



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Università degli Studi di Padova
Dipartimento di Studi Linguistici e Letterari

Corso di Laurea Triennale Interclasse in
Lingue, Letterature e Mediazione Culturale (LTLLM)
Classe LT-12

Tesina di Laurea

*At the Frontiers of English language teaching:
The playful approach with humanoid robots*

Relatore
Prof. Erik Castello

Laureanda
Maria Lorenza Peruzzo
n° matr.1197192/ LTLLM

Anno Accademico 2021/2022

ACKNOWLEDGMENTS

Al termine di questo percorso desidero porgere i miei più sentiti ringraziamenti a tutte le persone che hanno reso questa pagina della mia vita un ricordo indelebile. Ringrazio, in primis, il mio relatore Erik Castello. La sua professionalità, il suo supporto e il suo sostegno costanti hanno reso possibile il raggiungimento di questo mio importante traguardo. Doveroso da parte mia è ringraziare il professor Emanuele Menegatti e tutto lo staff dell'IAS Lab di Padova, nonché la maestra Taziana Giusti e la professoressa Monica Pivetti che hanno reso realtà la realizzazione di questo progetto.

Desidero dedicare questo lavoro a mio padre che ha sempre sostenuto il valore della cultura come mezzo per nobilitare l'uomo e la società. Un uomo meraviglioso, venuto a mancare troppo presto, che mi ha cresciuto con immenso amore trasmettendomi i più alti insegnamenti e valori. Con lo stesso profondo affetto che nutro nei confronti di mio padre desidero ringraziare mia madre. Donna tenace, forte, coraggiosa, ricca in spirito e personalità, che mi ha insegnato a lottare e persistere nel raggiungimento dei miei obiettivi. Spero, in questo mio lungo percorso di vita, di poter seguire le loro orme per diventare, un giorno, una donna capace di fare la differenza nella società. Un ringraziamento va a tutta la mia famiglia, ai miei nonni, ai miei zii e ai miei cugini che mi hanno accompagnato con amore durante la mia crescita aiutandomi a diventare quello che sono oggi. Spero di aver reso orgogliosi non solo i miei genitori ma anche tutti loro per la persona che sono diventata. Non posso non spendere qualche parola di ringraziamento per l'attuale compagno di mia madre Mario e per un'amica fidata Emanuela. Un grande grazie per essere entrati a far parte di questa grande famiglia portando gioia e amore a me e a mia madre.

Un enorme e speciale grazie va al mio fidanzato, Alberto. Non solo grazie al suo lavoro di dottorato ha partecipato attivamente alla realizzazione della mia tesi, ma mi ha sempre esortato a dare il massimo durante questi due anni insieme. Ha sempre creduto nelle mie capacità anche quando ero io, in primis, a dubitare di me stessa. Sono orgogliosa di avere accanto un uomo speciale, dotato di un'intelligenza raffinata, con una grande passione per la sua carriera e i suoi ideali e capace di profondi sentimenti per la sua famiglia, me e i suoi amici. Spero di poter continuare il mio percorso futuro di carriera e di vita con lui al mio fianco. Non posso dimenticare l'appoggio ricevuto da tutta la

famiglia del mio fidanzato. Mi hanno accolto con calore tra loro regalandomi tanta gioia e tanti sorrisi. Un grazie speciale a tutti loro.

Infine, desidero ringraziare tutti i miei amici. Gli amici di una vita che hanno riso e pianto con me, fidati compagni di avventure. Nell'ultimo periodo ho dovuto trascurarli per raggiungere il mio obiettivo ma, certa della loro comprensione, dedico loro un grande abbraccio e la promessa di nuove emozioni da condividere. Ringrazio i miei colleghi universitari per le forti paure, ansie e gioie condivise tra un esame e l'altro. A loro auguro un futuro e una carriera brillanti. Ai miei nuovi amici regalo un sorriso simbolo della felicità che hanno saputo donarmi.

Questo percorso di studi mi ha aiutato a crescere e maturare, mi ha fatto comprendere l'importanza del saper guardare il mondo attraverso prospettive diverse, a capire nel profondo le altre culture e ad apprezzare e valorizzare ciò che c'è di buono e giusto nel mondo. Non so cosa mi riserverà il futuro ma spero di poter contribuire alla crescita e allo sviluppo di una nuova generazione di adulti capaci di tutelare e proteggere la cultura e i valori più alti dell'umanità.

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INTRODUCTION

Which are the new frontiers of English language teaching? How can languages and technological studies collaborate to help the new generations of students? In this global world we have to face up new kinds of problems in our everyday life. Progress and technology are changing our lifestyle. Embracing progress is like embracing new ways of thinking and communicate. This thesis is an example of this kind of collaboration. Technology and language teaching studies together can improve our communication. The aim of this thesis is to investigate experimentally the new frontiers of English language teaching, analysing new methodologies such as the playful approach and Educational Robotics. Educational Robotics is the term that indicates a new teaching method where robots are employed in a school class to help students put their knowledge into practice and learn new skills. This project was conceived during my three years of English studies and after some contacts with the IAS-Lab (Intelligent Autonomous Systems Laboratory) of the Information Engineering Department of the University of Padua.

The focus of my research is to devise new teaching methodologies and apply them to a primary school class. Children have an extremely malleable and curious mind, and they are willing to be taught new facts and truths. They represent the backbone of tomorrow's society and therefore they need to keep up with all the changes.

My thesis is composed of three themed chapters.

In Chapter 1, I present the main characteristics of the field of Second Language Acquisition with a specific focus on how children acquire a second language, the role of the teacher and the classic methodologies proposed by the educational system.

In Chapter 2, I review the main studies and research carried out to illustrate the new frontiers of teaching. The first pages of this chapter are devoted to the exposition of the main theories regarding the playful approach and playful teaching as highly recommended methods for the student's performances and well-being. The last part focuses on Educational Robotics as a playful method to engage pupils and help them during the class routine.

Finally, in Chapter 3, I conclude my work presenting the main features of Pepper, the robot used as peer in a class. Then, I propose a few exercises thought and developed to be used with Pepper. These exercises were experimented with a class of the Muratori

primary school during an experiment of the IAS-Lab to test their efficiency and collect some relevant data.

It is hoped that this dissertation will help future researchers in this field to devise of a more practical application at the frontiers of English teaching.

CHAPTER 1

SECOND LANGUAGE ACQUISITION

As the aim of this thesis is to explain new possible methods for teaching English as a second language, I will start my discussion by explaining the concept of Second Language Acquisition (SLA). Firstly, I will define SLA, exploring the main linguistic theories about the difference between first language (L1) and second language (L2) and the learning processes underlying the acquisition of a language. After the clarification of these fundamental terms, I will draw the attention to the history of teaching and the role of the teacher. Secondly, I will focus on the studies of teaching a second language to young learners, giving particular attention to primary school students, and analyzing the classic methodologies employed by the school system. Finally, to end this chapter, I will offer a brief overview over the new frontiers employed in second language teaching that will now become a basis for the next chapters.

1.1 WHAT SECOND LANGUAGE ACQUISITION IS

Any human being acquires one's mother tongue naturally, almost without being aware of it. As Graffi and Scalise (2002:277) state "Il linguaggio è un fenomeno strettamente connesso alla natura umana" "Language is a phenomenon closely connected with human nature" (My translation from Italian). This phrase briefly summarizes the essence of language acquisition as a reality closely related to our everyday lives. Before starting this brief review about language acquisition, I have to clarify these three closely related concepts: second language acquisition, first language and second language.

In our global and interconnected world, it has become necessary and nearly a requirement to learn a second language to be able to understand others and to fully acquire the essential skills to completely become part of a target culture. With the advent of globalization and technological progress, studying a language has become an easier task for everybody. Students learn new languages at school, to keep up with the trends. Schools have been improving their educational offer by adding new languages to their students' curricula. SLA can be defined as "the study of individuals and groups who are learning a language subsequent to learning their first one as young children, and to the

process of learning that language” (Saville-Troike, 2012:2) This definition hides a “highly complex nature” (Saville-Troike, 2012:2) that finds its own resolution in studies of language from a linguistic and psychological perspective.

After stating what second language acquisition is, it is extremely relevant to this study to explain the concepts of first language and second language. The definition of first language varies in the literature and therefore terminological confusion arises. Saville-Troike (2012: 4) starts the paragraph about first language explaining the difficulty in distinguishing between the concept of “first” language from that of “native language”, “primary language” and “mother tongue” which are clearly used incorrectly as synonyms by laymen. These three terms, although different in many aspects, share a common feature. This particular trait can be designated as the actual definition of first language. Saville-Troike (2012: 4), starting from this specific characteristic, defines L1 as a language acquired during early childhood and learned as a part of growing up among people who speak it.

This definition of first language leads us to the notion of the other almost parallel term that is second language. Saville-Troike (2012: 4) proposes a characterization of this terms based on previous literature findings. The concept of second language is defined in the light of the function it will serve in our lives. Therefore, we come across four different conceptualizations of second language. The first defines a second language as an official or societally dominant language needed for education. The second sees it as a foreign language which might be used for travels or other cross-cultural communication situations. The third states it as a library language or a tool for further learning through reading. Finally, the fourth describes it as an auxiliary language for some official functions.

These two notions of first language and second language are significant to the understanding of the language learning process. They highlight the fact that language learning is intertwined and combined with other fields of knowledge such as psychology, sociolinguistics and psycholinguistics, and other subjects Saville-Troike (2012: 3). A large number of studies have been conducted into language acquisition and its development. Two of the most important researchers we can mention are Noam Chomsky and Michael Tomasello (Graffi and Scalise, 2002:298). These academics played a

fundamental role in the development and understanding of language in all its more complex parts.

1.2 HOW PEOPLE ACQUIRE L2

Saville-Troike (2012: 8) defines multilingualism as the ability to use two or more languages. This phenomenon, as Saville-Troike states, is a normal and common one in most parts of the world. “One message from the world demographics is that SLA phenomena are immensely important for social and practical reasons, as well as for academic ones. Approximately 6,000 languages are spoken in the world, [...] and almost all of them have been learned as second languages” (Saville-Troike, 2012: 8). Before giving an explanation of the process of second language acquisition, I will start with a brief introduction to first language acquisition and its development. As Saville-Troike (2012:8) underlines it is important to separate L1 and L2 learning processes because “while there are interesting similarities [...] the processes cannot be equated”.

First language acquisition begins in early childhood and is completed before school. The first language acquisition process can be divided into three different phases which Saville-Troike (2012: 12) identifies as “initial”, “intermediate” and “final state”. The most important features of L1 acquisition are innate capacity and social experience. Innate capacity, which characterizes the “initial state”, is the natural ability, which humans are born with, to learn a language (Saville Troike, 2012: 13). Graffi and Scalise, using terms as “instinct” and “genetic predisposition”, define it as the ability of all children to learn a language without ever being told how to do so. In this first phase children start to recognize and distinguish between the sound of their L1 that make a difference in the meaning and those who do not (Saville-Troike, 2012: 12). Graffi and Scalise (202:284), citing Meheler and Dupoux (1990), refer to it as learning by forgetting those sounds that do not appear in their L1; they also add to this first stage the phenomenon of lallation that corresponds with the early production of vocal sounds with a particular intonation. The “intermediate state” coincides with the elaboration of a child’s grammar that can be delineated as the “kinds of utterances a child can produce or understand at a given maturation level” (Saville-Troike, 2012: 14). At this point the first grammatical, lexical and morphosyntactic developments start to take place (Graffi e Scalise 2002: 286). As children mature, also their language abilities develop to reach the

final state of native competence. Social experience, another important feature of first language acquisition, plays a fundamental role in profoundly influencing children's language skills. This attribute allows them to expand their competence and vocabulary according to the kind of register they listen to and consequently evolve their language to the one of adults (Saville-Troike, 2012:15).

Having briefly illustrated the process of first language acquisition, I'm going to focus on second language acquisition from its definition to its history and aspects. SLA (L2) acquisition can be divided in the same parts as L1 but with significant differences, as can be seen from Table 1 (Saville-Troike 2012: 17)

Table 2.2 First vs. second language development	
L1	L2
INITIAL STATE	
Innate capacity	Innate capacity? L1 knowledge World knowledge Interaction skills
INTERMEDIATE STATES	
Child grammar	Learner language
<i>Basic processes</i>	
Maturation	Transfer
<i>Necessary conditions</i>	
Input Reciprocal interaction	Input
<i>Facilitating conditions</i>	
	Feedback Aptitude Motivation Instruction
FINAL STATE	
Native competence	Multilingual competence

Table 1: Comparison between L1 and L2 acquisition processes (from Saville-Troike 2012: 17)

Initial state: in contrast with the initial state of L1 acquisition learners already possess some elements that are extremely relevant. Learners of an L1, can initially only rely on their innate capacity, while L2 learners have previously experienced the real-world and social setting through the acquisition of their L1. In addition, they have earlier

knowledge of how language works and can successfully control it (Saville-Troike 2012: 18).

Intermediate state: at this stage the knowledge is almost completely transferred from the L1 to the L2. This involves transferring positive knowledge that like the transmission of a correct morphology and syntax. However not only does positive transfer exist but could negative shifts of errors and inappropriate structures could also occur (Saville-Troike 2012: 19).

Final State: the outcomes of the L2 do not reflect the ones of the L1 as the development of a second language can never reach a native language competence and the level of proficiency is variable (Saville-Troike 2012: 21).

It is now noticeable that these phases of the L2 learning process are cardinal for this study. SLA can be named, also, as sequential multilingualism, which is the definition of all languages acquired after an L1 (Saville-Troike 2012:13). The very nature of L2 learning explains itself in the same definition of the term. The fact that L2 learners possess already knowledge of language considerably affects the learning process and explains the difficulties faced by students throughout their studies. It also determines a disparity in terms of proficiency and competence that represent an issue of fundamental importance for language studies.

Academics conducted different investigations about second language acquisition from several perspectives. Since 1960 researchers introduced different approaches to L2 studies. The most dominant ones are “structuralism”, “behaviorism” and the “audiolingual method”. These methods are based and organized on linguistic, psychological, and social frameworks (Saville-Troike 2012: 25). Psychological investigations, however, can lead to interesting results regarding the process of second language acquisition. Information Processing (IP) maintains its primacy as the most significant theory in the study of SLA. It concerns the “mental processes in language learning and use” (Saville-Troike, 2012:78). These mental mechanisms confirm the data analyzed in the previous pages. At the origin of L2 developing learners are experiencing a “controlled processing” phase that requires a huge amount of effort and mental space. This status slowly grows into the stage of “automatic processing” which is typical of advanced students of an L2. The final part of this procedure leads to a crucial outcome in the world of SLA. The issue that arises corresponds to the actual difficulty in improving

L2 knowledge after this ultimate stadium. Fossilization presents itself as an “apparent cessation of learning” produced by automatized aspects of L2 and positive inputs no longer sufficient for their improvement (Saville-Troike, 2012:78). However, at the end of the learning process, a student of any L2 will find himself/herself with a certain set of skills. These abilities vary in their development depending on particular factors such as age, sex, aptitude, motivation, cognitive style, personality, and learning strategies. They form the fundamental basis for the theories of teaching English and their variation determines the level of proficiency (Saville-Troike 2012: 88).

