THE USE OF TECHNOLOGY IN EARLY CHILDHOOD SCHOOLS AND HOMES AND ITS IMPACT ON THE SOCIAL AND LANGUAGE DEVELOPMENT OF CHILDREN: PERSPECTIVES OF PARENTS AND TEACHERS IN KUWAIT

Saffa Z A J Alsuhail, BA, MS

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APPROVED:

Dina C. Castro, Major Professor
Karthigeyan Subramanium, Committee Member
Kelley King, Committee Member
R. Jefferson George, Committee Member
Ricardo Gonzalez, Committee Member
Jim Laney, Chair of the Department of Teacher Education and Administration
Randy Bomer, Dean of the College of Education
Victor Prybutok, Dean of the Toulouse Graduate School

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This study was aimed at understanding the use of technology in early childhood school and home settings as well as its impact on students' social and language development, specifically with children aged four to seven from two schools (Kindergarten and elementary) in Kuwait. The study followed a qualitative design in which the interpretative approach was applied. Non-participant observations were conducted to gather data concerning the actual use of technology in the classrooms, they were followed by interviews with teachers and a group of parents from each classroom. The study used Vygotsky's social development theory as a framework for the analysis of data. The analysis showed limitations in the use of technology in the classroom; teachers identified a need for training to increase their knowledge about how to integrate technology into instruction. Also, the limited availability of up-to-date technology was viewed as a challenge. Teachers and parents agreed that the use of technology may foster social and language development for most students, on the condition that their use is supervised and guided by an adult. However, they also perceived that technology could have a negative impact on the development of students' social development, an area that requires further investigation.

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

1.1 Introduction of the Problem

Technology has become the distinguishing feature of the current age. Different types of media, such as television, computer programs, internet applications, mobile phones, and other applications installed on electronic devices such as tablets have become the accompanying friend to people of all ages and have changed the ways in which people deal with different tasks they perform in their lives. People have become accustomed to the use of technology to the extent that many feel they cannot dispense with it and treat it as if it has been there forever. Most would agree, at least up to a point, with the assertion that computer technology is among humanity's most useful and beneficial inventions, as it has proven to be advantageous in almost every aspect of life. For better or for worse, technology has been integrated into all homes and has become a fundamental part of people's lives:

> Television was once the newest technology in our homes, and then came videos and computers. Today's children are growing up in a rapidly changing digital age that is far different from that of their parents and grandparents. A variety of technologies are all around us in our homes, offices, and schools. (Radich, 2013, p.1)

Technology has reached the field of education, and it is used in a number of ways to develop the different skills of children, especially at a young age. According to Fenty and Anderson (2014), "Technology has been shown to foster children's motivation and interest in instructional materials. In addition, researchers have found that technology results in higher levels of student engagement and greater levels of comprehension" (p. 114). In recent years, a noticeable trend has emerged toward the production of software programs specialized for use by young children. Educators and parents seem to share a strong belief that technology is a useful tool that enhances children's academic performance and increases cognitive and social abilities

(Fenty & Anderson, 2014). Researchers such as Hinchliff (2008) have argued that if used "appropriately with the right software, the computer can be a valuable learning tool for preschoolers" (p. 48).

Other research has questioned the widespread use of technology in early childhood education, and some has shown that technology could have negative effects on young children. For example, Healy (2004) said of classroom technology: "[t]ragically, these artificial reinforcements strip children of the most critical abilities of all – to direct their motivation and attention" (p. 57). Further, Graves (2012) argued that for children younger than two years of age, excess screen time can lead to sleep disturbances, language delays, and obesity. This contradiction warrants a deeper consideration of both positive and potentially negative effects.

1.2 Study Purpose

In the present study, I explored the influence of technology use in the early childhood classroom and at home on the social and language development of children aged 4 to 7 in Kuwait. The effects of this technology use are investigated by compiling and understanding the perspectives of teachers and parents regarding this topic. After choosing a grade school and a kindergarten in Kuwait for the study, I selected particular classrooms for observation. I also interviewed parents and teachers of these kindergarten and elementary school children to collect data concerning their views on the influence of technology on both the social and language development of children. The study also served to illustrate the views of teachers regarding the use of technology in the classroom and what might hinder that use. This investigation sheds light on how the social skills of the children are changed through the use of technology and how the

children's parents and teachers perceive their reading and writing skills to have improved when using technology in learning.

1.3 Research Questions

This study was concerned with investigating use of technology in the early childhood classroom and homes of children in specific schools in Kuwait. Furthermore, this study explored the perceptions of parents and teachers regarding the influence of the use of different technological means such as computers, mobile phones, and iPads on young children's social and language development. As technology is believed to have a substantial impact on young children, it is significant to understand whether this influence benefits or hinders children's typical development. This study on students in Kindergarten, Grade 1, and Grade 2 in Kuwait, aimed to answer the following questions:

1. How is technology being used in early childhood classrooms and homes of children in two kindergarten and elementary schools (Grades 1 & 2) in Kuwait?
    a. What are teachers' and parents' views about their roles in children's use of technology?
    b. What are factors that facilitate or hinder the use opf technology in the EC classroom?
2. What are the perspectives of teachers and parents in two kindergarten and elementary schools in Kuwait about the influence of technology on the social and language development of children?
    a. What changes, if any, have parents and teachers observed with regards to their children's interaction with others?
    b. How have the children's oral and written abilities changed after the use of technology for literacy purposes, if at all?

1.4 Rationale

Technology is vastly used in educational systems worldwide. This use of technology in education has become a popular trend. However, it is imperative to understand the consequences

of introducing different technologies to children at an early age. Children are becoming accustomed to depending on technology on a large scale, which could certainly lead to changes in the development of certain skills: “Because of the rapid development of technologies, they have changed children’s lives and ways of learning, particularly in the past 10 years” (Hsin, Li, & Tsai, 2014, p. 85). The influence of technology on the social and language development of children has become a controversial issue. Therefore, this study aimed to investigate how the use of technology affects the development of children, especially Kuwaiti children. For this study, the goal was to understand how technology operates both in the Kindergarten, First Grade, and Second Grade classrooms as well as at home.

There seems to be a recent tendency towards converting all teaching methods to techno-methods. The Ministry of Education in Kuwait proposed that technology should not be used in education just for the sake of using technology, but that it is used in a way that enriches learning:

> In Kuwait, educational technologies are very developed and are an essential part of the curriculum. Nevertheless, it is important to realize that this does not mean that one should use teaching technology, for its own sake. Rather, the key approach to follow is to apply appropriate technologies for teaching in order to enrich the learning of both traditional and 21st century content, as well as promote the development of 21st century skills. (Kuwait National Curriculum: Primary Education, 2013, p. 70)

Governments around the world and particularly in Kuwait are trying to implement the various technological aids available to teachers to improve student learning. However, it is critical to completely understand how this use of technology in the classroom affects children during their early years. Furthermore, it is important to determine the best means of introducing and using technology with very young children. Therefore, some of the research questions of the present study were focused on the teachers’ perceptions and how they apply technology in their classroom teaching techniques.

