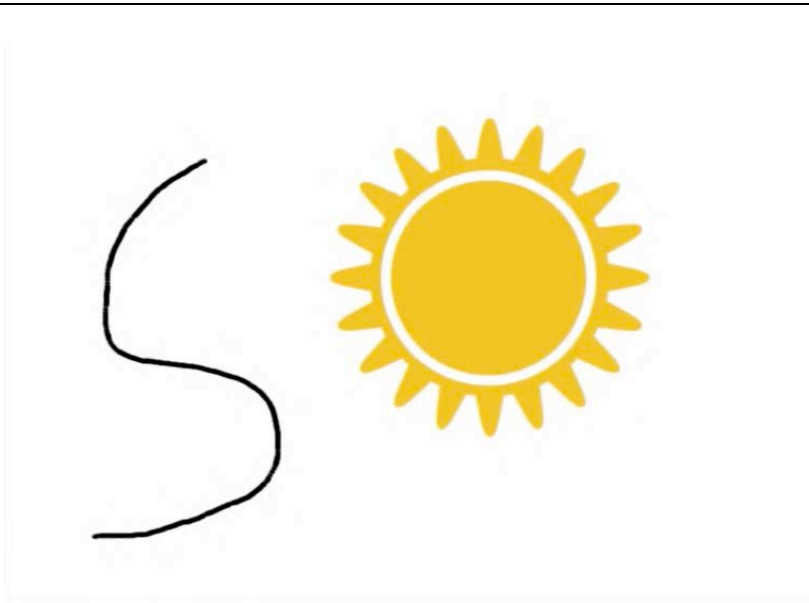
P: pencil



N: net



C: crocodile



S:sun



H: heart



E: egg

R



R: rabbit

M



M: men

D

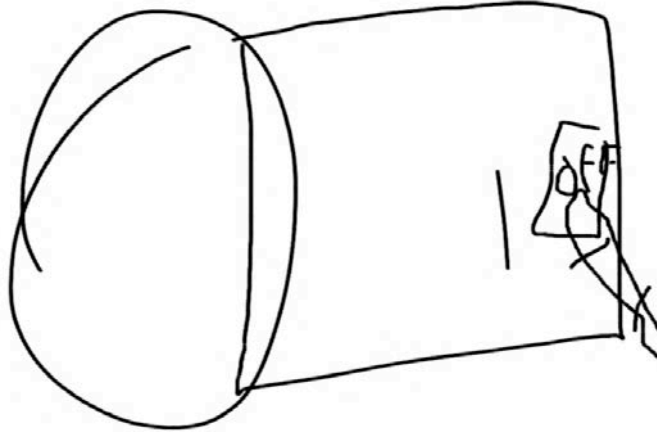


D: dog

g

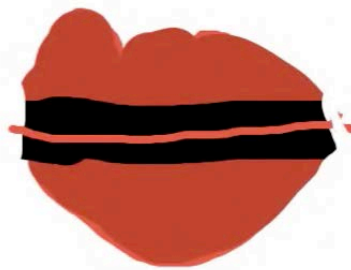


G: girl

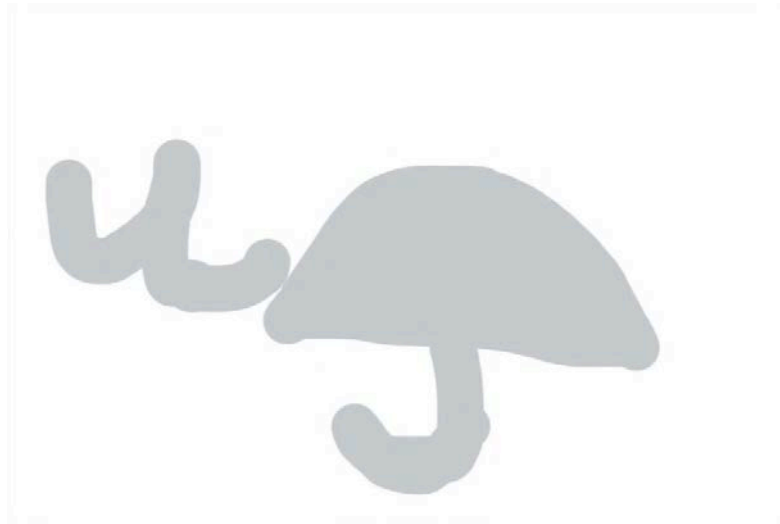


O: off

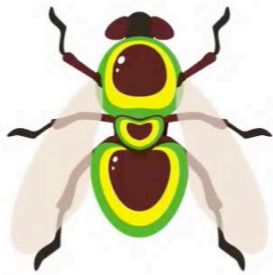
l



L: lip



U: umbrella



F: fly



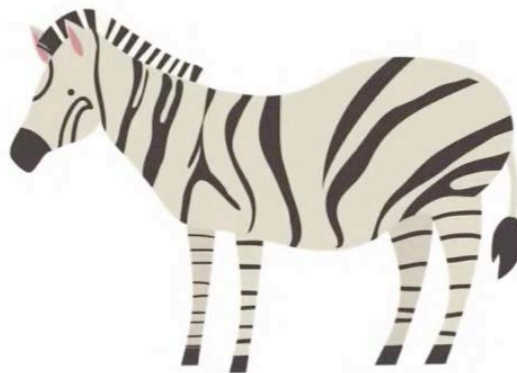
B: butterfly

j



J:jump

Z

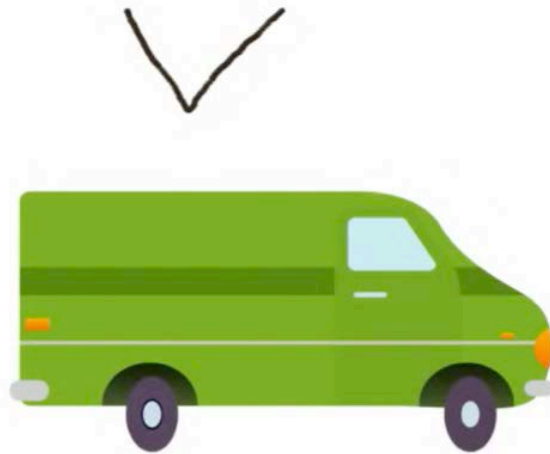


Z: zebra

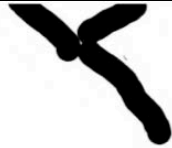


W: water

V:



van

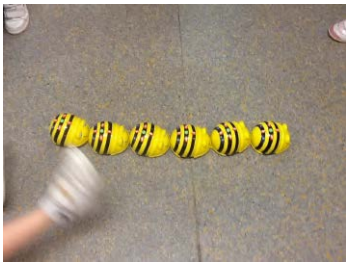


Y: yoghurt



M. Max

7.6 ANNEX 6: PHOTOS TAKEN BY THE APPOINTED TEACHER (WITH THE IPAD) DURING THE BEEBOTS CHALLENGE



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