Generally, there is a wide range of possibilities and methods for learning a second language. In addition to the school system, online courses, books for independent learning, evening classes and other interesting teaching methods exist. What all these courses have in common is the achievement of communicative competence. Saville-Troike (2012: 142) defines communicative competence as everything that a speaker needs to know to communicate appropriately within a particular community. This element, which forms the basis of SLA, turns out to be as the combination of linguistic and cultural knowledge and the appropriate use of these abilities in communicative activities. Saville-Troike (2012: 143) makes an important distinction between academic and interpersonal competence, considering the purpose for which people learn a second language. Considering that “L2 competence is typically [...] much more restricted”, academic competence “includes the knowledge needed by learners who want to use L2 primarily to learn about other subjects”. On the contrary interpersonal competence “encompasses knowledge [...] to use L2 primarily in face-to-face contact with other speakers”.

According to Saville-Troike (2012: 145) the main components that constitute communicative competence are:

Vocabulary: this is “the most important level of L2 for all learners to develop”. Its variability depends on the academic or interpersonal type of communication. Therefore, apart from “function words”, vocabulary differs highly depending on social setting and function (Saville-Troike, 2012: 146).

Morphology: it is extremely helpful for “vocabulary development as well as for achieving grammatical accuracy”. It consists in the ability of compounding, adding prefixes and suffixes, word-forming, and changing part of speech to achieve linguistic complexity (Saville-Troike, 2012: 149).

Phonology: it consists in the capacity of recognising and reproducing specific phonemes of the L2. This component plays a special part in the development of listening and speaking skills. As Saville-Troike (2012: 151) states “proficiency in phonological perception and intelligible production are essential for successful spoken communication”.

Syntax: it can be defined as the capability to recognize the intimate structure of L2 sentences, their essential elements (subject, verb, object), and the concepts they carry such as gender and number (Saville-Troike 2012: 153).

Nonverbal structures: this feature coincides with the identification of nonverbal symbols like facial expressions or body positions which “present different meanings in different languages and cultures” (Saville-Troike 2012: 158).

Discourse: “the linguistic elements at the level of discourse function beyond the scope of a single sentence”. Firstly, from a microstructural point of view, these parts are sequential indicators, logical connectors, and other devices to create cohesion. Secondly, at a macrostructural level these elements are characteristic of particular genres. (Saville-Troike 2012: 159).

Given the complexity of the competence system, to plan pedagogical actions teachers and learners need to make a choice based on socio-communicative priorities. The selection of these specific themes provides for the consequent choice of activities involving the use of language skills, such as reading, listening, writing, and speaking skills. The development of these last language skills is determined by the social circumstances and the particular objectives of the learner (Saville-Troike 2012: 145).

Finally, the structure of the learning process and the communication skills allow us to understand how vast and unresolved the fields of research in the linguistic area are. A wide range of research is still going on about childhood cognitive processes, and many questions are still unresolved. However, study and research have allowed the construction of a well-defined school system that can provide students with important learning tools. The school’s task is thus reflected in trying to cover as many skills and activities as possible in order to enable students to obtain adequate proficiency (Saville-Troike, 2012: 190).

1.3 TEACHING A SECOND LANGUAGE

The history of language develops along with his studies and theories. Debates are still persisting today with the intention to answer the main questions about this purely human phenomenon. Languages in the modern world exist in written and spoken form. However, language use starts from spoken performance. As the production of first language begins in oral form, also the second language has remained for a long time in this status. Linguists also base their studies on the fundamental assumption of the primacy of speech over writing. Graffi & Scalise (2002: 29) explain this statement enunciating three meaningful reasons:

- 1) There are (and existed) languages that are (or have been) only spoken and not written.
- 2) Children learn to speak before writing.
- 3) Languages change over time, starting with their oral form and then in their written one.

With the advent of writing by Greek and Latin civilizations, language passed from the spoken form to the written one. At this point the first theories of teaching first and second languages begin to be formulated by the most eminent Greek philosophers. Musumeci (in Long and Doughty, 2009: 47) indicates the historical context of the development of the teaching of second languages. After the Greek and Latin civilizations, the development of the status of languages, especially Latin, occurred during the Middle Ages. The Catholic Church elevated Latin to *Lingua Franca* allowing its spread throughout Europe. The first universities that arose in that period are an example of this. In 1400, Humanism and Renaissance brought about the rediscovery of the classics of the Greek world. The first forms of translation start with the revision of these texts. The advent of the press (1440), however, creates a gap between the Latin world and the modern world. Vernacular languages took over (1600-1700) and the teaching of second languages found more and more form and structure Musumeci (in Long and Doughty, 2009: 53).

The history of teaching proposed by Musumeci (in Long and Doughty, 2009: ch.4) enables us to outline the roles of the language teacher and of the student, starting from

the theories of the great scholars. It also makes it possible to discover the first proposed theories concerning the basics of second language teaching.

Let us start the figure of the teacher. According to Musumeci (in Long and Doughty, 2009: 56), historically, the figure of the teacher has been “disparaged” for a long time. Especially in the ancient world languages teachers were often slaves. On the contrary, the theories of scholars propose a particular positive vision of the pedagogue. Musumeci (In Long and Doughty, 2009: 47) report the ideas of Plato, Aristotle, and Quintilian. According to Plato the main role of the teacher is to “educate”, from Latin *educere*, which means literally, “to lead forth”. From the point of view of Aristotle, the educator has the duty to instruct and build knowledge. Finally, Quintilian states that the tutor must bring the best models for language learning. Subsequently, from the Middle Ages onwards the figure of the teacher begins to emerge not only as a private tutor but also as a true educator in schools. Musumeci (in Long and Doughty, 2009: 50) gives the early example of Vittorino da Feltre. The scholar, with his book “*La casa giocosa*”, proposed a model for a “total immersion experience with instruction geared to the ability and needs of each child”. Musumeci (in Long and Doughty, 2009: 50) describes his curriculum as a “combination of games and recreation, physical education, and music, in addition to the humanistic subjects of Latin and Greek”. Musumeci (In Long and Doughty, 2009: ch.4) shows how educational programs have also developed throughout history. Learning a second language is no longer grammar based. Therefore, second language is also analysed from the social and cultural point of view. Musumeci (in Long and Doughty, 2009: 55), citing Comenius, provides a good example of the “immersion” method according to which students must learn a second language by going to the place where it is spoken to take classes, that now takes place in the modern practice of studying abroad.

The student also plays a fundamental role in the success of second language learning. Musumeci (in Long and Doughty, 2009: 59) presents the figure of the student reporting the theories of Quintilian, Guarino and Comenius. According to Quintilian pupils are like jars or container to be filled with knowledge. Guarino, with a purely modern and revolutionary metaphor defines the students as “sculptors” and “artists” emphasizing their active and positive contribution in the reworking and transmission of science. Comenius, on the contrary, offers an extremely negative view of learners and of

the school system by introducing modern concepts of work and mass production. In his conception the educator becomes a “commodity”, and the student becomes a product.

The peculiar traits outlined above make it possible to understand the infinite complexity of the school system. The functioning of this apparatus requires strong determination and constant motivation from teachers and students. The collaboration between them and the use of appropriate tools and models make it possible to carry out information and science. Musumeci (in Long and Doughty, 2009: ch.4) therefore recalls that through progress and academics’ speculations second languages have become the “focus rather than medium of instruction”.

1.4 TEACHING YOUNG LEARNERS AT PRIMARY SCHOOL LEVEL

Generally speaking, second language teaching begins in primary schools or even before at home in their familiar environment. Pupils have different characteristics and teachers must be specially trained to fulfil their role as educator adequately. In this paragraph, I will analyse the peculiarities that present young learners and the characteristics that teachers should develop to perform their work as educators.

According to Scott and Ytreberg (1990: 1) “There is a big difference between what children of five can do and what children of ten can do. Some children develop early, some later”. Scott and Ytreberg (1990: 1), talking about English teaching as L1 and L2, divided children into two groups based on age and skills. The first group in their study consists of pupils of five to seven years old. These young learners have the ability to talk of what they are doing, plan activities, use logical reasoning and understand direct human interactions. However, they present short attention and concentration span and sometimes have difficulties in telling apart fact from fiction. On the contrary, the second group of children, from eight to ten years old, are “relatively more mature”. Scott and Ytreberg (1990: 4) argue that “the magic age seems to be around seven or eight. [...] things seem to fall into place for most children and they begin to make sense of the adult world as we see it”. They can definitely tell the difference between fact and fiction and their basic concepts are formed.

Based on the characteristics described by Scott and Ytreberg (1990) on the complexity of the nature of children and their needs, the work of the teacher turns out to

be as complex and challenging. Very often, “many teachers find themselves teaching in primary school even though they have not been trained for this level” Scott and Ytreberg (1990: preface). Good educators need different tools and skills. A valuable teacher has to provide the right environment for kids. According to Scott and Ytreberg (1990: 10):

“Once children feel secure and content in the classroom, they can be encouraged to become independent and adventurous in the learning of the language. Security is not an attitude or an ability, but it is essential if we want our pupils to get the maximum out of the language lessons”

In addition, teachers have to play with language to engage students, establish routines and distribute the right amount of different activities during lessons and let children speak and express themselves.

Also Camilleri (2003: 10), talking about how children learn second languages and which environment best suits them, states:

“A teacher can promote learning by providing a wide range of opportunities to gain vivid, first-hand experiences, placing tasks in meaningful contexts, helping children make sense of new experiences by relating them to what they have known already, and introducing the same idea in a variety of meaningful context. One has to organize tasks to stimulate mental activity, thus problem-solving and investigational approaches as possible. When children have learnt something, one is advised to give them a chance to make something of their own”.

Camilleri (2003:10) makes a precise list of the characteristics that the educational environment should have to facilitate learning. To provide “Active learning” the environment should be cooperative, theme-based and integrated, versatile and evaluative:

Cooperative means that it has to encourage meaningful interactions among students.

Theme-Based and Integrated indicates that the teacher has to use “tasks that emphasize content area knowledge and use technology tools to encourage learning the content in ways that are meaningful”.

Versatile stresses that it has to provide different tools and activities to promote the learning process.

Evaluative means that the tasks have to allow the assessment of student's ability to use the necessary knowledge and skills

In addition, to help children feel more confident and looked after, in a friendly and stimulating environment, Camilleri, citing (Curtain & Pensola, 1988) states that a good teacher has to use a slower rate of speech, distinct pronunciation, and less complex sentences". Scott and Ytreberg (1990: 5), to get the student's attention, encourage the use of movements and the involvement of the senses.

To conclude, from what we have learned from Scott & Ytreberg (1990) and Camilleri (2003), we can see that children are extremely sensitive to stimuli and have a unique and particular way of learning and developing a second language. Consequently, the teacher must be able to follow the student step by step, accompanying him/her and helping him/her in the difficulties of learning, respecting his/her time and his/her specific needs. With a stimulating environment, a good balance between different activities, and a good teacher-pupil relationship, learning a second language will be a fruitful and rewarding experience.

1.5 CLASSIC TEACHING METHODS

Different schools of thought and approaches to teaching have developed since 1800. These classic methods are still used today. After the beginning of the spread of Latin as a lingua franca (as explained in paragraph 1.3), during the XIX century, the most supported approach to the study of second languages was the Grammar-Translation Method. According to Richards & Rodgers (1986: 4) the "Grammar-Translation method dominated European and foreign language teaching from 1840 to the 1940s and in modified forms it continues to be widely used in some part of the world today". Richards & Rodgers (1986: 3) explain the principal characteristics of this method. These can be summarised as follows:

1. It consists merely of the “detailed analysis of grammar rules, followed by the application of this knowledge to the task of translating sentences and texts into and out of the target language”.
2. “Reading and writing are the most major focus”.
3. Students make wide use of bilingual word lists, and dictionaries and rely mostly on memorization.
4. “Much of the lesson is devoted to translating sentences into and out the target language”.
5. Students are expected to attain high standards in translation and accuracy is emphasized.
6. Grammar is thought deductively.
7. “The student’s native language is the medium of instructions”.

However, this method as Richards & Rodgers (1986: 3) argue often created frustration to students and in the 1880s was replaced by other modern theories. As Richards & Rodgers (1986: 5) state “Increased opportunities for communication among Europeans created a demand for oral proficiency in foreign languages”. As a result of language studies, researchers proposed a teaching reform. According to them, a language must be learned firstly in its oral form and then applied in a meaningful context Richards & Rodgers (1986: 8). Several theories took hold. The first linguist who created a scheme for classifying modern theories was Edward Antony in 1963. “He identified three levels of conceptualization and organization, which he termed *approach*, *method*, and *technique*” Richards & Rodgers (1986: 5). Modern methods that developed throughout the history of the nineteenth century are the following ones:

1.5.1 ORAL APPROACH

The Oral Approach is a method developed by British applied linguists from the 1930s to the 1940s. It has shaped the design of many widely used EFL/ESL textbooks and courses, including many still being used today. It can be characterized as “structuralism as students perform an oral practice of structures linked to situations. It is based on spoken language and sentences introduced and practiced situationally. Grammar is introduced gradually

starting from simple forms to complex ones. Reading and writing are introduced after the learner has completed the acquisition of the necessary oral skill and basic vocabulary. Initially, the role of the learner is passive. The students have to repeat what the teacher says and only later can they formulate questions and sentences. On the contrary educators are the center of the course as their role is to provide good models and then manipulate sentences and structures. (Richards & Rodgers 1986: 31)

1.5.2 AUDIOLINGUAL

Audiolingual methods derive from a view proposed by American linguists in the 1950s - a view that came to be known as structural linguistics. It also relates to the Behaviorism movement. According to it, good habits are essential for a good learning environment. It consists in memorizing dialogues and positive patterns without mistakes. It prefers the oral form to the written one and it is founded on the belief that the cultural context of the language that is taught is fundamental. Here learners are seen as “organisms that can be directed [...] to produce correct responses”. They can’t practice their skills with situations as it is going to produce mistakes in their knowledge. On the other hand, “teacher’s role is central and active as it is a teacher dominated method”, in fact, there is only a textbook for the teacher as he controls the pace of learning. The process involves extensive oral instruction and accurate speech with little provision for grammatical explanation. (Richards & Rodgers 1986: 44)

1.5.3 COMMUNICATIVE LANGUAGE TEACHING

This method starts from the theory of communicative competence explained in paragraph 1.2. It stresses the idea that the primary function of language is for interaction and communication and that the primary units of language are categories of functional and communicative meaning. The fear of mistakes and errors is absent as it resembles the initial state of children learning to speak their first language. Students are free to talk together in a cooperative environment. The teacher presents two roles: firstly he/she has to help and facilitate the communication process in the classroom. Secondly, he/she has to act as an independent participant during cooperative tasks. There is a vast usage of

games, role plays, and simulations. Also, magazines, newspapers, or advertisements are used to provide real examples of the second language. (Richards & Rodgers 1986: 64)

1.5.4 TOTAL PHYSICAL RESPONSE

Developed by Asher (1977) this is a “language teaching method built around the coordination of speech and action; it attempts to teach language through physical (motor) activity”. It follows the principle that children learn initially from commands and movements and tries make adults reproduce the same process. In fact, this theory highlights the importance of eliminating stress from lessons. To achieve such an objective, it is essential to “tap into the natural bio-program for language development and thus to recapture the relaxed and pleasurable experiences that accompany first language learning”. The students are represented as listeners and performers (in a physical way) and therefore the teacher is the direct instructor. Class materials are not fundamental as the teacher provides activities and examples for himself/herself. (Richards & Rodgers 1986: 87)

1.5.5 THE SILENT WAY

This is a method created by Caleb Gattegno (1972). It involves a problem-solving approach where creative and discovery activities are the main themes, and the learner is a principal actor in the “discover” of language. According to Richards & Rodgers (1986: 101) “lessons follow a sequence based on grammatical complexity, and new lexical and structural material is meticulously broken down into its elements, with one element presented at a time”. Here learning tasks and activities aim to stimulate oral response without oral inputs from the teacher. Therefore, the role of the latter is marginal and not dominant and demanding: “The teacher silently monitors learners' interactions with each other and may even leave the room while learners struggle with their new linguistic tools”. (Richards & Rodgers, 1986: 99)

1.5.6 COMMUNITY LANGUAGE LEARNING

This is a method developed by Curran, a counselor and a professor of psychology. “His application of psychological counseling techniques to learning is known as Counseling-Learning. Community Language Learning represents the use of Counseling-Learning theory to teach languages”. Table 2 compares the process underneath the *Client-Counselor* relationship with the process that goes under the *Learner- Knower* relationship. The essential part that both schemes present is the articulation of a message, the reception and the elaboration of it. As Richards & Rodgers (1986: 113) states “community Language Learning draws on the counseling metaphor to redefine the roles of the teacher (the counselor) and learners (the clients) in the language classroom.”