This study is significant to the Kuwaiti culture and the application of technology in the

schools of Kuwait over the years. The Kuwaiti government accepts that the use of technology in education plays a crucial role in developing the abilities of the students in all grades. Concerning education in Kuwait and the application of technology at various stages, World Data on Education (6th edition, 2006/07) says that at "the elementary and secondary levels, objectives include: broadening formal education by introducing information technologies and practical skills" (p. 1). Kuwait has taken many steps to incorporate technology for the benefit of students. There have been many trials and programs conducted to try to implement the use of technology in schools. However, not all of these programs proved to be successful. One of the programs that took place was the installation of all the curricula taught to students on USB flash drives. This was intended to provide students with faster and more interactive access to the subjects they study at school. However, this program did not meet the satisfaction of parents, teachers, or students for many reasons, primarily that many people lacked appropriate electronic devices to view the curricula, and it was quickly abandoned. There were many factors that led to the failure of using the flash memory in the schools. These reasons include the lack of a comprehensive awareness campaign for the objectives of the project (flash memory), the students could not take advantage of the flash in the schools to the extent required, the flash memory was only intended for use at home without any follow-up from the teachers, many students did not have computers at home, making it impossible for them to use it, some of the pages included in the flash memory only worked online, the flash memory contained no motivational or interesting activities that would encourage the students to learn through it, and the teacher did not get flash memories, so they were incapable of helping the students with anything that was contained in the flash memory.

This study is also of significance for me personally. I started using the computer after

graduation, and at that time, computers and the Internet in general did not occupy a great amount of attention and significance in people's minds. At that time, the use of technology was very limited due to the parents' concerns regarding the harmful effects on their children, especially from the social perspective. Television was the only common thing at that time; whereas, in the present time, children at a very early age are allowed to use a variety of devices, not only the television but also the iPad and iPhone with their different applications. This has created a sort of gap between the parents and their children. Since in many cases children know more information concerning the use of technology than their parents, embarrassment can result for the parents. All of these factors encouraged me to conduct a research concerning the use of technology, specifically its influence on the children if they were exposed to it at an early age both from social and language perspectives.

1.5 Theoretical Framework

1.5.1 The Qualitative Approach

According to Flick (2002), the qualitative approach is:

> An endeavor to catch the feeling that exists in, and that structures what we say in regards to what we do; (b) an investigation, elaboration and systematization of the significance of an identified behavior; and (c) an illuminative representation of the importance of a delimited issue. The qualitative approach does not involve one single means, and very diverse points will be achieved by various interpretative methodologies. (p. 76)

Qualitative research was applied for this particular research as it is appropriate for the purposes of the current study. Qualitative research was convenient as it allowed me to study the new trends and make hypotheses concerning a single point or topic. It allowed me to have in-depth insights concerning the topic studied: "In qualitative research, a single research problem may be applied and understood from different qualitative perspectives (e.g., client, counselor, and

community)” (Creswell, Hanson, Clark, & Morales, p. 259). In this research study, qualitative research methods, including field observations and face-to-face interviews, addressed questions of students and their technology use inside and outside the classroom. The benefits of qualitative research are further supported by others: “If properly employed, qualitative data gathered from face to face interviews, field observations, and document analysis can lead to deeper understandings of social issues than a quantitative analysis can” (Hilal & Alabri, 2013, p. 181).

1.5.2 The Interpretative Approach

The use of qualitative research design allows for the use of different approaches that can be implemented to study various aspects of a certain topic related to the lives of people and to monitor any changes taking place with the purpose of understanding the causes of this change. For the purpose of the current study, the interpretive approach was implemented.

Researchers using the interpretive approach generally share several beliefs including an assumption that reality is constructed "inter-subjectively through the meanings and understandings developed socially and experientially" and an assumption that "we cannot separate ourselves from what we know" (Cohen & Crabtree, 2008). This approach assumes that the "investigator and the object of investigation are linked such that who we are and how we understand the world is a central part of how we understand ourselves, others and the world" (Cohen & Crabtree, 2008).

1.5.3 Observation as Method

Observation is a process in which we are all constantly engaged. In this study, observation was the basis of all other parts of the research. Observation is, of course, the

backbone of all ethnographic research. Indeed, even studies that depend on interviewing as an information accumulation system use observational strategies to note non-verbal communication and other gestural prompts that add to the researcher's understanding of what the interviewee is saying (Gupta & Ferguson, 1997).

Observation is one method of data collection in both qualitative and quantitative research. Different types of observation can be applied in qualitative research. The first type is participant observation, in which the researcher is participating and interacting with the observed group. The second type is non-participant observation, in which the researcher keeps a distance from the group being observed, and he or she never interferes or interacts with them. The third type is the controlled observation, in which all the factors of the situation are controlled or work according to certain guidelines. The fourth type is the uncontrolled observation, the exact opposite of the controlled, in which the situation is taking place naturally without any control on the observer or the observed. For the purpose of this research, the non-participant and uncontrolled observation was applied as I needed to observe the situation without taking part in it or interfering in the process (Cohen & Crabtree, 2008).

The use of observation allowed me to make connections between the data that was collected through the interviews, the actual realities of the children's' use of technology in the classroom, and the different habits of both the children and teachers. It also gave a more complete picture concerning the interaction between the children and the different technological programs used in the classroom. In addition, the observation phase of this study gave me the chance to monitor the different actions taken by the teachers when the children were working with technology, such as the methods used for monitoring or intervening in the children's activities.

1.5.4 Interview as a Method

An interview is an up-close and personal discussion with an obvious objective. In this research, the value of the interview as an exploration methodology was that it permitted both sides to investigate the significance of the inquiries and answers included. There was an understood sharing in the interview. Any false impressions with respect to the questioner or the interviewee could be checked instantly in a way that is simply unrealistic when the interview and observations are being finished, or tests are being done (Dane, 1990).

The interview portion of the research included open-ended questions which allowed the participants to feel free when answering, which hopefully resulted in more ideas and more suggestions that showed the different use of technology in the early childhood classroom and at home by considering the different perspectives of understanding the phenomenon studied. Face-to-face interviews were critical for the success of this study because it was believed that a personal interview would produce more accurate and honest responses to the questions, as opposed to participants responding to questions as part of a survey.

In the current study, I followed the semi-structured interview as a set of questions was prepared prior to meeting and participants were asked the same questions in the same order. Specific questions that allowed participants to answer in detail were needed to more comprehensively cover the topics in a qualitative manner without getting off track and distracted. Furthermore, semi-structured interviews often follow an observation period, which was what occurred in this case.

Interviews were used for this research as it allowed me to ask questions to gather the most useful data for the study. These interviews allowed me to understand the use of technology in early childhood classrooms and the homes, as well as, the different personal perspectives of

the interviewees about the influence of technology on the social and language development of children.

1.5.5 Interview Protocol

One set of interview questions was directed only to the teachers to gather information concerning their abilities to use technology and their knowledge related to the use of technology in the classrooms. One question was, “How much preparation and training did you as a teacher have related to the application of technology?” This question provided background on the extent to which teachers are prepared to use to technology. Teachers were directed to speak about all the different sources of knowledge and training they could have access to during the course of their work. In relation to this question, each teacher was asked, “How do you feel about the use of technology in class with children?" "Do you think it is a tool that assists or hinders a child’s learning in the classroom? Explain.” A second question was related to the effect of technology on the children’s development. “What role does technology play in the classroom?” “Is it used only as a demonstration means of teaching or is it used interactively?” Teachers were expected to elaborate on the different ways and techniques that technology is used in the classrooms. A third question was concerned with the teachers’ use of technology and how they decide which way(s) they integrate technology in their teachings. “How do you decide on the way that you are integrating technology in your lesson plan?” “Does it differ from one class to the other or from one context to the other?” The last question for teachers was: “What are some obstacles you face with respect to using technology in the classroom?” Teachers were encouraged to explain in detail all the problems they face when trying to apply technology in their teaching practices. They were also asked about the different things that would facilitate the integration of

technology in their teaching practices.