TABLE 8.1 COMPARISON OF CLIENT–COUNSELOR RELATIONSHIPS IN PSYCHOLOGICAL COUNSELING AND CLL

<i>Psychological counseling (client–counselor)</i>	<i>Community Language Learning (learner–knower)</i>
1. Client and counselor agree [contract] to counseling.	1. Learner and knower agree to language learning.
2. Client articulates his or her problem in language of affect.	2. Learner presents to the knower (in L1) a message he or she wishes to deliver to another.
3. Counselor listens carefully.	3. Knower listens and other learners overhear.
4. Counselor restates client message in language of cognition.	4. Knower restates learner’s message in L2.
5. Client evaluates the accuracy of counselor’s message restatement.	5. Learner repeats the L2 message form to its addressee.
6. Client reflects on the interaction of the counseling session.	6. Learner replays (from tape or memory) and reflects upon the messages exchanged during the language class.

Table n.2 Comparison of client-counselor relationship and Community Language Learning from Richards & Rodgers (1986: 114)

This table highlights the principles of this theory. This method combines different activities such as translation, group work, recording, transcription, analysis, reflection, observation, listening, and free conversation. According to this approach, learners become part of a community to learn from the other members. They are meant to listen to others but also, but they are free to express themselves, their ideas, and their feelings.

The teacher role derives from the counselor. He/she has to be calm, comprehensive, and supportive giving space mainly to listening. Richards & Rodgers (1986: 113)

1.5.7 NATURAL APPROACH

Devised by Terrell in 1977, this method was thought for beginners. In its lessons, the main focus is the acquisition of language resembling the way infants learn their L1. Language is seen as a “vehicle for communicating meanings and messages”, teachers do not force any utterance from students and wait until learners want to say something on their own. There is a progression from yes/no questions to more complex sentences. Students don’t have to try to learn a language but acquire it letting input stimulate them. On the contrary, the teacher takes on three different roles: he/she has to provide accurate inputs, create a friendly atmosphere, and choose and mix various activities to engage with the class (Richards & Rodgers 1986: 128).

1.5.8 SUGGESTOPEDIA

This is a term invented by Lazanov to explain his teaching method based on the study of non-rational and nonconscious influences. This method finds its realization in these points:

- 1) People remember best and are most influenced by information coming from an authoritative source.
- 2) Older students have to become children again.
- 3) Students learn from the environment. Therefore, classes have to be bright, colorful and decorated like the ones in primary schools.
- 4) The variation of tone and rhythm avoid boredom and monotony

Students who volunteer for “suggestopedic” courses are expected to be truly committed to classes. Their mental state is critical to success and they have to encourage their own “infantilization”. Also, the teacher has to become adept at this course and deeply dedicated to it, showing absolute confidence (Richards & Rodgers 1986: 142).

1.5.9 BILINGUAL EDUCATION AND IMMERSION PROGRAMS

Another rather innovative teaching method devised, in the 1960s, is represented by Bilingual education and Immersion programs. According to Cummins (In Long and Doughty, 2009: 161):

“Bilingual education refers to an organized and planned program that uses two or more languages of instruction. The central defining feature of bilingual programs is that languages are used to teach subject matter content rather than just the languages themselves.”

Their objective was to develop proficiency. To reach particular goals bilingualism uses different kinds of programs, the Immersion program being one of them. The definition of “Immersion” is closely related with the history of bilingualism. Firstly, it was described as total immersion of immigrant or minority language children in a classroom environment where instruction was conducted through their second or third language. Johnson and Swain (1997) delineated its fundamental features as a teaching approach:

- 1) The L2 is a medium of instruction.
- 2) The immersion curriculum parallels the local L1 curriculum.
- 3) Overt support exists for L1.
- 4) The program aims for additive bilingualism where students add L2 proficiency while continuing to develop their L1.
- 5) Exposure to L2 is largely confined in the classroom +Students enter with similar levels of L2.
- 6) Students enter with similar (and limited) levels of L2 proficiency.
- 7) Teachers are bilingual.
- 8) The classroom culture is that of the local L1 community.

There are several subcategories for these programmes that differ in many aspects, for example dominant/subordinated, Majority/minority, and Enrichment /remedial programs. However, their outcomes are general and commonly accepted. According to Cummins (in Long and Doughty, 2009: 168) these outcomes are

1) Significant positive relationships exist between the development of academic skills in first and second languages. There is a common belief that there is common knowledge that is transferred from L1 to L2. This characteristic is responsible for the positive results during the learning process.

2) The most successful bilingual programs are those that aim to develop bilingualism and biliteracy

3) Bilingual education for minority students is, in many situations, more effective in developing L2 literacy skills than monolingual education in the dominant language

1.6 NEW FRONTIERS

After the development of the main teaching theories, with the advent of technology and the modern world, new frontiers have identified. New tools for the help of teachers and students have been created. Camilleri (2003: 17) argues that “the Information and Communication Technologies (ICT) have opened up meaningful opportunities for self-direct and interactive learning” and that the “Internet had opened up the widest perspectives for learning”. Also, Brett and González-Lloret (in Long and Doughty, 2009: 351) are in line with this stating that “Technology has indeed permeated the profession deeply.”

Children’s second language learning is influenced by technology, as children can be positively affected if tools are proposed and used in meaningful environments and with the right support of the teacher. Camilleri (2009: 19) stresses, “developments in this area suggest that children can use the web to express their ideas in many forms” and “working with technology has implications for the teaching methods normally associated with a classroom context.”. Internet, blogs, websites, and online dictionaries can greatly improve language learning and communication. Brett and González-Lloret (in Long and Doughty, 2009: 351) explain that technology can help enhance the quality of inputs and the authenticity of resources to help children achieve proficiency.

These new technological tools, however, are not meant only for students but also to help the teacher. He/she can find interesting solutions and particular stimulating activities to engage students and fill his/her curriculum with meaningful content and

exercises. Brett and González-Lloret (In Long and Doughty, 2009: 353) highlight the importance of the teacher's role in this kind of technological context as follows:

“As technology evolves, it is in the language teacher's hands to select those tools that are most appropriate for implementing their pedagogical approach and/or to help develop those skills that best fit their teaching philosophy”

Not only has the teacher the possibility of relying on these tools but he/she can also create his/her particular materials to help his/her students in a more direct and active way. According to Brett and González-Lloret (In Long and Doughty, 2009: 354) “the role played by the individual teacher in the creation of materials is one of fundamental importance” however there are considerable obstacles to achieving this objective of creating meaningful exercises. Often, tools are not so easy to manage or are not available, and moreover, most teachers do not have time to take extra technology courses to implement their technological skills.

In addition to offering websites and blogs where they enhance their syllabus with additional materials, projects have been introduced in recent years to allow teachers to take full advantage of technology for language teaching. Collaborations with companies and university computer-science departments are the most popular way to meet the challenges mentioned above. The help of specialized technicians allows the teacher to focus on creating targeted exercises to help students better learn. As part of this kind of collaborative project, “students are presented with rich texts and are provided with tools to help them deal with difficult vocabulary items” (Brett and González-Lloret in Long and Doughty, 2009: 358).

To conclude, research in this field is growing. As Brett and González-Lloret (in Long and Doughty, 2009: 358) say “CALL (Computer-assisted language learning) is still a vast field of studies”. Also, Carol A Chapelle, distinguished professor of Applied Linguistics and Teaching English as a Second Language (TESL) in the Department of English at Iowa State University, declares that “this is an area with much space for discovery and innovation” (Meniado, Seameo Relc Journal 2020: 452).

CHAPTER 2

In this chapter and in the next, I will focus mainly on teaching English as a second language in primary schools. The playful method presented below, and the experiment proposed in the third chapter, will focus on the English language. The choice of this language comes not only from consistency with my studies but also from purely scientific reasons. The English language has always been considered a “Lingua Franca” and used in all parts of the world (with about 427 million L1 speakers and 959 million L2 speakers) (Saville-Troike, 2012: 9). Moreover, in the experiment proposed in the following pages, I will use the English language not only for its fundamental importance in schools but also for technical reasons related to the software used by the robot.

PLAYFUL APPROACH

This chapter introduces and discusses the playful approach, its characteristics, and its developments. Firstly, in the first paragraph, I will provide the definition of “playful approach” given by Balboni (2008:40) and Ryoo (in Long and Doughty, 2009: Ch. 10). Secondly, I will present some examples regarding some classic exercises reporting the ideas of Scott and Ytreberg (1990), Balboni (2008:40) and Shin (2017). The third paragraph reviews the literature concerning Educational Robotics as a tool for better development of basic English language skills and its implications. I will compare the opinions of Barreto and Benitti (2012), Aidinlou et al. (2014), You et al. (2006), Alemi, Meghdari, and Ghazisaedy (2015), and other researchers to explain how this new type of teaching can lead to excellent results in language learning and the teacher-student relationship.

2.1 WHAT PLAYFUL TEACHING IS

According to Balboni (2018:40), the playful method presents itself as highly instructive. Balboni highlights how this system is extremely positive for the student-teacher

relationship and the creation of a serene and stimulating learning environment. He gives a special definition of what “Playful approach” is:

“La glottodidattica ludica non consiste nel fare giochi, ma nella giocosità [...]in cui lo scopo dell’azione è giocare e, se possibile, vincere: il gioco è autotelico, non vuole far prendere un bel voto, non incute la paura di un brutto voto, non contrappone docente/studente”

“The playful approach does not consist in making games, but in playfulness [...] in which the purpose of the action is to play and, if possible, win: the game is autotelic, does not want to produce a nice grade, do not arouse the fear of a bad grade, do not oppose teacher and student”
(My translation from Italian)

Balboni, citing Freddi (1990), lists the different physical and psychological components that develop during the implementation of the playful approach:

Cognitive: it is the ability to elaborate strategies and understand rules.

Linguistic: it consists of the explanation of the rules, communicative exchanges for the development of the game, and reading.

Social: it is the ability to interact with teammates and to mediate between competition and collaboration.

Motor and psychomotor: the physical dimension of the game.

Emotional: it is the development of positive feelings such as joy and fun and the reduction of negative feelings such as anxiety, fear, and stress.

Also, Ryoo (in Long and Doughty, 2009: ch. 10) insists on this point, arguing that a teaching method based on joy and humor can be of great benefit to language learning.

“[...] pedagogies of humor and joy were actually essential to not only engaging their students in what many initially believed to be a boring or intimidating subject but also participating in critical thinking and communication practices valued across all fields of study.”
Ryoo (in Long and Doughty, 2009: 177)

Ryoo argues that students need access to quality learning to develop the same competencies listed by Balboni and to experience different ways of “thinking, acting and reacting” to support their mental growth. Also, Balboni, supporting the fundamental importance of the playful approach for psychological development, highlights how this method can be extremely important for the development of memory skills. Thanks to its typical feature of “repetition”, students are able to remember and learn more easily and with less effort.

In conclusion, to achieve these results Ryoo recommends appropriate behavior by the teacher who has the cardinal role of managing and adjusting the system. The latter must show his personality and adapt the lessons depending on the topic. He must enter the playfulness and games gradually, controlling the activities, and letting students develop their ideas and creativity. He must take an active part in the activities and give ideas for new reflections and propose different points of view to analyze problems.

2.2 PLAYFUL TEACHING: CLASSIC METHOD

The classic method, used especially in primary schools, involves the use of basic tools such as books, toys, playing cards, and cd players. These tools are part of early childhood and are familiar to children. Scott and Ytreberg (1990: 12) even encourage the use of their own toys: “Encourage the children to bring in objects, pictures, or postcards [...]. Physical objects are very important to young children”. The game is intended as a basic structure, and familiar to the child, for this reason, the playful approach is more effective than other methods. Balboni (2018:40) highlights how structural exercises can be heavy and boring. He proposes games like the dice game, tic-tac-toe, naval battle, speed race, and the differences game to stimulate students. An important part for children in learning English is reading stories, playing with rhymes, reciting poems, and singing songs. This is particularly positive because they combine mnemonic learning with physical and motor learning. Shin (2017), citing Coulter (1995: 22) argues that “songs, movement, and musical games are considered “brilliant neurological exercises” that support intellectual development”. As he says this is one of the best methods to ensure second language acquisition and it is to be applied to all English classrooms as they have to be “enjoyable

and interesting; active and hands-on; supported and scaffolded; meaningful and purposeful; culturally appropriate and relevant”.

All these exercises are normally blended to form a profitable learning plan for learning English as a second language.

2.3 PLAYFUL TEACHING: NEW TECHNOLOGIES & EDUCATIONAL ROBOTICS

With the advent of the new millennium and the development of new technologies, the use of tools such as tablets and computers has consolidated within the school system for language teaching, especially in English classes. This teaching method has become a new practice and is considered part of playful teaching and of classic methods. An example can be found in the use of digital storytelling via tablet. Puspitasari Dwi and Widodo Handoyo (2018:490) in their research published in the Indonesian Journal of applied linguistics define digital storytelling as a “multimodal text created with technological tools” and “an artful combination of personal voice, images, music, sound, and/or text, usually presented as a short video of 3-5 minutes”. Children are allowed to play with their voices interact with their peers to create stories as they are “active digital technology users” (Puspitasari Dwi and Widodo Handoyo 2018: 489). The study conducted by Puspitasari Dwi and Widodo Handoyo has shown how “digital stories or DST can have a considerable bearing on learners’ knowledge and language and literacy development” (2018: 490).

A new type of technology under development is educational robotics. This educational endeavor, which involves the use of humanoid robots for teaching English and second languages in schools, is presented as highly profitable. This project can be inserted as a further development of playful teaching as it is proposed as a fun and highly educational method. Excellent results were observed during the trial. Firstly, there have been interesting results from a psychological and social point of view regarding interactions. Secondly from a purely educational point of view, good results have been achieved in the learning of the skills necessary for the use of English as a second language. Aidinlou et al. (2014: 14) define Robot-assisted language learning (RALL) as “interactive and instructional activities which can be interacted and performed between robots and

learners”. Even though most of the research was conducted on the use of robots in mathematics and science classes (80%) as Barreto and Benitti (2012: 981) underlined, robot learning has shown to be extremely important also in the field of languages. Aidinlou et al. (2014: 14) state that:

“With the features embodied in many robots like adaptability, sensing, repeatability, intelligence, mobility, and human appearance, the RALL (Robot-assisted language learning) system can create a useful collaboration with students to improve their speaking and listening abilities and to provoke the learners’ interest, collaboration and motivation in problem-solving abilities and specific tasks”

Robots present peculiar characteristics that are widely significant and might help support language learning instruction. As Aidinlou et al. (2014: 14) underline:

“Robots not only have attributes of CALL (Computer-assisted language learning)/MALL (mobile-assisted language learning) but also are able for independent movements, voice/visual recognition, and environmental interaction. Robots are also capable of non-verbal communication, such as gestures, facial expressions, and actions”

These qualities are essential during English and language classes as language is a mixture of voice and gestures. According to Aidinlou et al. (2014: 14) other important features that support English and language learning are the followings:

Repeatability: it is the possibility of making the robot repeat the same exercise almost endlessly.

Flexibility: consist of the possibility for “instructors to design and adjust proper robot-supported educational activities for instructional needs.”

Digitization: robots have the ability to preserve data so teachers and students can record their progress and their portfolios.

Humanoid Appearance: most robots are made with a humanoid appearance. Children see them as toys or “friends”. Their aspect can “provoke fantasy and curiosity among children and increase learners’ motivation to practice language skills joyfully.”

Body Movement/Motion: robots make specific gestures during class activities. These particular movements “arouse motivation but also lead and help children to use suitable gestures while talking.” Children have fun and play together with the robot.

Interaction: one of the most important skills children have to practice is speaking. Robots can be useful tools capable of practicing dialogues with students thanks to their voice recognition features.

Sensing Capability, Intelligence, and Automatic Speech Recognition: “Robots are equipped with artificial intelligence that helps them to communicate with humans and computers.

Language Understanding and Dialogue Management: There is a system that anticipates and understands dialogues and produces “corrective feedbacks”.

Emotional expressions: human robots can reproduce emotions like joy, hope, fear, and sadness that engage children and make them seem more human and friendly.



Figure 1: a robot teacher (from Aidinlou et al., 2014: 14)

Robots can be used to perform different roles depending on the needs of teachers and students and based on the school program. Teachers may need help during lessons and students may need some companion to practice with. During the experiments by Aidinlou et al. (2014: 16) robots were employed in three different roles. The roles are the followings:

Learning materials: Students and teachers can design robots to have learning materials and use them as the database. They can create exercises, record stories, and save images to stimulate language learning.

Learning companion/pets: children can use robots as “friends”. They can practice as many times as they want, and their anxiety increasingly reduces as they are not afraid of a bad grade. They play and have fun with them practicing their language skills and treating robots like companions.

Teaching assistants: robots help teachers present materials and manage the students.

As Aidinlou et al. (2014: 17) explain the “development of RALL began approximately around 2004.” The robots employed in the experiments can be divided into two categories: robots for educational service and robots used to “enhance creativity and promote interest in instruction that stands for science”. Educational robots, as Aidinlou et al. (2014: 17) stress, can be divided into three types. Firstly, there are *Tele-operated Robots* using the technology of remote controlling. Secondly, researchers can use *Autonomous Robots* that have their artificial intelligence. Thirdly, *Transformed Robots* that are born from the union of Tele-operated and Autonomous Robots and can “switch between these two operations.” Some examples of Educational Robots are Robosapien, Robosem, Nima (NAO), and Lego Mindstorms. Robosapien is a low-cost humanoid robot used as a teaching assistant by You et al. (2006) in their experiment. Robosem was employed by Park et. al. (2011) in an experiment with a class of 34 students between 10 and 13. Nima (2013) was used in Iran’s Junior high schools (Aidinlou et al. 2014: 18) and Lego Mindstorm was employed as a motivational tool in an English classroom with

children from 6 to 9 years old (Segovia and Souza, Latin American Robotic Symposium, 2018).

Figure 2 shows in order (from left to right), Robosapien as a teacher assistant, Robosem and its specifications, the appearance of Nao and finally Lego Mindstorm during class activities

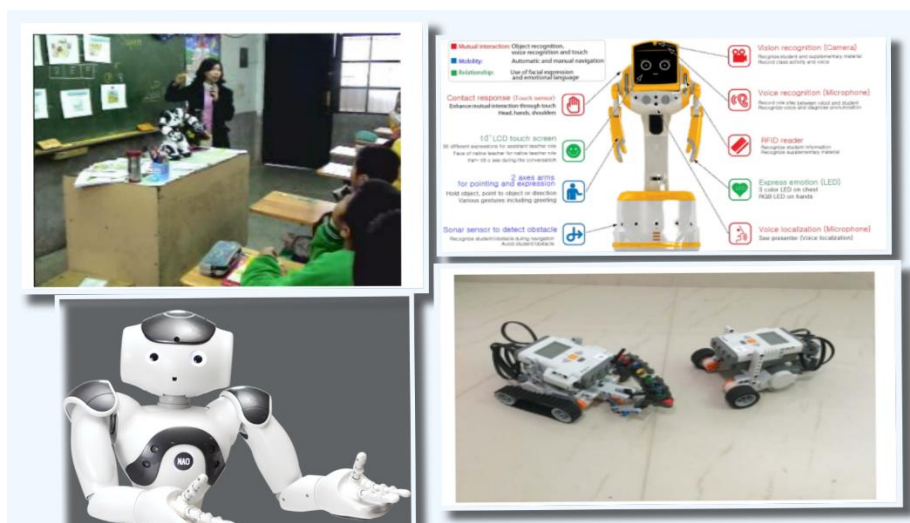


Figure 2: collage. Robosapien (from You et al. 2006), Robosem (from Park et al. 2011), Nao (from Softbank Robotic website), and Lego Mindstorm (from Segovia and Souza, Latin American Robotic Symposium, 2018)

During most of the research in English teaching and language teaching the exercises proposed were practically the same. The interaction models are thought to engage and involve children in the learning process creating a stimulating and playful atmosphere. You et al. (2006) presented a list of activities specifically prepared to be done with the help of the robots at the Sixth International Conference on Advanced Learning Technologies. These are the following ones:

Storytelling model: as I underlined in paragraph 2.2 stories are part of the playful method. You et al. (2006) stress that “the use as an effective way to motivate children to learn a second language is a good way”. Robots become the right companions to play with and read/listen to a story with. In this model, robots are programmed to stimulate children with different stories. The activity is designed to stimulate comprehension, so

during each story the robot stops to ask some questions to children, rewarding them if they respond correctly.

Q&A model: this model is thought to provide a direct dialogue with the robot. It is an individual task where the robot asks some simple questions to a student. If the answer is correct the robot encourages the pupil with some ludicrous sound or acclamation.

Cheerleader model: The robot controls a competition game. Children have to answer correctly to the questions, pick the corresponding word or picture or perform an action. If they respond correctly, they are rewarded.

Let's act model: The robot orders the students to do some gestures or picks a pupil to do this task and rewards him if he does it right.

Pronunciation leading model: “In this model the teacher let the robot leads everybody to speak English words.” Children during this task seem to be less afraid of failure and are more engaged in playing with English

Figure 3 shows some Japanese children learning English with the help of the robot Nao and their teacher.



Figure 3: students learn English with the humanoid robot Nao at Meiji Elementary School in Omuta, Fukuoka Prefecture, Japan. (The Japan News: 2018)

The activity types have shown great results mostly in engaging and helping children feel secure and improving their learning skills. In particular, robots may be the perfect combination of playful pedagogies and technologies. They can be motivational tool and they can reduce anxiety during classes. Alemi, Meghdari, and Ghazisaedy (2015: 529) stress how “the robot’s ability to play games with students helped make the classroom a fun and enjoyable environment” and that “the more the students enjoy the class, the more they would like to participate in it.” You et al (2006) showed how in each interaction model proposed to their class students were enthusiastic, eager, and more willing to participate and speak. Also, Segovia and Souza (2018), after analyzing the pupil’s answers to their final questionnaire, state that “the workshop achieved the desired goal: the use of Educational Robotics as a playful tool for learning English.”

However, despite the huge amount of positive outcomes, there are considerable obstacles to the development and spread of Educational Robotics like problems with costs, the provision of convenient tools, the improvement of robot communication, and the distribution of standardized software developer tools for educational robots (Park et al, 2011). Also, Aidinlou et al. (2014) underline the importance of having more theoretical studies on RALL to produce more instruction and learning models to engage children.

Finally, many studies are still ongoing on this issue as it is so vast and yet to be deepened. The present dissertation represents an attempt to support the implementation of educational robotics. In the next chapter, I will give an example of activities developed for teaching English as a second language through the robot Pepper.

CHAPTER 3

EXPERIMENTING WITH PEPPER

After discussing extensively second language learning, the playful approach, and educational robotics, in this Chapter I will propose a series of activities designed for a collaboration with the IAS Lab of Padua for a new experiment with the robot Pepper. First, I will introduce, following the ideas of Tanaka et al. (2015), Robot Pepper, explaining its functionalities and peculiarities from a scientific and psychological point of view, and analyzing its interaction with children. Secondly, I will explain the method used to create the activities. Finally, I will propose the complete list of exercises created for the experiment, briefly explaining their functionality.

1.1 PREVIOUS RESEARCH ON THE USE OF PEPPER FOR TEACHING

Pepper the robot has been used to teach English in primary school and proposed by the IAS Lab is Pepper.

Pepper is a humanoid robot designed and created by SoftBank Robotics Corp. and Aldebaran Robotics SAS. On their website page dedicated to Pepper, they describe it as:

“The world’s first social humanoid robot able to recognize faces and basic human emotions. Pepper was optimized for human interaction and is able to engage with people through conversation and his touch screen.”

Figure 4 shows what it looks like:

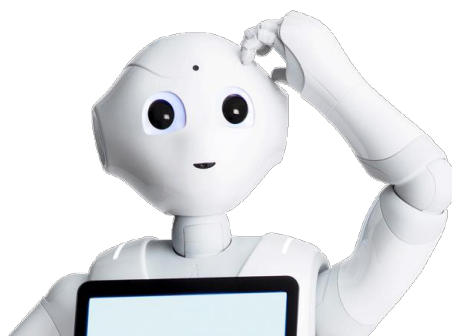


Figure 4: Pepper (Softbank Robotics Website)

Pepper presents multiple functionalities and characteristics. As Softbank’s developers specify, the robot recognises speech and dialogue in 15 languages, has perception modules to recognize and interact with the person, possesses touch sensors for multimodal interactions, and has an open and fully programmable platform. Other specifications are given in the table on the right in Figure 5/6. As Tanaka et al. (2015) stress, Pepper is a robot “designed for use with online information acquisition and cloud database, features that enable users to expand Pepper’s functions by installing new software and various applications called robo-appli”.



SPECIFICATIONS.	
Size (H x D x W)	1210 x 425 x 485 [mm]
Weight	28kg
Battery	Li-ion 30.0Ah / 795Wh
Sensors (head)	Mic ×4, RGB camera ×2, 3D sensor ×1, touch sensor ×3
Sensors (trunk)	Gyroscope sensor ×1
Sensors (hand)	Touch sensor ×2
Sensors (leg)	Ultrasonic sensor ×2, laser sensor ×6, bumper sensor ×3, gyroscope sensor ×1
DOF	20
Display	10.1 inches touchable display
OS	NAOgi OS
Network	Wireless / wired interfaces
Velocity	Max. 3km / h

Figures 5/6: Pepper and table of specifications (from Tanaka et al. 2015)

A considerable number of experiments to test Pepper’s functionalities have been conducted and are still going on. One example is given by the research carried out by Tanaka et.al (2015) which tests the Robot Pepper to try to teach English to Japanese children of age 4/5 years old. Tanaka et al. (2015) presented their results at the 15th International Conference on Humanoid Robots. With their experiment, they successfully tested the use of Pepper as a peer and a teacher’s assistant. The results showed the importance of some of its specific features. Tanaka et al. (2015) point out that, during class activities, the ability of Pepper to engage children with its movement and the use of its tablet is particularly important. They that “physical contact plays an important role in children’s long-term interaction with robots and is thought to be effective in maintaining children’s interest in interaction” (Tanaka et al. 2015). Pepper can make movements, like high five or simple actions like “brush” or “fly” that can play a significant role during English classes to enable children to learn directly and “recognize the meaning and the

linguistic structures” (Tanaka e .al. 2015). Finally, eye contact and face detection showed to be of great relevance. Tanaka et al. (2015) has also showed that “keeping eye contact between robot and children seemed to be highly important” and that “thanks to the chest display, children tend to face Pepper most of the time”. The robot’s ability to recognize children and turn its body directly to them seems to be highly effective.



Figure 7: children interacting with Pepper (high five) (from Tanaka et al. 2015)

All these features tend to create a close atmosphere that is of great help in engaging and interesting children during classes and provides a good environment for English and language learning thus making Pepper a fantastic companion to play and learn with.

1.2 METHODS AND DATA

In order to create the exercises, I followed the guidelines provided by Dr. Alberto Bacchin, a computer science engineer, and by the IAS Lab (Intelligent Autonomous Systems Laboratory), based on experiments already implemented by them. My task was to improve and strengthen the activities from a linguistic point of view with regard to the choice of a more suitable vocabulary for the educational purpose of correct English learning.

The previous experiment they conducted regarded a third-grade class of the Muratori primary school of Padua in collaboration with Ms Taziana Giusti, one of the teachers at the school. The class was divided into groups of four or five children to make them able to easily interact with the robot. The proposed exercises allowed the use of the robot’s capabilities of listening and voice interaction as well as the ability to use the tablet to view the material.

The activities I experimented for the present study are the following ones:

Storytelling: a brief introduction to the activities with a story or a situation described.

Listening: children listen to Pepper's questions and choose the right answer on the tablet.

Speaking: children have to describe the image proposed by the robot.

Reading: students have to answer Pepper's questions by reading the possible options on the tablet.

Interaction: pupils engage in a dialogue with Pepper, and they have to answer simple questions regarding the topic.