Another set of interview questions were posed to parents of students in the schools. Five of the ten questions posed to parents were the same questions posed to the teachers. I started the interview with the parents by explaining what kind of technology she was focusing on which included desktop computers, laptops, iPad and other tablets, and iPhones and other smart phones. I had decided these were the most likely devices children would use for educational and recreational purposes that had a more interactive element. The first question of the interview after the introductory part was, “What is the usual duration that your student spends daily working with technology?” This question was intended to show the habits of the student in relation to technology. The second question was, “What kinds of programs does the student work with?” It is significant here to note the kinds of applications children are exposed to so as to better understand the effects. For example, a student who uses only learning applications intended to teach spelling was likely to experience different effects from a child who plays violent video games. The third question was, “What is the role you play when your child is using technology?” This aspect was crucial in judging the kind of influence technology has on children. It was concluded from previous studies that for some children to develop their own potential and skills, they should be monitored when using any sort of technology (Hinchliff, 2008). The fourth question was drafted to give possible answers pertaining to the first and second questions of the research. The questions were: “How does the use of technology affect the social and language development of the children from your point of view?” “Have you noticed any change in your child’s interaction with others?” “Has the literacy level of the child changed after he started using technology?” Parents and teachers were asked to elaborate upon any answer they provided in this question in addition to giving some examples. The fifth question of the interview

was: “What are your suggestions to improve the benefit that children get from the use of technology?” This question opened horizons for future scientific research.

1.6 Researcher as Instrument

The first time I ever used a computer was in 2007, a year after I graduated with a bachelor’s degree in early childhood education. I was teaching kindergarten at a large public school and was having a great deal of trouble using the computers in my classroom. I was new to teaching and nervous, but my inability to use the computer further embarrassed me in front of my students. I decided to further my own training and enrolled in a three-month computer course through the University of Cambridge. My school also sent me to a one-week training course for kindergarten-specific software. After the course, I was supposed to train my co-teachers. However, this proved to be quite difficult due to the realities of busy classroom teachers who all have different break times.

The first perspective that I bring to the present research study is that of a teacher. Many teachers are being asked to provide training to students in technology with which they themselves are undertrained and unfamiliar. However, teachers are often led to believe that technology in the classroom will be an unmitigated good, if they are just able to implement it.

An additional perspective that I bring to this research is that of a parent. In this role, my experience has been very different. While people of my generation, myself included, were unlikely to have ever touched a computer before they were in their early 20s, my own children are growing up with advanced handheld devices that only existed in fantasy when I was a child. At first, I was enthusiastic about allowing my children to explore this wonderful world that had been closed to me, but it was not long before I realized that my daughter, specifically, was

becoming addicted to this technology. If it were up to her and I did not place restrictions on her use of the iPad, she would lie down and play on it all day without moving.

On one hand, I think she has learned a tremendous amount of the English language from her explorations on YouTube. On the other hand, she is watching shows intended for teenagers and mimicking some disturbing behaviors: she speaks to strangers in shops, asks about their clothing, and asks people whether or not something is expensive (even though she has no idea what she's really asking). What is most upsetting to me are her temper tantrums. Initially, when her father and I set limits on her iPad use, she threw some tremendous temper tantrums. At least one iPhone was a casualty of this acting out. And so, I began to wonder about the appropriate role of technology with respect to young children. Is it a wonderful, unmitigated good? A great way to learn language? Or is it a dangerous, addictive drug? And what effect might it be having on child development?

As schools, everywhere, specifically throughout Kuwait, are pushing for greater implementation of technology, I think it is critical to understand just what we are getting into.

1.7 Limitations

The limitation on this study was the lack of member checking at times. There was a limited amount of time for this process in this qualitative research (Bloor, 1997). After the participating teachers and parents were selected for the one-on-one interviews, there was not ample time to verify, for example, specific ages of the teachers. Instead, I took the number of years they had been teaching and calculated the median number of years of experience. Ideally, everything stated on the interview would be verified and discussed with the participants, but this type of member check was not always possible.

1.8 Definitions

For the purpose of the current study:

Centers refers to an area used to provide learning tools such as computers to help students work on their learning skills in areas like math, science, and reading.

Ex post facto refers to the actions that take place after the interviews with the participants as I collect the data from all the responses given.

Free activities refer to when teachers can choose the activities their children learn about, such us going to the library to read a story and discussing what they learn about.

Group work refers to the teacher teaching children about words, numbers, and different lessons provided by the Ministry of Education or the school district.

KG1 refers to the kindergarten for 4-year-old students.

KG2 refers to the kindergarten for 5-year-old students.

Language development refers to children's ability to use language to express ideas and views.

Social development refers to the different skills acquired by children that enable them to successfully interact with other people in different contexts and settings.

Technology refers to all forms of technological devices including computers, mobile phones, tablets, and the different applications and software programs that are used by children and teachers.

Traditional curriculum refers to the subject matters taught to students through the teacher who conveys the knowledge to the students in the classroom.

The key phrase *young children* are used to refer to children who are between 4 and 7 years old.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this literature review, I examined existing literature from three perspectives: Section 2.2 Technology and Teachers; section 2.3, Technology and Parents; and section 2.4, Technology and Skills Development.

2.2 Technology and Teachers

The educational process does not achieve any success unless all parties engaged in the process are fully aware of each other's perspectives and beliefs. School administrators must give attention to teachers' points of view and suggestions as these teachers have the closest contact with the students and are the most eligible people to judge the validity of anything new that is introduced in the teaching process. Based on this belief, much research has been conducted to investigate the teachers' own opinions concerning the use of technology in education.

A number of the studies presented here investigated the reasons for teachers' use (or disuse) of technology. Several common themes arose: 1) teachers' perspectives concerning the use of technology, 2) obstacles hindering the use of technology, 3) the design of curricula in relation to the application of technology, and 4) a lack of appropriate technology or training.

2.2.1 Teachers' Perspectives

The relationship between teachers' beliefs and technological practices was investigated by Palak and Walls (2009) at 28 professional development schools in West Virginia, United States. Here, the researchers looked at four case studies to examine the effect of teachers' beliefs

concerning technology and their actual use and implementation of technology in the classroom in the context of their teaching practices in general. The study found that teachers tend to use technology for "planning, management, and communication" (p. 435). However, they indicated that the way the teachers taught, "and especially ways they had students use technology, were primarily influenced by the teachers' educational beliefs and of what they believed to be good teaching" (p. 435). Teachers with strong teacher-centered beliefs tended to use computers and other technology for "repetition and reinforcement" (p. 435), as "drill-and-practice," and as a "reward" (p. 425). In contrast, teachers with strong student-centered beliefs tended to use computers and other technology for "storage, retrieval, and communication . . . with students and parents" (p. 429), as well as "independent learning" and to allow students to "explore concepts on their own at their own pace" (p. 435).

In McGrail (2005), English teachers who used technology in their classrooms were interviewed in two schools in the eastern United States. These teachers indicated that they would use technology in their classes on the condition that this use of technology would lead to practical benefits of obvious and tangible results in the students' performance levels. However, to this point, many indicated that they had not "seen major improvement" (p. 14). Teachers were looking for what could be of assistance to them in their teaching practices rather than just showing off through using something new that would not lead to any development in their own careers in addition to their students' achievement levels.

In the same study, teachers working in schools reported that it was important to them to measure the level of benefit that could result from introducing anything new in the classrooms before doing so. They said that they were not interested in using technology for the sake of just introducing technology in their classes and following trends in their communities and

governments, but that it was more important for them to apply technology where it would be of use to the students and would add to their own teaching experiences. This study found that teachers widely felt that administrators were trying to push the teachers toward the use of technology just to have their schools be considered modernized educational institutions.