They are longer and more elaborated than those used before by Ms Giusti. Pupils obtained positive feedback for every correct answer or otherwise an invitation to try again the exercise in case they get an answer wrong. We also set up a control group, for whom no interaction with Pepper was planned. This control group, together with the teacher, carried out the same activities using the traditional methods without any contact with Pepper. The activities are all focused on repeating the same topic to stimulate mnemonic learning and understanding of concepts. The theme chosen for the experiment according to the indications of Ms Giusti, in compliance with syllabus, is "The members of the family".

1.3 PROPOSED EXERCISES

I modified the activities, already proposed Dr. Bacchin and the IAS Lab, with the making of them longer as suggested by Ms Giusti. I added some new family members such as *aunt*, *uncle*, and *nephew* to make the children familiarize themselves with this new vocabulary. I also added some new elements like the names of the pets that can be considered as part of a Family. The activities I changed are the followings:

STORYTELLING: I modified the first activity, and I added a brief story to help the children become familiar with the names of the family members (*mother, father, cousin...*) and general concepts of *woman, man, people, baby, children, boy, and girl*. To introduce these terms, I invented a brief story about Lucy a little girl that is celebrating Christmas with her family and friends. During the story, step by step, I introduce the names of all the family members as a warmup activity.

LISTENING: In this activity, I tried to focus only on the general concepts of *man, woman, girl, boy people*, and so on. I followed the guidelines of the previous experiment. The task consists of answering Pepper's questions by clicking on the right answer on the tablet.

SPEAKING: This activity proposes some images to the students. They have to recognize and say to the robot what these images represent. In this exercise, I focus on Family members adding new words such as *aunt, uncle, and nephew*. The main problem with this exercise is that students looking at the image responded with more than one word making the answer to the robot seem incomprehensible. I tried to solve this problem by specifying which person they should describe. For example, in the figure with the mom and her baby, the question will be "*Who is the woman in the picture?*" so the answer is obviously "*mother*" and not "*mother with baby*".

READING: In this activity, students have to read and answer the questions proposed on the tablet by Pepper. I decided to use this exercise to review all the terms introduced in the previous activities and mix them into different questions to stimulate logic.

INTERACTION: This last exercise aims to help children become familiar with dialogues and to stimulate their oral production. I expanded the dialogue previously used by Ms Giusti with some new questions regarding general concepts related to *boy and girl*. As the activities used by Ms Giusti were too short, some children were not able to talk to Pepper and complete this activity. Therefore, to overcome this problem, I added three

more dialogues. The first consists of some questions about *pets* with which the pupils can have fun with Pepper. The second one aims to review the concepts of *grandmother*, *grandfather* and of all the family members. The third one helps children review the words *aunt*, *uncle* and *nephew*.

To complete my thesis, I have decided to interview Ms Taziana Giusti, one of the teachers at the Muratori primary school (Padua) that promoted the experiments, and Professor Monica Pivetti, professor and researcher of social psychology of the university of Bergamo. The aim of these interviews (Appendix B) is to clarify some aspects of the experiments that were performed to teach English with Pepper, but also to explain some other technical parts of my research.

The interview with Ms Giusti, from a technical point of view, highlighted the importance of classic methods for teaching English in schools. The questions helped explore specific teaching methodologies and allowed us to understand how these techniques, developed over time, are the guidelines for each language teacher. These methods, according to Ms Giusti, allow the creation of a complete syllabus to help students learn English correctly and fully. As explained by Ms Giusti the combination of these methods allows one to devise an “elastic teaching” with activities that are always stimulating and effective. The playful method combined with the others can give great results in terms of memorization and learning. The idea behind the experiment is to teach English to children in a fun and stimulating way, avoiding elements of anxiety and stress and giving children the opportunity to learn at their own time, focusing on long-term results. Regarding the results of her earlier experiment, Ms Giusti found that children were much more active and involved in the robot activities. Pepper has proven to be a great playmate. The activities proposed have achieved excellent results with regard to the children memorizing and understanding ability.

The interview with Professor Pivetti, on the other hand, highlighted the fundamental role of the humanoid characteristics of the robot Pepper. These have greatly influenced the interest of children. The empathy and "warmth" brought about by the robot made the children a lot to feel involved in the teaching activity. The positive reinforcements given by the robot contributed enormously to the emotional state of the children who felt encouraged to respond correctly in English. From a technical point of view, instead, Professor Pivetti highlights how the division of the work into small

groups helped and greatly increased the learning outcomes. Concepts and words were better assimilated. Another important aspect considered by Professor Pivetti is the multi-ethnic and technological character of the children in the school. As "digital natives" these children have the great advantage of knowing how to use technological tools such as Pepper without any kind of problem. The multi-ethnic nature of the class it is possible for the students to better perform on the activities by children without fear of expressing themselves in English because they are already used to interacting with one another, and they all belong to different cultures. Pof. Pivetti, suggests ways to further conduct research on the topic. She suggests conducting other experiments in different other schools to analyse and compare these observations.

CONCLUSIONS

Learning a second language, as Saville-Troike (2012) highlights, is an extremely fascinating and complex phenomenon, full of various facets that make it a field of study still in need to be developed. We can just think of the neurological and linguistic studies that are still exploring the language learning process put in place by new-borns and children.

The history of language teaching practices also highlights how learning a second language is a continuously developing process that from time-to-time introduces new figures and models. The role of the language teacher becomes fundamental for achieving linguistic competence at an almost native level.

In my dissertation I have focused mainly on the teaching of English as a second language in primary schools. Fundamentals are the explanations of Camilleri (2003) and Scott and Ytreberg (1990) that highlight the importance of programs designed specifically for children. In this regard, the brief exposition and analysis of the teaching methodologies allows to understand the breadth and complexity of this subject as well as the dedication and professionalism that a language teacher should have.

Among all the methods presented, the playful approach is the most innovative and appealing for students. This method, as I highlighted in Chapter 2 supported by Balboni (2018) and Ryoo (in Long and Doughty, 2009) is useful for engaging students and for a natural and for spontaneous language learning that avoids anxiety and stress. It emerges that other methodologies do not contradict this new method but rather complete and integrate it to train students in the best way possible.

As said in Chapter 3, educational robotics mentioned is an innovative and forward-looking method. My research shows that the use of robots for teaching languages, in particular English, combined with a playful type of teaching can be extremely effective. From the interviews with Professor Monica Pivetti and Ms Taziana Giusti, with regard to the experiments conducted in a class at the Muratori primary school of Padua, this method turns out to be a promising future approach for language teaching. The collected testimonies show that children were more active and interested during English lessons and their results improved. It should also be noted that these robotic tools are not intended to replace the figure of the English teacher but rather to be a valid support

to teaching thanks to the various possibilities that the robots are equipped with. The exercises that I have elaborated and expanded (the appendix to this thesis) present particular characteristics. They are designed to be a valuable tool for the use of the English teacher to improve student's speaking, reading and listening skills. The activities always require the support of the teacher as a guide to clarify and solve any problems of understanding. However, they are a great tool also for reviewing the concepts learned during the school year.

This thesis aims to support a future type of technological innovation for the teaching of English in support of teachers. From what emerges from my research this field is still vast and much is yet to be discovered. From this consideration I would suggest further research for the development and creation of further types of activities and exercises, as well as further testing and experiments in schools. However, the availability of equipment and robots, as well as their high production costs, is a major obstacle. This thesis is therefore also intended as a testimony of the benefits of educational robotics used as playful method and as an excellent support for all schools that want to help their students to improve their knowledge of English language teaching.

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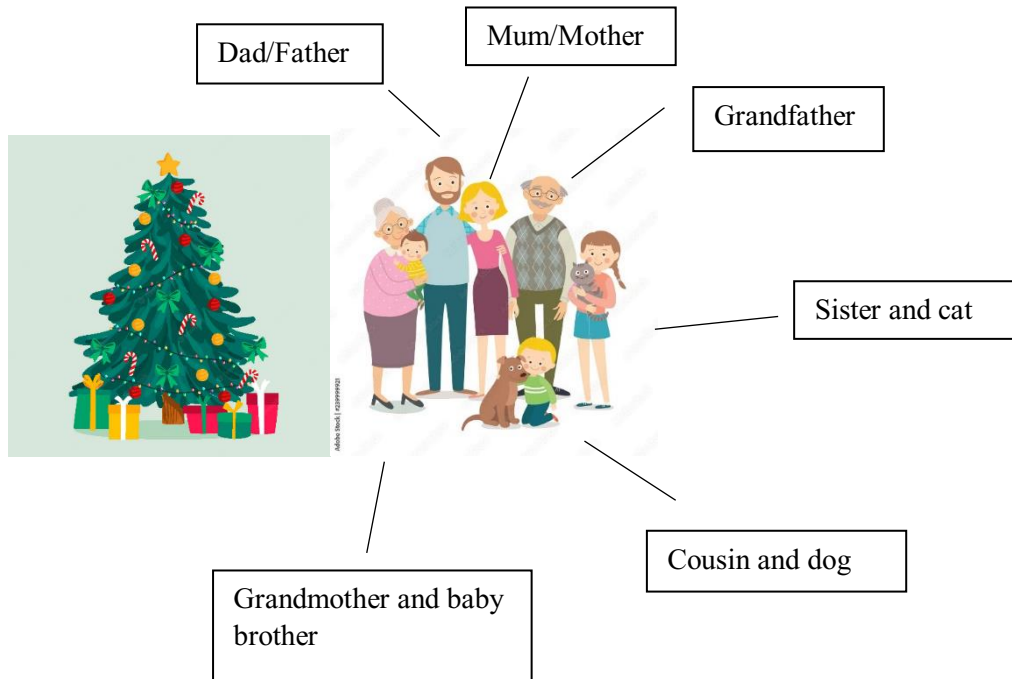
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APPENDIX A

ESERCIZI ESPERIMENTO

1. **Lezione teorica condotta dalle maestre in classe con i video allegati ad esempio**
2. **Lezione con Pepper a piccoli gruppi (3/4 bambini). La lezione si svolgerà in una stanza a parte e sarà abbastanza breve in modo da consentire la turnazione. Quest'ultima comprende:**







Lucy's Friends
They are children

PEPPER: Welcome to this class, my name is Pepper and I will be your teacher. How are you today?

PEPPER ASCOLTA, KEYWORDS: Fine;Good;Ok;Well;Great;Right;Bad

PEPPER: Nice! Let's start the lesson! Can I start the first activity?

PEPPER ASCOLTA, KEYWORDS: Yes

PEPPER: The topic of today is family and people. My friend Lucy is celebrating Christmas with her family and friends. Let's listen to her story.

Her mom and her dad are together with her grandfather and grandmother. There are also her sister, her cousin and her baby brother. She also have two pets: a dog named Bruno and a cat named Napoleone. This is a picture I took. Can you see them together?

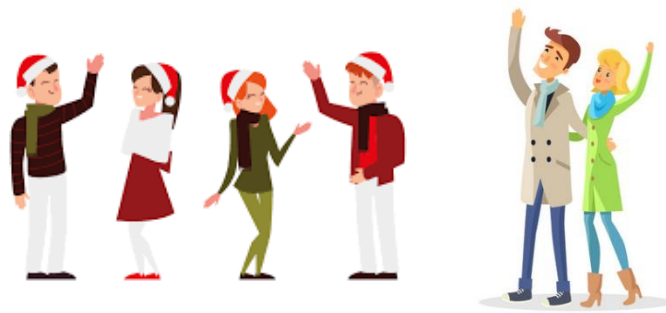


PEPPER ASCOLTA KEYWORDS:

No → **PEPPER:** They are near the Christmas Tree. Can you see them now?

Yes → **PEPPER:** Great, you found them!

They are celebrating Christmas together and they are all happy. Her mother and her grandmother are cooking. Her father is talking with her grandfather. Her sister is playing games with her cousin. Her baby brother is sleeping. Her aunt Katy and her uncle Jhon are also at the party. They are talking to other man and women. Can you see them?



PEPPER ASCOLTA KEYWORDS:

No → PEPPER: Aunt Katy is wearing a green coat. Uncle Jhon is wearing a brown coat. Can you see them now?

Yes → PEPPER: Great, you found them!

There are so many people at the party. They are dancing and they are very happy. There are also Lucy's friends. They are all children like her. They have presents for her. Can you see them?



PEPPER ASCOLTA KEYWORDS:

No → PEPPER: They are all wearing red hats. Can you see them now?

Yes → PEPPER: Great, you found them!

But Napoleone the cat and Bruno the dog are hungry. They want to eat. They jump on the table and eat the dinner.



Now there is a mess! Oh No! Poor Lucy! Now she can't celebrate with her family and friends!

But her grandmother has a great idea!

"Let's order pizza!" she say to her nephew.

So they order pizza and happily celebrate Christmas together!

It's snowing so Lucy goes playing outside with her friends.



What a happy ending!

NEXT ACTIVITY

Listening: Pepper mostra, tramite tablet, un'immagine con due alternative e fa una domanda vocale. Il bambino ascolta e tocca quella giusta (se sbaglia riprova)

Who is the man?
Touch it!

TOCCO SUL TABLET:
→ GIUSTO: FELICE
→ SBAGLIATO: INVITO A RITENTARE

PEPPER: Please look at the tablet and use it to answer my questions. Who is the man? Touch it!



PEPPER: Please look at the tablet and use it to answer my questions. Who is the girl? Touch it!



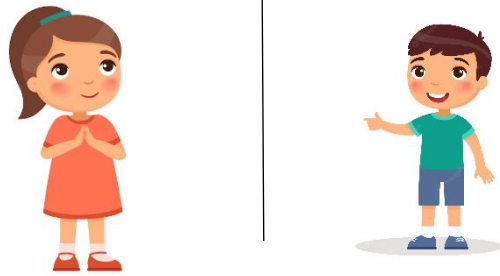
PEPPER: Please look at the tablet and use it to answer my questions. Who is the baby? Touch it!



PEPPER: Please look at the tablet and use it to answer my questions. Who are the people? Touch it!



PEPPER: Please look at the tablet and use it to answer my questions. Who is the boy? Touch it!



PEPPER: Please look at the tablet and use it to answer my questions. Who are the children? Touch it!



PEPPER: Please look at the tablet and use it to answer my questions. Who is the woman? Touch it!

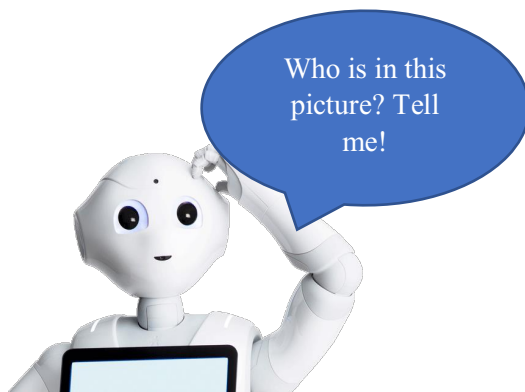


PEPPER: Please look at the tablet and use it to answer my questions. Who are the pets? Touch it!



NEXT ACTIVITY

Speaking: Pepper mostra l'immagine di una persona e chiede di riconoscerla, Il bambino risponde a voce (se sbaglia riprova). Se Pepper non riesce a capire bene, interviene la maestra con uno swipe sul tablet.



PEPPER: In the next activity, I will show you a picture. Tell me what you see! Who is the woman in this picture?



PEPPER ASCOLTA

Mother, Mum → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the man in this picture?



PEPPER ASCOLTA

Grandfather → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the man in this picture?



PEPPER ASCOLTA

Uncle → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the man in this picture?



PEPPER ASCOLTA

Dad, Father → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the woman in this picture?



PEPPER ASCOLTA

Grandmother → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the woman in this picture?



PEPPER ASCOLTA

Aunt → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

PEPPER: Tell me what you see! Who is the boy in this picture?



PEPPER ASCOLTA

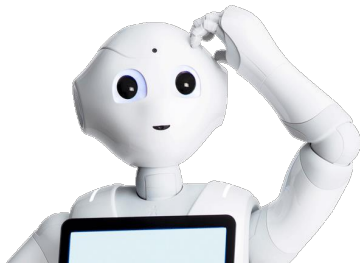
Nephew → REAZIONE FELICE

ALTRO → INVITO A RIPROVARE Toccando il tablet quando Pepper è in ascolto (occhi blu) è possibile interrompere l'esercizio per intervenire.

NEXT ACTIVITY

Reading: Pepper mostra una domanda con alternative scritte a video. Il bambino legge le alternative e tocca la risposta. Se sbaglia, riprova

Read the
question and
answer!



Who is older?
MOTHER

GRANDMOTHER

Who is the son of my
parents?
MY BROTHER

MY COUSIN

TOCCO SUL TABLET:
→ GIUSTO: REAZIONE
FELICE → SBAGLIATO:
INVITO A RITENTARE

Who is older?
GRANDFATHER

NEPHEW

Who is the son of my aunt
and uncle?
MY COUSIN

MY SISTER

Who is the daughter of my
parents?
MY SISTER

MY COUSIN

What are your mother and
your grandmother?

WOMANS

WOMEN

Who is your brother?

BOY

GIRL

Who is a man?

FATHER

AUNT

What is Lucy?

CHILD

CHILDREN

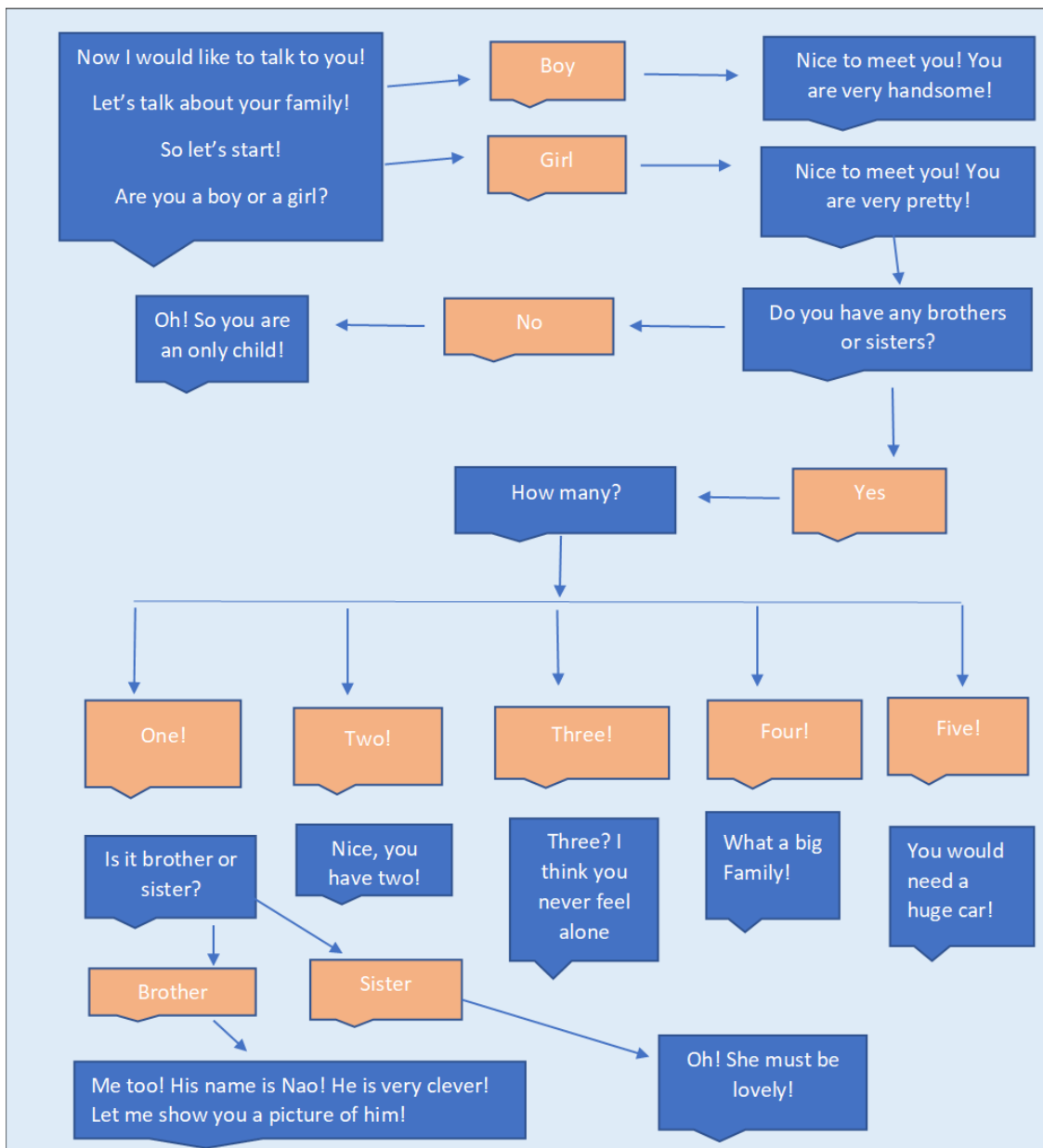
Who is your brother?