Zhao (2007) investigated in a southeastern state of the United States the perspective of social studies teachers regarding the integration of technology in the teaching process. The study was conducted after holding a training program for the social studies teachers. It investigated their perspectives on the use of technology in their classrooms. The results of the study indicated that even after training, not all teachers held positive opinions concerning the integration of technology in the classroom.

However, most teachers were in favor of using technology in the classrooms, especially after undergoing training on the use of technology in the teaching process. They expressed that they were willing to integrate the technological devices and technology-based activities in their daily teaching practices, as they believed that the use of technology would lead to positive results for both the teachers and the students. They believed that the creative use of technology would enhance the teachers' professional experience with the use and creative implementation of technology in the classrooms, and it would also enhance the achievement levels of the students and their learning outcomes as technology motivates them and makes the learning process more enjoyable for the students.

Writing in 2010, Joshi, Pan, Murakami, and Narayanan investigated the perception of both American and Japanese kindergarten teachers regarding the effect of using computers in the classroom on the development of children. The findings of this study showed conflicting opinions between the two countries. The American teachers had a positive attitude towards the

use of computers with children. Conversely, the Japanese teachers revealed some concerns and an overall negative opinion.

The analysis of the data collected from both sets of teachers showed that 65% of the teachers in the United States believed that the use of computers gives children inspiration and enhances their performance. However, only 8.5% of the Japanese teachers believed that computers have a positive impact on the children's performance. 52.3% of the Japanese teachers expressed doubts that computers could give any inspiration to the children. From an educational perspective, 66.7% of the American teachers believed that computers could be used for learning and motivating the students. On the contrary, 31.4% of the Japanese teachers agreed with the American teachers concerning the benefit of using computers in learning.

Writing in 2012, Al-Awidi and Ismail investigated the perception of teachers regarding the use of the CALL English as a Second Language (ESL) teaching program in teaching the subject of reading for students in the United Arab Emirates. This study included 145 teachers who were asked to fill in a survey regarding the use of this technology. Sixteen of these teachers were interviewed later to confirm the results obtained from the survey. It was reported that teachers were in favor of using the CALL program in teaching reading as it allowed for more interaction in the classes.

The responses of the teachers in both the survey and the interviews were consistent. Most of the teachers indicated that they are not using the CALL program to improve students' reading exactly, but rather to motivate them to read through creating an enjoyable and creative atmosphere for learning. The use of the CALL program stimulates the children's imagination and motivates them to learn. Some teachers indicated that there are many technological tools that could enhance and motivate the children to read in the classes, such as YouTube videos, video

games, and phonics songs. The fourth question of the survey investigated teachers' perception regarding the benefit of using technology in education. The main benefit indicated was that the use of computers in general encouraged the students to actively read different texts. It was also indicated that it makes the learning experience fun and enjoyable for the students.

Davidson, Richardson, and Jones (2014) reported that although in many cases specific goals for the integration of technology were not articulated by the administration, most teachers were aware of these goals. However, these teachers' perceptions of the goals were that in many cases, they were unrealistic. For example, teachers reported that their students had asked "how to turn on a laptop" (p. 11), and that just getting acquainted with the technology was a daily issue for them. Several teachers from southern United States quoted in Davidson et al. did not use technology or did not use it as an instructional tool. Other teachers reported that administrative goals of incorporating technology were unrealistic due to time constraints, to lack of functional technology, or to lack of technical support.

2.2.2 Obstacles to the Use of Technology

Writing in 2009, Alrasheedi investigated the relationship between Kuwaiti teachers' gender and training in Information and Communication Technology (ICT), and their attitudes towards the use of technology. This study used a questionnaire, which was given to high school teachers, and found that male teachers overall showed slightly more positive attitudes toward the use of ICT in their classrooms "with a mean of 3.38 for males versus 3.28 for female teachers on a 5-point scale" (p. 136). It was also indicated that when teachers received preparation and training on how to use ICT, their attitudes became more positive toward using it in the classroom. The training on using technology provided these teachers with high levels of self-

confidence and more enhanced skills concerning the implementation of the technology in their classrooms.

Concerning the actual application of technology in the classrooms, it was found that teachers who received training on the use of technology tended to use technology more often than the teachers who did not receive any kind of training on technology at all. Another important finding was that male teachers who had training on technology showed more willingness to actually use technology while teaching (Mean=3.16) than female teachers who received training (Mean=3.10) (p. 137).

Keengwe, Onchwari, and Wachira (2008) conducted a literature review concerning different aspects related to the use of technology in the classrooms and the perceptions of teachers about the use of technology. With particular focus on the use of computers as technological tools for instruction, the authors indicated that while educational technology has proliferated, "teachers are not using technology in ways that could make a difference in teaching their students" (p. 78). The researchers identified a lack of training as a primary source of this, quoting a U.S. Department of Education report from 2000 which argued that teachers "must be comfortable with technology, [and must be] able to apply it appropriately." They must also be "conversant with new technological tools, resources, and approaches" (p. 79). One might posit, therefore, that proper training would thus empower teachers.

The study also cautioned against simply putting more machines into the classroom, saying that increased access to computers would not be effective unless the teachers have the proper training on how to integrate these technological tools in their lessons and teaching practices. They argued that considering computers or any other technological tools as the drive

for the instruction can be the greatest impediment to students' learning. Rather, the learning process and the instruction should drive the use of technology in the classrooms.

In Lam's 2000 study of second language (L2) teachers' use of technology, some teachers interviewed indicated that they did not use technology in their classes for various reasons, such as lack of knowledge about teaching L2 with computers, lack of access to computers, lack of confidence in their own computer skills, and a general belief that computer technology would be inadequate for students' language-learning needs. However, it was indicated that all of these reasons could potentially be handled in one way or another by the teachers through training and an increase in self-confidence.

Davidson, Richardson, and Jones (2014) conducted research in the southern region of the United States and investigated the reasons why some English Language Arts (ELA) teachers do not integrate technology in their teaching practices despite federal mandates that require the use of technology in the classroom. Reasons that teachers did not integrate technology in their classrooms included: outdated equipment, inadequate or wholly absent training in the use of particular technologies, an absence of appropriate technology, and classroom infrastructure which prohibited the use of technology "such as projector screens hung in the center of the room" (p. 9). From the perspective of teachers, technology was primarily used for administrative purposes, and its use in the classroom would require significant support from the administration. The teachers' inability to access the needed equipment often led to rejection of integrating technology in teaching at all.

A need for training and technical support was a theme. Teachers reported that they did not tend to use technology in teaching as they faced certain technical issues and problems with which they became unable to deal. The teachers interviewed in the study indicated that they

believed there should always be technical administrators to help teachers in case they face any problems with the technological devices in class. As teachers find that this assistance is not available most of the time for them and they find themselves in a spot where they have to deal with the technical problems which would be considered as both a sort of embarrassment and a waste of time, they do not feel much inclined to use technology. They prefer to keep to the old traditional methods of teaching that they can rely on without facing any problems they cannot handle.

2.2.3 The Design of Curriculum

AlAqaad (2010) examined the different obstacles the application of technology faces in the Arab World and in Palestine in particular. She indicated that the content of education in the Arab World needs a drastic change in both quality and quantity. The curricula used in the Arab World are traditional and do not allow for a successful incorporation of the different technological means in the classrooms. She indicated that the successful implementation of technology in the educational process would lead to significant improvement of the students' performance and enhance the general of education not only in Palestine, but also in the whole Arab World.

AlAqaad also indicated that the success of the educational process through the use of technology is not the sole responsibility of the teacher. There are other factors that interfere in the process. One of the main factors is the teacher's expertise in the subject area in which the technology is being used. The content of the subject does not always give the teachers much freedom to apply technological tools in a meaningful and purposeful way. The curricula are condensed and traditional. AlAqaad concluded that it is the responsibility of all the parties of the

educational process to enhance the content of the subject taught to the students in a way that allows for meaningful implementation of technology in the classrooms.

2.2.4 Teacher's Preparation to use Technology

Hawkridge and McMahon (1992) studied technology use in third world schools with emphasis on the different ways to prepare teachers in the use of technology and the effect of teacher training on the outcomes of using technology in classrooms. The researchers found that in 23 third world countries in general, teachers graduate from college without having the training needed to implement technology in the classroom. Therefore, other sources for preparing teachers had to be sought to provide teachers with the knowledge they needed to work with technology. To this end, training personnel were hired by the various countries' Ministries of Education to provide training for teacher trainers. Another source for training was hiring an educational consultant who had sufficient experience in the field of technology. A new training approach emerged which was called a *cascade training approach*. This approach works as a chain reaction. It starts with certain trainers who train small groups on the use of technology. This chain of training continues until it reaches the teachers in the schools.

Writing a literature review in 2014, Naraian and Surabian acknowledged that despite the potential of assistive technology for improving student outcomes, "it remains under-utilized in schools" largely due to inadequate teacher preparation (p. 330). The authors made three major recommendations: first, that teacher education programs for general and special education "need to more systematically address the use of technology within their courses, so that teachers come to understand how both pedagogy and subject matter can be transformed through the use of technology," particularly by emphasizing that "learning is always interconnected with the

complex social discourses in which schools are nested" (p. 340). Naraian and Surabian argued that "one-shot models of instruction such as workshops . . . may be less effective" (p. 340). They emphasized that teachers need "to understand how multimodal learning via technologies can enhance participation of *all* students" (p. 340), and they encouraged a view of adaptive technology as "scaffolds" rather than "crutches" (p. 341). Second, the researchers suggested that "teacher preparation programs require pre- and in-service teachers to interview multiple stakeholders including students, families, and school staff" (p. 341). This exercise may assist teachers to understand the potential of technology to enhance students' intellectual growth and "connectedness with peers" (p. 341). Third, Naraian and Surabian said that "teachers need to be prepared to advocate for the availability of technological supports for their students with disabilities" since in many schools, administrators and other professionals remain "unaware of the far-reaching potential of technologies . . . to enhance student learning outcomes" (p. 341).

In the article "Preparing Teachers to Use Technology with Young Children in Classrooms," (2003), researcher Joyce Pittman focused a great deal on the National Education Goal 1: *Ready to Learn,* which stated that "[by] the year 2000, all children in the United States will start school ready to learn" (p. 262). Getting children ready to learn is not a new concept, but what is new is adding technology into the mix. Adding technology changes teacher preparation, practice, and the profession at all levels. To get this goal in place, preschool teachers have a huge responsibility. To effectively integrate technology in early childhood education, teachers "must be armed with new knowledge about how to capture a full and realistic picture of their learning and development in technological classroom environments" (p. 273). It seems we as teachers have to become experts in these programs to pass it along in the classrooms and present it to our students. However, this article clarified that all teachers need not become experts, suggesting that

teachers will never be able to keep up with all the technological changes. We will never be masters, so we should not try to be. Our main goal should be to become computer and technologically literate for effective communication and to stay informed as best we can.

Pittman concluded by saying that teachers and opinion leaders must not get preoccupied with the complexities of national standards for preparing children to learn with technology. Rather, it is more important to "engage and insist on teaching conditions that allow [teachers] to teach with technology and not just about it" (p. 281). She cautioned that using "yesterday's methods and entertaining revolving dialogue on nonessential issues about standards leave[s] important dialogue lacking" (p. 281).

2.3 Parents and Children's Use of Technology

As parents constitute the other angle of the educational process along with the teachers, it is important to examine current literature regarding their opinions and perspectives concerning the role of technology in education and children's learning.

Hollingworth, Mansaray, Allen, and Rose (2011) investigated the perspectives of the parents from England concerning their children's use of educational technology while taking into account the parents' social and cultural background as well as their work and experience with technology. The parents Hollingworth et al. interviewed were found to have great enthusiasm concerning the use of technology by their children and most parents showed great support of the use of technology at home. This use of technology involved the use of a variety of devices and technological applications at home, from watching television to using the internet for a variety of purposes. It was also found that parents were very supportive of the idea of cooperating with their children to learn at home using technological applications and they showed enthusiasm to

do so, regardless of their professions. However, it was found that the attitudes of parents toward the use of online applications varied depending on their ability to access the Internet. Those who had the ability to access the internet showed support and willingness to use the Internet and to allow their children to work on the Internet. On the other hand, those who had no access to the Internet showed resistance to the idea of their children using online applications and websites. Hollingworth et al. (2011) wrote:

> The researchers said: [W]e can see how those parents in professional forms of employment were able to transpose their organizational capital, embodied skills and dispositions used in their working lives to facilitate their parenting strategies and practices. In contrast, particular fractions of working-class parents were less likely to feel confident to play a role in their child's learning with technology, thus displaying a 'taste for the necessary'. We have argued that parents' orientation and practices are determined not only by their experiences of education and learning and their access to material resources (technology assets), but also the ways in which parents engage with and become families with ICT – or not – in their daily lives. In other words, their understandings and negotiation of the uses and meanings of technology are infused by their wider classed relations to the social world. (p. 358)

Despite the fact that Hollingworth et al. reported that parents generally encouraged the use of technology by their children at home for many purposes, several parents pointed out that there are certain risks that make them afraid of allowing their children to use technology all the time at home. This concern was universal and was not affected by cultural or economic factors. The most notable concern from parents' points of view was that the use of technology might harm the social and language development of their children. Some parents reported that they were afraid that their children would become attached to technology and would not do any physical activities, which might lead to health problems such as obesity. Other parents raised the point that children might become isolated and unsocial with the continuous use of technology and indicated a fear that children might stop interacting with people around them. Another group of parents indicated that the use of the internet and social communications websites might affect

children's learning process negatively, particularly in the area of language learning.

Writing in 2000, Subrahmanyam, Kraut, Greenfield, and Gross examined existing studies of computer, television, and video game usage in children. The researchers looked for patterns of effect on children's physical, cognitive, and social well-being focusing on obesity, the effects of violent content, supposed improvements in school performance, and the impact of early social media (such as chat rooms and multi-user online games) on "loneliness, social relationships, and psychological well-being" (p.140). The various studies included in the paper covered research subjects ranging in age from 2 (p.124) to 18 (p. 131) with most subjects being between the ages of 13 and 17.

The technology that children were using in 2000 included television, home computers (increasingly connected to the Internet), and game systems. The study found that in "1999, an estimated 67% of households with children had a computer game system such as Sega or Nintendo, 60% had home computers, and 37% had home access to the Internet -- more than twice the percentage with access in 1996" (p.124). Subrahmanyam et al. further reported that more than "one-fifth of all children between ages 8 and 18 report[ed] having a computer in their bedroom" (p. 131). The researchers also reported that "in 1999, children between ages 2 and 17 were spending approximately 1 hour 37 minutes per day using the computer and/or playing video games" which represented an increase of 24 minutes over times reported in 1998 (p. 124). Further, they found that the research suggested "greater access to home computer may actually be increasing children's total 'screen time'" (p. 125). In another 1999 survey examined by Subrahmanyam et al. parents reported that their children (ages 2 to 17) were spending an average of "4 hours 48 minutes per day in front of a television screen or a computer monitor" (p.125). In the late 1990s and early 2000s, the types of technology available to children and the time that

children were spending with these various technologies were both increasing, which naturally increased concerns regarding the effects of these behaviors.