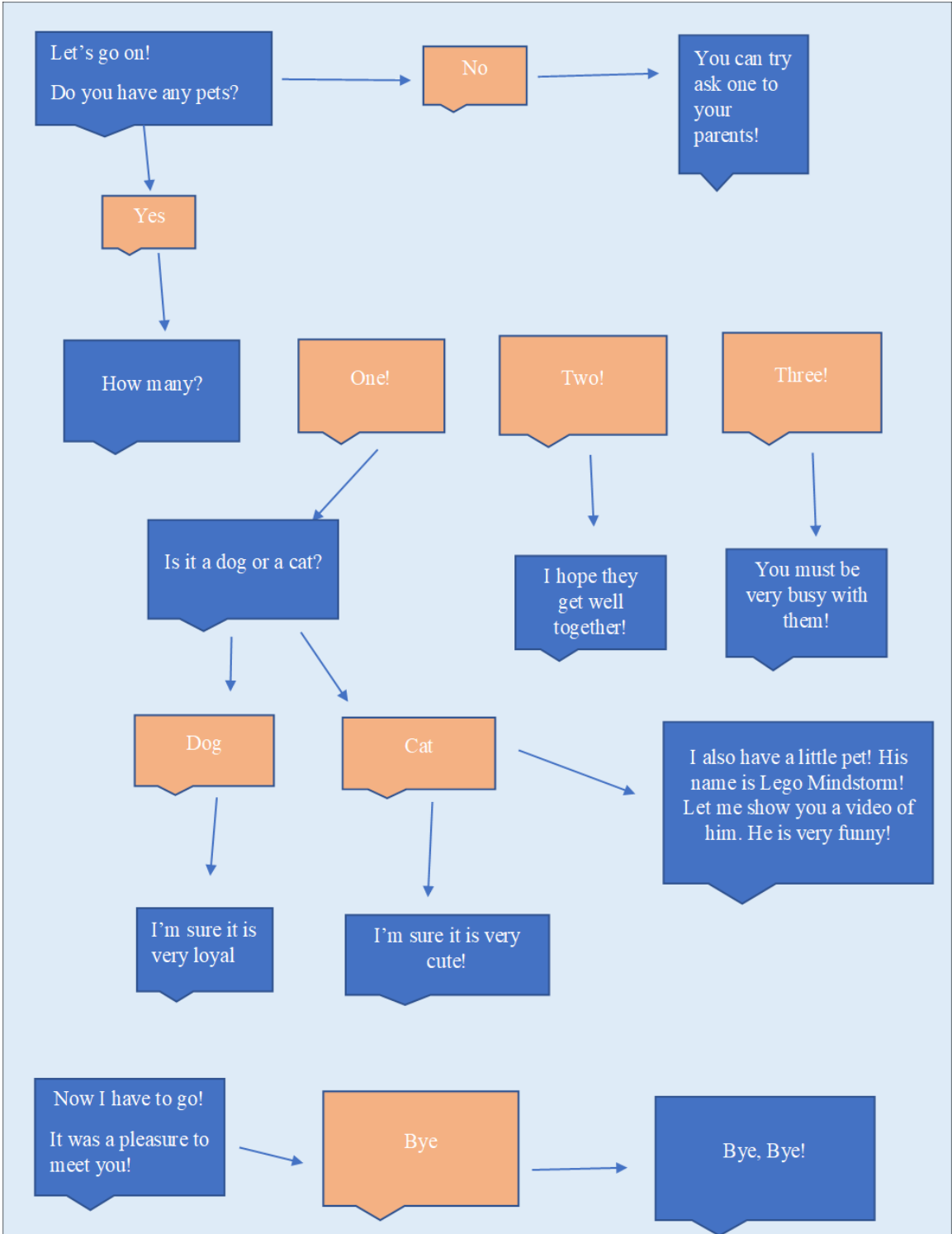
GIRL

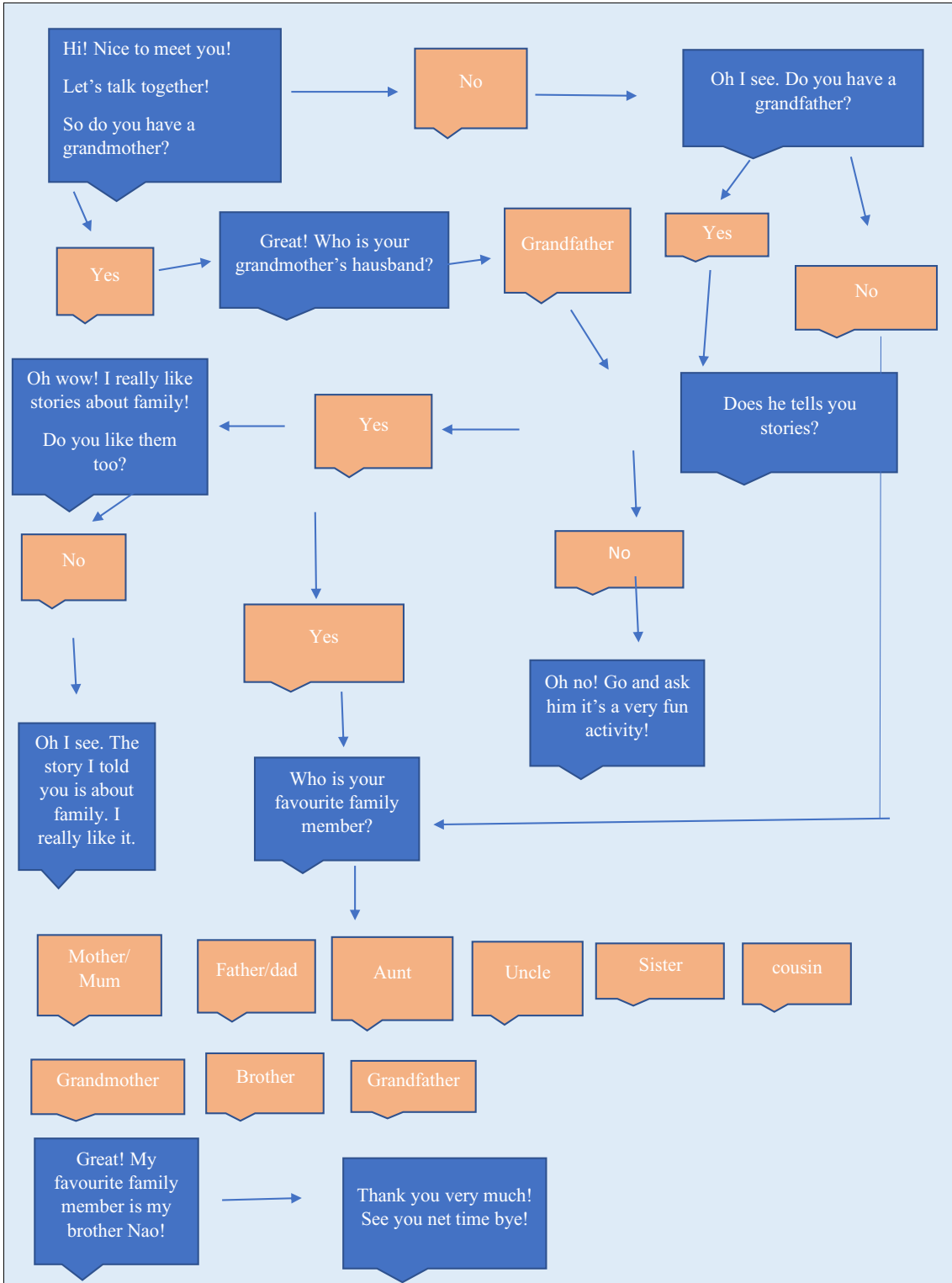
BOY

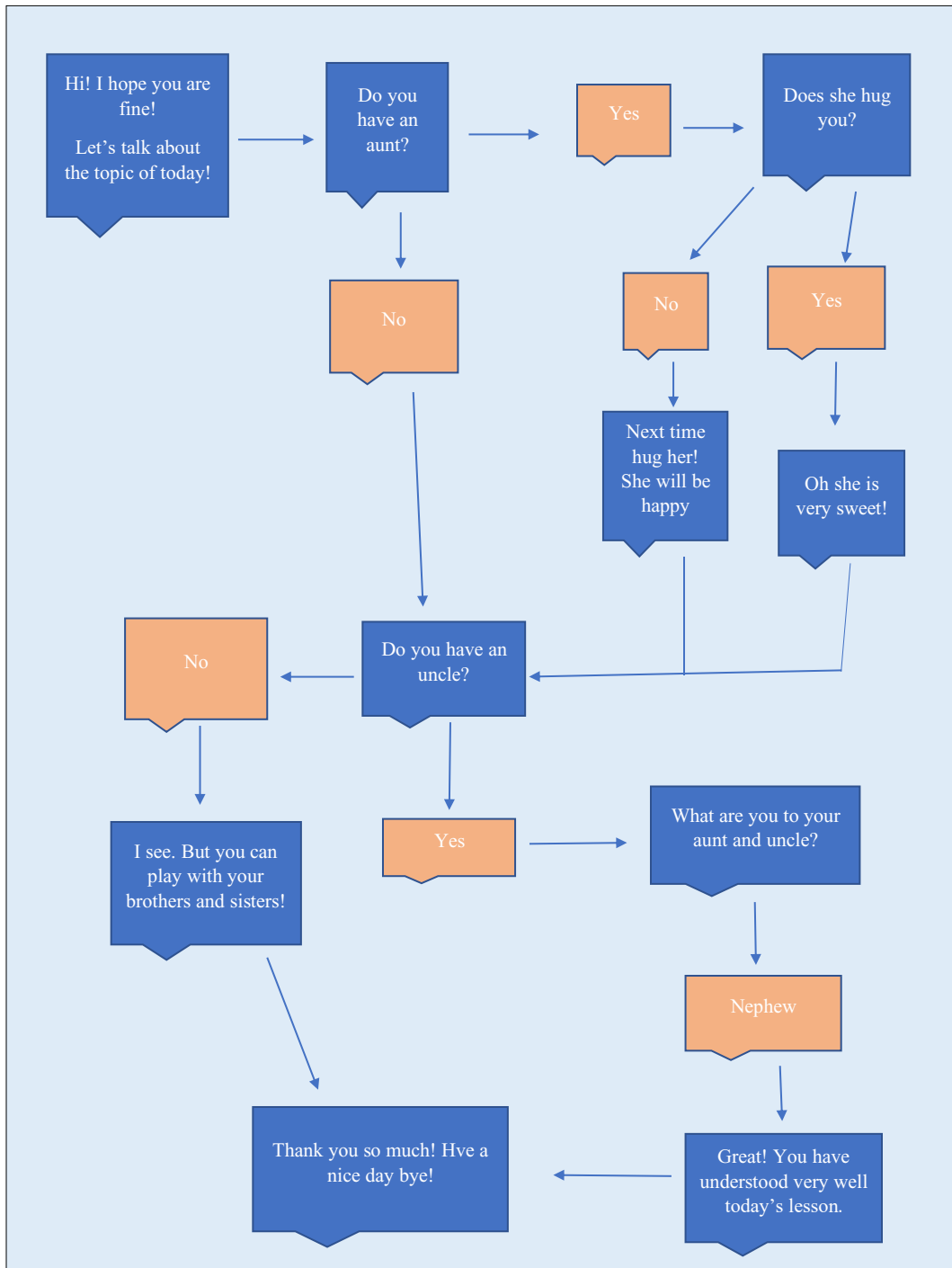
NEXT ACTIVITY

Interaction: dialogo simulato con Pepper che chiede di parlare della propria famiglia con semplici domande mirate (vedi esempio sotto). Il bambino risponde a voce. Se Pepper non riesce a capire bene, interviene la maestra con uno swipe sul tablet









APPENDIX B

INTERVISTA PROFESSORESSA MONICA PIVETTI

La mia tesi riguarda lo sviluppo delle nuove tecnologie e della didattica ludica per l'insegnamento dell'inglese nelle scuole primarie. In particolare, si concentra sull'uso dell'Educational Robotic come metodo ludico. Per completare la mia tesi con la testimonianza di un esperto desidero farLe alcune domande.

In merito agli esperimenti attuati con Pepper

1) Partendo dall'aspetto didattico-ludico quali ritiene siano stati gli elementi del robot che hanno influito positivamente sui bambini riducendo l'ansia e lo stress?

Il mio ruolo è stato quello di osservatore per il gruppo sperimentale. Ho presenziato all'esperimento documentandomi mentre la maestra Taziana interagiva con il robot e i bambini. Da un lato ha influito l'effetto sorpresa perché i bambini non avevano mai visto Pepper. Per gli studenti è stata una cosa molto eccitante perché Pepper interagiva con loro. Li ha colpito molto il fatto che il robot al momento dell'accensione si sia stiracchiato e li abbia salutati. Da questo punto di vista spicca, infatti, la caratteristica relazionale poiché il robot non veniva percepito come un elemento freddo e statico. Un altro aspetto che ha influito molto sulla riuscita dell'esperimento è stata la divisione in piccoli gruppi di 4/5 bambini. Un'altra cosa molto utile è stata la possibilità di ripetere gli esercizi se i bambini non capivano. I bambini comunque non erano ansiosi e nemmeno stressati perché Pepper era già stato precedentemente presentato. Il robot comunque non veniva percepito come fonte di un giudizio sull'attività svolta. Il robot dava solo stimoli e rinforzi positivi a seguito di ogni risposta corretta mentre per le risposte errate si limitava semplicemente a incoraggiare gli studenti a riprovare senza svilire il loro lavoro e demotivarli.

2) Quali, invece, gli elementi del robot che hanno contribuito a coinvolgere e a migliorare l'attenzione dei bambini durante le attività?

Ciò che ha contribuito maggiormente ad aumentare l'attenzione è stata la precedente spiegazione delle attività da parte dell'insegnante come anche il fatto di poter interagire e toccare il robot e averlo fisicamente in classe. Il lavoro in piccoli gruppi ha favorito la concentrazione.

3) Durante l'interazione con il robot ha riscontrato problemi da parte dei bambini nel seguire le attività? Esempio, si è posta la necessità di dover sostenere e/o spronare qualche bambino per paura e/o difficoltà nel comprendere le dinamiche situazionali?

L'esperimento si è svolto senza problemi. Il ruolo della maestra Taziana è stato fondamentale per spronare i bambini più timidi e guidarli durante lo svolgimento delle attività. Sono stati necessari dei rinforzi come far ripetere l'esercizio o spiegazioni. I bambini comunque in generale hanno capito le regole del gioco e anzi avrebbero voluto continuare a giocare con Pepper.

4) Ritieni che l'esposizione dei bambini ad un approccio ludico per l'apprendimento delle lingue possa ridurre, se non quasi eliminare, la futura ansia che normalmente si crea nell'interagire e/o colloquiare con persone straniere?

La scuola dove si è effettuato l'esperimento è una scuola multietnica dove su una classe di 20 studenti dove solo 2 bambini su 20 avevano solo l'italiano come L1 ed entrambi i genitori italiani. A partire da questo si può notare come i bambini siano già abituati a interagire con persone provenienti da culture e paesi diversi dalla loro. Oltretutto la scuola è situata in quartiere multietnico dove questo problema di interazione non sussiste. I bambini stranieri, infatti, si sono dimostrati molto disponibili ed entusiasti durante lo scambio di opinioni sull'attività svolta. Sarebbe interessante provare ad effettuare lo stesso

esperimento in altre scuole con una maggioranza di studenti italiani per valutare le eventuali differenze ed i possibili miglioramenti.

5) Ritieni ci siano stati miglioramenti nell'apprendimento dell'inglese da parte dei bambini?

Ho assistito solo all'esperimento con la classe sperimentale e non con la classe, devo ancora analizzare i dati ma a mio parere ci sono stati dei miglioramenti nella comprensione, intesa come, grazie agli esercizi svolti con Pepper e all'associazione parole-immagini.

6) I giochi pensati con il robot si sono rivelati efficaci per migliorare l'apprendimento mnemonico delle parole in lingua straniera?

Assolutamente sì. Il fatto di stare in gruppi di 4/5 e di poter seguire le interazioni dei compagni ha alzato di molto l'interesse a rispondere correttamente. L'attività è risultata molto motivante per i bambini

7) Quali esercizi/giochi, a Suo parere, hanno contribuito maggiormente all'apprendimento delle lingue?

Non ricordo con precisione tutti gli esercizi svolti, tuttavia ritengo sia stata molto importante il doppio canale con l'associazione parole-immagini

8) Quali esercizi/giochi ritiene andrebbero sviluppati maggiormente? Quali invece potrebbero essere introdotti per una migliore efficacia nell'apprendimento da parte dei bambini?

Sarebbe interessante ripetere gli esercizi o esercizi simili più volte in modo da fissare i concetti in quanto la ripetizione giova all'apprendimento. Per quanto riguarda gli esercizi nuovi che potrebbero essere inseriti, uno dei suggerimenti dei

bambini era la possibilità di far rispondere Pepper alle domande dei bambini facendo sviluppare loro la competenza della produzione orale (speaking).

9) A suo parere cosa differenzia/rende migliore il metodo ludico con Pepper dai metodi classici utilizzati per l'insegnamento dell'inglese e delle lingue?

Altre ricerche dimostrano come l'interazione con il robot mantiene alta la motivazione, l'interesse e il coinvolgimento dei ragazzini per cui è sicuramente istruttivo, da estendere ed applicabile ad altre scuole. Infatti, i bambini non sono solo nativi digitali ma "super nativi digitali" e l'utilizzo di tablet o altri tipi di tecnologie non li intimorisce. Il robot inoltre non risultava freddo ma, anzi, molto caloroso e dava dei rinforzi positivi ai bambini senza spaventarli. Rispetto ad un tipo di approccio tradizionale risulta molto più utile anche per valorizzare i bambini con questo tipo di esperienze e farli sentire più motivati rispetto all'apprendimento e rispetto alla scuola vedendola come un luogo divertente e appagante.

INTERVISTA MAESTRA TAZIANA

La mia tesi riguarda lo sviluppo delle nuove tecnologie e della didattica ludica per l'insegnamento dell'inglese nelle scuole primarie. In particolare, si concentra sull'uso dell'Educational Robotic come metodo ludico. Per completare la mia tesi con la testimonianza di un esperto desidero farLe alcune domande.

1) La didattica ludica nello specifico ha il pregio di poter diminuire l'ansia degli studenti. Durante l'esperimento con Pepper come hanno reagito i bambini? Ha riscontrato un'atmosfera più rilassata durante l'utilizzo del robot? L'attenzione dei bambini era maggiore durante l'utilizzo del robot?

I bambini erano entusiasti. Non sono classi con le quali ho riscontrato una particolare avversione verso la lingua inglese, anzi, hanno sempre vissuto le lezioni in maniera divertente; tuttavia, è importante notare come la presenza di

Pepper ha alzato notevolmente l'entusiasmo. A mio parere uno degli aspetti più importanti è il fatto che i bambini abbiano capito di dover interagire e parlare con Pepper in inglese sviluppando e attivando di conseguenza una serie di abilità comunicative specifiche.

2) Ritieni ci siano stati miglioramenti nell'apprendimento dell'inglese da parte dei bambini? I giochi pensati con il robot si sono rivelati efficaci per migliorare l'apprendimento mnemonico delle parole in lingua straniera?

Al momento non ho ancora i risultati ma, dal mio punto di vista, ci sono stati dei miglioramenti. Tuttavia, l'attività avrebbe bisogno di essere rivista per poter valutare questo aspetto poiché non tutti i bambini hanno lavorato con il set di vocaboli che volevamo imparassero. Mi ha sorpreso, comunque, il fatto che Pepper abbia influenzato in maniera positiva questo aspetto.

3) Sempre riguardo alle attività svolte ritieni che l'approccio ludico attraverso il robot sia in grado di trasmettere correttamente non solo le parole in lingua straniera ma anche i concetti e i significati? Ovvero, i bambini hanno dimostrato, dopo l'utilizzo del robot, di saper usare e comprendere correttamente parole e concetti semplici?

Sì, abbiamo lavorato molto sulla memorizzazione con queste attività. La presenza del robot ha alzato tantissimo i livelli di attenzione e anche il vocabolo è stato assimilato di più rispetto ad una lezione normale. Con il robot abbiamo lavorato con piccoli gruppi di 4/5 bambini, a differenza di una lezione tradizionale eseguita con una classe di 20 bambini. Questo aspetto ha agevolato di molto lo svolgimento degli esercizi che sono stati eseguiti più velocemente evitando così una conseguente diminuzione dell'attenzione da parte dei bambini.

4) A partire dal suo ruolo di insegnante quali esercizi/giochi possono essere migliorati e quali nuovi esercizi possono essere creati per l'utilizzo di Pepper?

Ritengo che andrebbe sviluppata la parte dove i bambini sono invitati a parlare con il robot perché altamente motivante per gli studenti. Dovrebbero essere estese anche le parti di speaking e listening. Durante il dialogo con Pepper i bambini cercavano di capire e comprendere quello che il robot diceva; il mio compito è stato quello di facilitare l'attività anticipando alcune domande. La velocità sostenuta del dialogo rendeva abbastanza complessa l'attività considerando che si tratta di una classe di bambini di terza elementare. Presentando infatti il robot a tutte le altre classi ho potuto notare, invece, come gli studenti della quinta elementare fossero già più sciolti e riuscissero a seguire meglio l'esercizio. Riguardo gli esercizi di riconoscimento delle immagini, di associazione e di reading aumenterei il set delle parole perché non tutti i bambini hanno avuto la possibilità ad esercitarsi con tutto il set. Scientificamente, quindi, non abbiamo la certezza che tutti i bambini siano stati esposti allo stesso stimolo.

5) Quali sono i limiti che un approccio ludico di questo tipo può presentare o che ha riscontrato durante gli esperimenti?

L'attività di memorizzazione è molto motivante, tuttavia, sarebbe da sperimentare più volte per vedere se l'attenzione cala o meno. Visto per la prima volta l'impatto è coinvolgente e non so fino a quando possa essere così motivante. D'altra parte, il fatto che il robot dia lo stesso set di stimoli garantisce in un certo modo che tutti quanti possano ascoltare le stesse parole. Se invece si pensa di più agli aspetti legati al coinvolgimento emotivo della lingua inglese e al fatto di lasciare i bambini liberi di provare a spiegarsi, viene richiesta una flessibilità che l'insegnante può avere mentre il robot no. Si vengono, infatti, a perdere tutti i tentativi del passaggio da una lingua ad un'altra. Questo processo può essere supportato dall'insegnante che dà delle facilitazioni che il robot non è in grado di dare. Il lavoro di facilitazione delle attività da parte dell'insegnante è stato

importante per loro. Oltretutto alcune cose anche per un adulto non molto abile con l'inglese non risultano semplici da comprendere a maggior ragione per dei bambini.

Come introduzione alla didattica robotica e all'approccio ludico, ho proposto nei primi due capitoli una breve letteratura riguardante l'acquisizione del linguaggio e i metodi classici di insegnamento delle lingue. Per concludere questa breve intervista vorrei porLe qualche domanda, in quanto esperta, riguardo a quest'ultimo argomento.

1) A seguito di un primo approccio di tipo tecnico e grammaticale, nel corso della storia sono stati creati nuovi metodi per l'insegnamento delle lingue. Abbiamo L'oral approach and situational language teaching, l'audiolingual method, il communicative language teaching, il Total Physical Response, The silent way, Community Language Teaching, The Natural Approach, Suggestopedia. Quale tra questi ritiene sia il metodo migliore che possa aiutare lo studente ad apprendere in maniera completa una lingua straniera, in particolare l'Inglese? Perché?