In examining the effects of this technology use on children, Subrahmanyam et al. pointed to a lack of research specific to newer technologies such as Internet chat rooms. The researchers found that the "strongest evidence examining how home computer use affects children builds on the studies of television" (p.139).

One newer technology that Subrahmanyam et al. focused on in the paper was the Internet generally, with specific focus on "Usenet news groups, listservs, multi-user domains, and chat rooms" (p.135). With respect to these, it was found that Internet use "was associated with small but statistically significant declines in social involvement as measured by communication within the family, size of social networks, and feelings of loneliness" (p.135). Further, Subrahmanyam, et. al. indicated that "[g]reater use of the Internet also was associated with increases in depression" (p.135).

Stephen, Stevenson, and Adey (2013) conducted research on four families living in central Scotland where they investigated the influence of family contexts and parents' involvement on their children's use of technology, as well as parental attitudes towards the potential educational value of technology. The data, based on four case studies, were collected through interviews with parents and video-recorded sessions. Stephen et al. indicated that "all four children in this study experienced a similar range of supportive actions and interactions in their encounters with technological toys at home;" however, they continue to say that the "children's experiences were different because they were located in specific family contexts," each with its own attitude toward technology (p.160). The researchers reported that the parents studied "differed in their perspectives about the value of play with technological toys, in their

understandings about how learning should be supported and in their typical ways of interacting with their children and balancing the demands of family life" (Stephen et al., 2013, Discussion). These attitudes in turn affected the degree to which the technology was able to impact the children positively.

In the United Kingdom, Formby (2014) investigated parents' attitudes on children's use of technology in the early years. The paper also explored the activities which parents engaged in at home that might support children's language and literacy development, as well as the frequency with which parents use books and touch-screen devices to engage with their children. Data were collected via questionnaire.

It was found that parents supported the use of technology by their children at a very early age, based on the belief that this would improve their skills development. Formby (2014) reported that "most parents either strongly agree (21.5%) or agree (52.5%) with the statement that it is important for children to learn to use technology from an early age" (p. 12). In fact, "three-quarters of parents said that using technology from an early age is important for children to get on at school" (p. 19). Regardless of the medium (traditional paper book or touch-screen), Formby found that parental engagement in a child's reading has the strongest impact on literacy development.

2.4 Technology and Children' Skills Development

2.4.1 Positive Impact of Technology

Young (2001) examined the use of technology and its different effects on the development of the children. Based on the volume of research conducted concerning the effects of technology on the development of the children, Young showed that technology has begun to

play an important role in people's lives especially children. However, it was emphasized that the use of technology has its pros and cons. The authors of the study stressed that children need interaction with people, and technology can affect that developmental aspect negatively if it was used to substitute the daily conversations and interactions between the children and the people around them. Technology can only trigger the interactions. Concerning the development of language skills, the bulk of Young's (2001) research has shown that technology has led to major achievements in that area. The use of technology for literacy purposes enhances the children's reading and writing skills. However, it was emphasized that this use of technology should be guided and selective. The paper showed that technology does not help with the development of physical and motor skills.

A study by McCarrick and Xiaoming (2007) examined empirical studies from 1985-2004 which showed the impact of computer use on social interactions, cognitive effects, language development, and motivation in pre-school students. Their findings are discussed within the framework of social and cognitive theories by Erikson, Piaget, and Vygotsky. This study showed the different perspectives found regarding the impact of technology on the development of the children. Some of the previous research showed that the use of technology by children at an early age leads to the improvement of their social interaction and their social development. However, in a paper titled "Strip Mining for Gold," McCarrick and Xiaoming (2007) stated that no research has found this to be true, and instead, research supports the notion that computers "serve as catalysts for positive social interaction" (p.76). It was indicated that it is better for children to start using computers and technology at an early, age as they are not intimidated at that age, and they have all the powers and the capacity to explore and learn on their own. In addition, using technology at an early age increases the students' motivation to learn and interact with their

peers and with people around them.

Perry and Moses (2011) conducted a study on some of the Sudanese refugees in Michigan with regards to the effect of television as one form of technology on their language development. This study included three families. The use of television proved to have a significant impact on the development of the language for these refugees. It enabled the participants to understand and to learn how to speak English in different contexts. The development of the language was clear which indicates that the use of technology by different ages has a positive impact of the literacy skills of the children. In addition, it motivates their learning skills. However, one concern was raised with regards to watching too much TV. It was also indicated that the positive influence of using technology can be enhanced when cultural and traditional views are incorporated with what children watch and learn from: “Thus, television comprised one of the ‘'funds of knowledge’' (Gonzalez, Moll, & Amanti, 2005) that children and adults drew upon as they learned new language and literacy skills and practices.” (Perry & Moses 2011).

Fox (2014) who conducted a study on the campus at SUNY Brockport, college in western New York, focused on one student to measure the influence of the use of technology on the students’ reading and writing skills in addition to the student’s motivation to learn: According to Sylvester and Greenridge (2009), “technology has the potential to affect our students’ motivation within literacy domains and provide an understanding of traditional reading and writing practices” (p.3). The researchers conducted this study on a third-grade female student. The study was conducted to show the importance of technology and the extent to which it can improve the literacy skills for children. The child had a problem reading in front of her peers and adults. She was shy as was afraid to be judged by others. During the 5-week study, data were gathered

through interviews, retellings, records, and observations. The participant was familiar with technology, and she used technology on a daily basis in her life to improve her skills. The researcher used technology with the student to improve her reading and writing skills. It was concluded that the use of technology had a positive impact on the student's abilities to read and write. It also helped to enhance the motivation of the student to learn. The researcher also concluded that a degree of parental guidance would lead to more improvement of the children's skills and motivations. Thus, technology is a means that would enhance the literacy levels for children who are familiar with technology.

According to Sardegna and Dugartsyrenova (2014), it is likely that technology use in the classroom has a positive effect on the development of the social and language skills, particularly in the areas of critical thinking and professional growth. The researchers examined the perspectives of teachers towards the impact of technology on the types of activities that can be introduced to the students and the different skills students develop when dealing with technology in the classrooms. Teachers at a southwestern university in the United States were asked about the degree of usefulness of some of the activities that are based on technology such as discussion forums, blogs, wikis, e-portfolios, and videotape recordings. It was indicated that the use of these activities is highly supported by the teachers, and that these kinds of activities and others technology-based activities are considered to be of considerable use and benefit for the students' skills and abilities.

These sorts of activities help the students understand the theories they study as they become able to practice these theories through different innovative activities. Based on teachers' own opinions concerning these activities, it was found that activities based on technology lead to various and richer interactions among students and teachers, as well as improved and more

constructive peer feedback and reflection. In addition, these activities also help in developing learners' autonomy and sense of belonging to a community of learners and fostered a deeper appreciation of the different teaching practices based on technology. Sardegna and Dugartsyrenova (2014) stated:

> A qualitative analysis of participants' reflections revealed that, despite technology-related challenges and preferences for other coursework activities, participants believed that the technology-based activities provided increased opportunities for varied and richer interactions, peer feedback, and reflection; helped develop their learner autonomy and sense of belonging to a community of learners; modeled effective technology uses; and fostered a deeper appreciation of technology-enriched practices. (p. 147)

According to an online study by Lin and Griffith (2014) and a study in Iran by Bahadorfar (2013), it is likely that the use of technology has a positive impact on the language development of the students with regards to their abilities to use English vocabulary and to master English writing skills. Both researchers agreed that the use of technology in the classroom leads to better development of these language skills. Lin and Griffith (2014) conducted a complete review of the literature related to the impact of using online technology on the students' writing skills. It was found from reviewing different articles that using online collaborative environments could result in different positive points in favor of the students' development. They indicated that:

> Students perceived the information search, email, and on-line forum as helpful to the writing process. Some web sites created for ELL/EFL learners were perceived to be especially useful in providing knowledge and drills on the usage of the language; e-mail was perceived to have helped students in gathering ideas, peer editing, and revising; and forum discussions were perceived to have allowed students to contribute ideas and to stimulate their thinking processes. (Lin & Griffith, 2014, p. 306)

It was found that using online technology in writing classes could result in several advantages: cognitive, sociocultural, and psychological. In addition, this kind of technological integration would enhance different areas of development such as writing skills, critical thinking skills, and

knowledge construction. It was also found that the use of online technology would impact other social and communication skills as it was found to increase levels of participation, interaction, and motivation, as well as to reduce anxiety.

This research supported the use of technology, specifically online tools, to enhance students' social and language skills. As a caveat, the study also indicated that some research has found that this use of technology is not free from some disadvantages, such as mechanical errors, conflict, fear, discomfort, and time wasted on technological problems. However, these drawbacks and disadvantages were not fully confirmed through the body of research investigated in this study.

Bahadorfar (2013) agreed with the premise that the use of technology in language classrooms helps students to enhance their language abilities and language skills. He tackled this by examining the impact of the use of technology on vocabulary acquisition. The researcher studied the impact of computer-assisted language learning in teaching vocabulary. In this study, the researcher investigated the role and impact of using technology in teaching vocabulary in Iran through the use of the CALL program. This program was chosen as it used extensively by many educators in teaching language. It was found that the use of this technological program was of considerable assistance to the teachers in teaching vocabulary to the children. This program was considered to be a positive impact on developing the language skills of the students due to the inclusion of supportive information such as pictures and translations. It was also indicated that the use of this program enhanced certain skills related to learning, such as retention and retrieval levels. Bahadorfar (2013) indicated that “[m]ultimedia tends to feature several media types including text, images, sound, video and/or animations. Multimedia can promote students’ vocabulary acquisition for its increasing students’ autonomous abilities in learning. It can also

lower students' awareness of teacher-centered feelings in classroom" (p. 251).

There are certain features used in CALL that allow for better language learning and development. These features include hypertext, hypermedia, and multimedia. The outcomes of using technology through CALL are positive as the program allows the students the opportunity to experience the information they acquire instead of simply acquiring it without any application. In addition, using technology is not intimidating for most students; rather, working with computers is friendly for the students, which motivates them to learn. Moreover, working with computers adds more fun to the educational process and makes the students more open to learning.

In the same line of language development, Adams (2011) focused his study on students the United States concerning the introduction of one of the technologies in the classrooms, speech recognition technology, to improve the reading literacy skills for the children in the classrooms. Technology has proven to be a boost for a better education in many countries. It has been long used as an effective assistance to the teachers in teaching the children the different skills of the language. The researcher also noted that reading is one of the skills that children are not mastering well adequately. The low abilities of reading fluently are noted in many schools, which affects the grades of reading comprehension for the children. The researcher showed that improving basic reading fluency was found to be one of the most difficult tasks to be achieved by the students. As noted by previous research, the best way of enhancing the reading skill is the one-on-one method. The use of conventional methods of teaching reading in the classroom such as round-robin reading, choral reading sessions, and partner-reading sessions requires huge effort and time from the teachers, which cannot always be accommodated in a single classroom period. The researcher introduced the most effective solution to this ongoing problem: the use of speech

recognition technologies. The use of this technology in the classrooms would be effective with regards to the cost and the time. The use of technology allows the readers to have one-on-one guided reading session, which is in the form of private tutoring, a proven successful way of teaching learners the proper ways of reading. Hence, this study showed that the incorporation of technologies in the classroom teaching can be very effective and can have notable positive effects on developing the learners' reading skills.

According to Fenty and Anderson (2014) and Hinchliff (2008), it is likely that technology has a positive influence on the development of social skills especially with relation to the increased levels of interaction in the classrooms and the students' levels of motivation. Fenty and Anderson (2014) conducted their six-month pilot study in central New York on teachers working with pre-school students. Technologies such as interactive white boards, tablets, electronic books, and digital narratives were found to have a positive influence on the children's social development. It was found to enhance their interaction and motivation in addition to increasing their interest in the new lessons and materials provided to them by their teachers. It was found that the use of technology led to engaging the students into different activities, which consequently improved their reading and comprehensions abilities. However, it was indicated that in order for technology to have this positive effect on the children, their educators must have fair knowledge of technology and must be convinced that the use of technology would be for the better benefit of the children. Therefore, the effect of technology use in classroom settings is conditioned by the teachers' own knowledge and beliefs concerning the use of technology with children in the daily lessons and activities. The study recommends that teachers should have professional development with regards to the new technological advances to foster their students' development. Fenty and Anderson (2014) suggested:

> Many early childhood educators and related service providers recognize the potential benefits of using technology with young children, but a lack of technological and pedagogical knowledge and lack of access to updated technology present significant challenges. Participants in this study also expressed confusion around when and how to integrate technology into their teaching practices, frustration with a lack of availability of updated technology, and differences of opinion about the potential role of technology in early childhood educational settings. (p. 124)

Hinchliff (2008) agreed with the previous study that technology leads to the development of social skills as long as this use of technology is monitored by caregivers. In this article, Hinchliff described the results of a survey on electronic media used by young children. This survey was conducted in 2005 and was sponsored by the Kaiser Family Foundation. The researchers reviewed different studies conducted on the use of technological means by children from very early age and its effect on them. It was found that there were very few studies that tackled the relation between technology use and young children. However, the studies that were involved in this research include contradicting results. The results of the studies differed due to the rapid advance and development that take place in the industry of technology; therefore, different technological means could lead to different results.

Hinchliff (2008) reported that technology was found to motivate children and enhance their readiness for school when used at early age, and that technology affects children's social and intellectual development stages to a significant extent. However, the positive effect of the use of technology is conditioned by the amount of parental interaction and control over the way through which the children use technology. The researcher recommended that parents should keep a keen eye on the amount of time children spend using technology as well as the different media types and materials the children are exposed to. In conclusion, technology was found to be beneficial to the development of the children from both social and linguistic aspects, provided that the technology was consumed under the supervision of the parents and interaction with their

children.

Hinchliff indicated that “[c]ustomized, developmentally adapted software and appropriate adult interaction can substantially increase the value of computer use for two and three-year olds.” Hinchliff continued, stating that in “one study, toddlers showed 'significant levels of independent interaction' and 'the beginnings of self-directed learning,' as well as positive attitudes towards computing and increases in focused time" (p. 48). Preschoolers who used computers regularly in the classroom were found to have "'significantly greater developmental gains' in skills and knowledge" compared with children "without computer experiences in similar classrooms” (p. 48).