Tutti i metodi sono utili. Non ci si orienta mai solamente verso uno solo degli approcci. Anni fa ci si orientava verso il total physical response utilizzato ancora oggi. Gli approcci orali sono molto consigliati tuttavia c'è un'enorme difficoltà all'interno della scuola che è quella di far comprendere ai bambini che si sta cambiando lingua. Con altre discipline è semplice introdurre gli argomenti, tuttavia, non è così semplice con l'Inglese o con le lingue in generale quando si tratta di partire da zero. C'è sempre una base da cui iniziare dove è necessario fare dei focus frontali (es. ripetere le parole). Questo poi avviene in un contesto scolastico dove le ore dedicate alla materia sono molto poche e, molto spesso, lo stesso insegnante di italiano è anche quello di inglese, per cui i bambini non sono stimolati a cambiare lingua. Anche se l'approccio orale sarebbe interessante e stimolante, viste le difficoltà di applicazione, si tende ad unire e mescolare i diversi metodi per scendere a compromessi con la situazione scolastica. Deve sempre essere fatta una mediazione. Tuttavia, ho notato che quando la

motivazione è alta e sono presenti diverse attività per apprendere la lingua (es. storytelling, teatro) i bambini sono molto più coinvolti e più disponibili ad esprimersi in una seconda lingua. In ogni caso è importante, in quanto insegnanti, essere flessibili.

2) Confrontando i metodi da Lei utilizzati con il playful approach quali ritiene siano i pro e i contro dell'utilizzo di questo metodo rispetto ad altri e viceversa?

Sicuramente i bambini si sentono più liberi, tuttavia, se si ricerca la precisione nelle attività (es. buona pronuncia e risposte esaustive) questo non è subito riscontrabile ed evidente ma va sistemando con il tempo. Le risposte e la pronuncia vanno corrette e sistemate durante il percorso scolastico. Non è un lavoro immediato. Questo tipo di processo avviene con l'insegnamento delle lingue mentre con altre materie come la matematica o l'italiano è scontato ed immediato. Nell'insegnamento delle lingue gli insegnanti tendono a correggere molte volte gli studenti con la tendenza ad inibire l'entusiasmo del bambino con la conseguente mancanza di stimolo per continuare ad apprendere. Se si lavora in modo divertente i risultati si raggiungono con il tempo lasciando i bambini sperimentare. Con i bambini si lavora sempre su lungo periodo. La lingua inglese oltretutto è viva ed è difficile da incanalare tutta in un contenitore statico per ottenere risultati specifici.

3) Collegandoci all'esperimento fatto con Pepper, ritiene sia possibile unire questo tipo di metodi classici all'utilizzo del robot?

Gli approcci orali potrebbero essere interessanti, quindi sarebbe utile sviluppare l'esercizio di dialogo con Pepper dove i bambini ascoltano e rispondono. Anche il total physical response potrebbe essere interessante, sarebbe consono sviluppare la parte motoria di Pepper (es. fargli alzare le mani o integrare altri tipi di gestualità). Quest'ultimo tipo di approccio sarebbe ottimo soprattutto per i bambini più piccoli. I metodi vanno sempre calibrati in base alle classi e al

periodo di sviluppo dei bambini (alla fine della terza viene richiesto un pre A1 e alla fine della quinta un A1).

RIASSUNTO

“Quali sono i nuovi orizzonti per l’insegnamento dell’Inglese? Come possono le lingue e le tecnologie collaborare per aiutare le nuove generazioni di studenti?”. In questo nuovo mondo siamo costretti ad affrontare nuove tipologie di problemi nella nostra vita quotidiana. Il progresso e la tecnologia stanno rivoluzionando il nostro stile di vita. Questa tesi è un esempio di collaborazione: gli studi linguistici e tecnologici insieme hanno il potere di migliorare la nostra comunicazione. L’obbiettivo di questa tesi è quello di scoprire e sperimentare i nuovi orizzonti per l’insegnamento dell’inglese grazie all’introduzione di nuove metodologie come la Didattica Ludica e la Robotica Educativa. La didattica ludica si presenta come una metodologia alternativa per l’insegnamento delle lingue dove il gioco e il divertimento vengono visti come elementi altamente educativi e in grado di ridurre ansia e stress negli studenti durante il confronto con lingue e culture diverse dalla propria. La Robotica Educativa si presenta come un metodo di insegnamento altamente efficace che prevede l’utilizzo di Robot Umanoidi per l’insegnamento dell’Inglese e delle lingue all’interno delle scuole e permette agli studenti di accrescere e migliorare le loro conoscenze e di imparare divertendosi. Lo sviluppo di questo progetto è dovuto non solo alla mia esperienza e al mio studio dell’inglese durante questi tre anni ma anche grazie all’opportunità offertami dall’IAS Lab di Padova (<http://robotics.dei.unipd.it/>) e da Alberto Bacchin, ingegnere dottorando presso l’Università di Padova.

Lo scopo della mia ricerca sarà quello di sperimentare l’utilizzo di questi modelli all’interno di una classe della scuola primaria. La ragione di questa scelta sta nel fatto che i bambini sono estremamente malleabili, curiosi e desiderosi di imparare. In particolare, perché rappresentano i cardini del nostro futuro ed è per loro necessario restare al passo con i tempi.

La mia tesi è composta da 3 capitoli.

Il primo capitolo tratta il tema dall’acquisizione del linguaggio come “fenomeno strettamente connesso alla natura umana” (Graffi and Scalise 2002:277), in particolare si concentra sull’acquisizione delle seconde lingue. Con l’avvento della globalizzazione si è resa necessaria la conoscenza di lingue e culture diverse dalla propria.

Le scuole, per restare al passo con i tempi, hanno aggiornato le loro proposte formative e hanno messo a disposizione degli studenti sempre più nuove lingue per arricchire i loro curricula. Saville-Troike (2012) definisce l'acquisizione di una seconda lingua a partire dallo studio di individui o di gruppi di persone che affrontano l'apprendimento di una seconda lingua successiva alla prima appresa da bambini. Saville-Troike definisce "prima lingua" (L1) la lingua appresa durante l'infanzia e l'adolescenza e sviluppata completamente durante l'età adulta. La "seconda lingua" (L2), intesa come lingua appresa in un momento successivo alla prima, viene definita in base allo scopo socioculturale per cui viene appresa (per motivi scolastici, di viaggio, come strumento per poter accedere ad altre materie e infine come ausilio durante situazioni ufficiali o formali). Interessante risulta il fatto che l'acquisizione di prima e seconda lingua condividano le stesse fasi (tabella 1) sebbene con caratteristiche molto diverse tra loro. Entrambe le lingue condividono tre stadi fondamentali (iniziale, intermedio e finale) che l'individuo attraversa durante la loro acquisizione (Saville-Troike 2012: 18-21). Particolarmente rilevante risulta il fatto che l'acquisizione della L2 avvenga a partire da basi grammaticali e conoscenze già formate, a differenza dell'acquisizione della L1 che avviene in maniera spontanea grazie alla capacità innata. Nello stadio intermedio quasi tutte le conoscenze formatesi a partire dalla L1 vengono trasmesse alla L2 trasportando sia le formule corrette che quelle errate. La fase finale evidenzia quest'ultimo problema della fase intermedia: la conoscenza della L2 non potrà essere appresa allo stesso livello della L1. Quest'ultima caratteristica della L2 rappresenta, infatti, una delle problematiche cardine degli studi linguistici. Lo studente, infatti, molto spesso può ritrovarsi a non essere più in grado di evolvere e migliorare le sue capacità e conoscenze in merito alla L2, creando così forme imperfette che non raggiungono la fase finale. Questo stallo viene identificato dalla linguistica come "fossilizzazione". A questo punto, la "competenza comunicativa" diviene un pilastro fondamentale per chi desidera apprendere una seconda lingua. Saville-Troike (2012: 142) definisce la competenza comunicativa come tutte le capacità che servono ad un individuo per comunicare in maniera appropriata all'interno di una comunità. Essa può essere di tipo accademico/scolastico o di tipo interpersonale ed è costituita da diverse componenti (vocabolario, morfologia, fonologia, sintassi, strutture non verbali e conoscenza delle micro e macrostrutture del discorso) che devono essere apprese dagli studenti al fine di ottenere uno sviluppo completo ed esaustivo della L2.

Al fine di completare questa breve introduzione e analisi all'acquisizione del linguaggio, il primo capitolo tratta di altre quattro tematiche fondamentali che saranno utili per la comprensione dell'obiettivo della ricerca: la storia dell'insegnamento delle seconde lingue, l'insegnamento delle L2 all'interno delle scuole primarie, le metodologie classiche per l'insegnamento delle L2 e infine le nuove frontiere dell'insegnamento.

L'insegnamento delle seconde lingue ha origini antiche che risalgono al mondo greco e latino. Le prime produzioni scritte e traduzioni avvengono proprio in questo periodo. Musumeci (in Long and Doughty, 2009: 47) spiega come l'evoluzione dell'insegnamento delle L2 sia avvenuto grazie alla chiesa e alla diffusione del Latino come "Lingua Franca" e successivamente grazie alle prime università e alla stampa che condussero alla diffusione delle lingue vernacolari e alle prime forme di traduzione scritta vera e propria. In questo frangente è importante notare come siano notevolmente cambiate nella storia le figure dell'insegnante e dello studente. In particolare, l'insegnante evolve dal ruolo di schiavo nella civiltà greca e latina, al ruolo di tutore privato e infine di accademico ed educatore nelle scuole con l'avvento della modernità. Lo studente invece regredisce passando da "scultore" che rielabora gli insegnamenti e supera il maestro a mero prodotto della società di massa.

Dopo aver introdotto la storia dell'insegnamento delle L2 ho spostato il mio focus sull'insegnamento delle L2 all'interno della scuola primaria, uno dei temi fondamentali della mia ricerca. I bambini presentano caratteristiche e bisogni particolari, di conseguenza gli insegnanti devo essere formati al meglio per svolgere correttamente il loro ruolo di educatori. Scott and Ytreberg (1990: 1) evidenzia come l'età migliore per l'apprendimento delle lingue inizi intorno agli otto anni. I bambini di quest'età presentano la capacità di distinguere il reale dall'immaginario e sono in grado di gestire discorsi esprimendo preferenze e giudizi. L'insegnante per valorizzare al meglio le loro capacità e per metterli nelle migliori condizioni per l'apprendimento deve necessariamente rendere la classe un posto sicuro dove i bambini possano sentirsi liberi di sperimentare e promuovere diverse attività che stimolino l'attività mentale e il problem solving. Camilleri (2003: 10).

Diversi furono i metodi sviluppati per l'insegnamento delle lingue nelle scuole per far in modo che gli studenti ottengano una competenza comunicativa completa. A partire da un primo approccio di tipo grammaticale (utilizzato nel mondo della chiesa

latina) si formarono i seguenti metodi ancora oggi utilizzati nelle scuole: Oral approach, Audiolingual Approach, Communicative Language Teaching, Total Physical Response, The Silent way, Community Language Learning, Natural Approach, Suggestopedia, Bilingual Education and Immersion Programs (spiegati nel paragrafo 1.5).

Oltre ai classici metodi per l'insegnamento delle lingue si è reso necessario, con l'avvento del nuovo millennio, l'intervento di nuove tecnologie come computer e siti web che promettono un supporto costante all'insegnante che può addirittura programmare esercizi e attività a seconda della lezione e degli argomenti che desidera affrontare. Risultano infine ottimi strumenti per gli studenti che li utilizzano come data base e mezzi per esercitarsi.

Dopo aver introdotto i concetti fondamentali nel primo capitolo, il secondo e il terzo capitolo trattano i due temi fondamentali di questa ricerca: la didattica ludica e la robotica educativa come nuovo metodo ludico per l'insegnamento dell'Inglese nelle scuole primarie. Balboni (2018) definisce la didattica ludica come "giocosità" che stimola lo studente ad apprendere le lingue senza ansia e senza paura di subire un giudizio da parte dell'insegnante. Questo metodo risulta altamente efficace in quanto gli esercizi non risultano mai noiosi e ripetitivi e gli studenti risultano più concentrati e attenti alla lezione (Ryoo, in Long and Doughty, 2009: 177). Inoltre, la didattica ludica è capace di stimolare nei bambini le capacità cognitive, linguistiche, sociali, motorie ed emozionali. Gli strumenti classici utilizzati per la realizzazione di questo metodo risultano essere bambole e pupazzi, poesie, filastrocche, canzoni, giochi come battaglia navale e trova le differenze.

In questo frangente si propone la Robotica Educativa come metodo ludico. Robot umanoidi come Nao, Roboem, Lego Mindstorm e Robosapien grazie alle loro capacità di interagire e di riconoscimento vocale nonché grazie alla loro apparenza umanoide e alla possibilità di ripetere più volte gli esercizi e di essere programmati secondo le esigenze dell'insegnante, rappresentano un ottimo strumento per l'insegnamento delle lingue, in particolare dell'inglese ai bambini (Aidinlou et. al. 2014: 14). Questi robot sono stati creati e programmati principalmente per svolgere tre ruoli fondamentali: database per materiale scolastico, assistente all'insegnante e compagno di gioco/studio per i bambini. Le attività fondamentali pensate dai ricercatori da svolgere con il robot per l'insegnamento dell'inglese sono: Storytelling, Q&A model, Cheerleader model, Let's act model e Pronunciation leading model (You et. al. 2006). Ricercatori come Segovia

and Souza (2018), You et. al. (2006), Park et. al (2011) e Alemi, Meghdari, and Ghazisaedy (2015) hanno evidenziato come la robotica educativa abbia ottenuto risultati positivi e incoraggianti per quanto riguarda l'apprendimento delle lingue, rendendo le lezioni di inglese più interessanti, divertenti e rilassanti.

Il terzo capitolo si concentra sulla figura di Pepper come robot umanoide per l'insegnamento dell'Inglese nelle scuole. Grazie alle sue capacità di interazione e di "empatia" aumenta l'interesse dei bambini per la lezione rendendola stimolante ed efficace. Pepper è stato utilizzato dall'IAS Lab di Padova e dall'ingegnere Alberto Bacchin per un esperimento con una classe di terza elementare della scuola primaria Muratori di Padova. Gli esercizi da loro proposti si concentrano sulle competenze linguistiche che gli studenti devono sviluppare (listening, reading and speaking). Il mio compito, come esperta in lingue, è stato quello di ampliare e perfezionare gli esercizi già proposti aumentando il numero di vocaboli e concetti. Ho posto un breve storytelling come introduzione generale per far familiarizzare i bambini con le parole inerenti al topic della famiglia. Nel primo esercizio mi sono concentrata sul proporre concetti generali come uomo, donna, bambino, bambina. Ho incentrato il secondo esercizio sui membri della famiglia aggiungendo parole come zio, zia e nipote. Il terzo esercizio è stato sviluppato come un ripasso generale unendo parole e concetti utilizzati nelle prime due attività con domande mirate a sviluppare il ragionamento logico. Il dialogo finale è stato modificato aggiungendo i concetti di bambino, bambina e animali. Ho inserito altri tre dialoghi da me pensati per far in modo che tutti i bambini possano fare l'attività.

In conclusione, questo tipo di proposta educativa, come risulta dalle considerazioni precedentemente fatte, è altamente stimolante ed efficace. Le interviste fatte alla maestra Taziana Giusti, della scuola primaria Muratori, e alla professoressa Monica Pivetti, dell'università di Bergamo, hanno confermato l'importanza di un approccio ludico improntato verso la robotica educativa evidenziando l'entusiasmo dei bambini verso la scuola e le materie affrontate. Questa tesi si propone come testimonianza dei benefici della Robotica Educativa come metodo ludico, con la speranza che possa divenire parte del futuro del nostro sistema scolastico.