These two studies seem to be closely related to real-life experiences with technology in classrooms. They show that technology could have positive impact on the social skills and motivation of students; yet this development is conditioned by the teachers’ levels of knowledge and the monitoring by the caregivers of the children while dealing with technology. Teachers who are able to manage and use technology can make use of it for the benefit of children. Their use of technology leads to improvement and development of the students’ own social and language skills. On the contrary, teachers who do not have the ability to manage and deal with technology efficiently have a problem motivating children to use technology. As a consequence, these children cannot make much use of technology. In other words, the positive impact of technology on the social and language development of children is conditioned by their teachers’ own knowledge and use of technology in the classrooms. In the second study, it was emphasized that technology alone cannot lead to development in the children’s social and language skills. Adults must monitor and manage the use of the different technological devices. Adults have a responsibility to customize the different software according to the different needs of the students.

They are responsible for creating activities that would enrich and improve the children's different skills. As mentioned earlier, technology could produce the most effective and beneficial results if used under the supervision of responsible adults.

Lim (2012) investigated the social interaction that takes place among the children in the computer area. In this study that was conducted on kindergarten children in Seoul, Korea, Lim (2012) noted: "Children's social interaction, as defined in this study, is the action of giving and taking information that results in children's knowledge construction and cognitive development that can be accomplished through peer-to-peer interactions" (p.400). Data for this study was collected through three main methods: observation, interviews, and collection of different materials related to technology classes. Many patterns of social interaction were found to take place among the children: "parallel play, simple verbal conflicts, sociable interactions, knowledge gains through positive process, knowledge construction through negative process, and non-verbal communication" (416). Children showed that they have developed good social skills as a result of the use of computers and technology.

Eagle (2012) also investigated the social interaction and social development of the children as a result of using technology. In examining research literature, the researcher focused on the modes of interaction between the adults and the children. It was found that children tend to achieve better learning and have better social interaction when the adults surrounding them play the roles of the supporters rather than the role of the guide who established the goals and set the way for them. Children need more freedom when learning and exploring so as to have better outcomes regarding their learning and their abilities to interact with others around them. In the article by Eagle, Strommen (2004) pointed out:

> Devices for children marketed according to notions of classroom learning have been more readily marketable than other varieties of device: ELAs lend themselves to sound

> bites or curriculum shorthand. 'Will teach your child to read' is always stronger than 'Encourages exploration, creativity, and problem-solving. (p. 47)

Hsin et al. (2014) conducted a literature review on the research conducted regarding the relation between the use of technology in early childhood and its influence on the development of the children's different skills and capabilities. Eighty-seven articles were reviewed in this regard. It was found that studies regarding technology involved teachers, parents, and children as the three basic angles for the effect of technology on children's development. As for the effect of technology, it was shown that studies have two main trends: Although many researchers and educators have advocated for the importance of young children's learning with technology and devoted themselves to investigating and implementing technology-related practices, the influence of young children's use of technologies on their development is still controversial (p.90). Some research shows that technology leads to better abilities of communication and interaction skills. However, some other studies show that technology leads to isolation and inhibits the interaction between the children and people. The study emphasized the positive effect of technology on the learning process. Technology helps to develop the literacy skills for children.

2.4.2 Negative Impact of Technology

In a report that was prepared by the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center in the United States, different issues regarding the use of technology by children were tackled. It was indicated that it is a must for educators and caregivers to accept technology and media as it continues being in the children's lives. Technology is not a temporary achievement that will be out of date after a while, but it will become more advanced in time, and the use of this technology by children is inevitable.

Therefore, it is crucial that people start accepting the fact that technology constitutes an integral part of the children's future and that they must make them use it wisely and correctly. However, it is noted that the use of technology by children has created some concerns. It is of great importance to know that the use of technology is a substitute for the interactive playtime of the children, so if the children do not use this time purposefully, they will lose their time and their skills. It is therefore recommended that educators choose the best technology that would serve their aims and integrate it in their lessons in a meaningful way to enhance the children's experiences and their engagement with those around them. In addition, it must be noted that technology should not be used all the time and should not substitute the interactive play time and the games to create well-balanced learners. It is also crucial that children do not use technologies such as televisions and media passively. Technologies should be used in a functioning context in which children are to learn a new skill and not for entertainment purposes only. Caregivers and educators bear the responsibility of choosing the right applications and programs that would foster the interactions between the children and the technologies used.

According to Hashjeen and Mammedhuseyn (2003), it is likely that the use of technology by students in Tehran, Iran has no tangible positive impact or it has a negative impact on the social skills of the students. The researchers concluded that technology has no positive impact on the development of the children's social and language skills. They conducted their study on the use of computer games by children. In this study, the researchers investigated the role played by the use of computer games on the social development of boys. The researchers hypothesized that personalized computer (PC) games have a variety of effects on the students. The investigation of this hypothesis was carried out through the use of a questionnaire. The analysis of the data revealed that the use of computer games did not yield positive effects with regards to the social

development of the students. Rather, these games caused the boys to be immersed in playing to the extent that they ignored all social relations with their families and their friends. This use of technology was found to be harmful to social communication and social development as it inhibited the desire for face-to-face communication. The boys' communications and social activities were negatively influenced by the use of computer games. However, it was also found that the computer games assisted the mental and creative development of the students due to the different skills they have to develop to be able to play these games. The research also indicated that the factor of time also mitigates these effects: less playtime led to less serious effects. Time is a critical factor that could shift positive effects into negative ones and vice versa.

Hashjeen and Mammedhuseyn (2003) posited:

> It seems that children who spend more time playing with PC games [are] more affected by effects such as sedentary state and inactivity and this may… cause extreme obesity. Therefore, these adverse effects may influence negatively on their social activities. (p. 2007)

The researchers also pointed out that children need to “play with their peers,” and experience “behavioral creativeness in the social environment.” However, they also noted that PC games may deprive them of this opportunity. They concluded that the more time a child spent “using PC games, the more negative effects [this would] have on the social interactions of children,” (p. 2007).

Revisiting the study done by Subrahmanyam et al. with respect to all technologies in the study, Subrahmanyam et al. highlighted concerns regarding obesity as a result of sedentary behavior. The researchers did find that in terms of physical effects, video games specifically might lead to epileptic seizures and tendinitis (p. 127) as well as cognitive changes including, "increased aggression in children's free play, hostility to ambiguous questions, and aggressive thoughts" (p.133). At the same time, "playing specific computer games" was found to have

positive effects on "specific cognitive skills" (p.127), and academic use of computers was overall shown in a more favorable light. "[S]tudies of the effects of one computer-based after-school program" indicated that participating children showed "advances in reading, mathematics, computer knowledge, following directions, and grammar" these children also "had higher scores on school achievement tests, compared with children who did not participate" (p.130).

One of the most concerning findings in this paper involved the effects that technology use had on children's perceptions of reality. Subrahmanyam et al. report that "one noted researcher, Sherry Turkle, found that some children may have difficulty understanding the boundaries between real and artificial life when engaged in simulation computer games" (p.138). She reports that children experienced difficulty discerning whether their computerized creations were, in fact, "alive," particularly with respect to virtual pets (p. 138). Role-playing games were also implicated in children's confusion between the real and virtual worlds.

The effects noted in Subrahmanyam et al. were "only suggestive," and the researchers called for "more systematic research across the broad range of topics discussed" (p. 139). However, it is interesting to note that these concerns have persisted in the public consciousness to this time, as both technology and Internet use have become almost ubiquitous.

2.5 Summary

The body of literature dealing with and investigating the topic of technology in relation with its impact on the development of children’s social and language skills investigated the topic for various dimensions. The first was the teachers’ perspective towards the impact of using technology in the teaching process. It was found that teachers’ own beliefs concerning the extent to which technology could be of use to the children affects the way they incorporate technology

in their own teaching practices and how they make it useful for the children. Teachers who have negative beliefs regarding the impact of technology on the development of the children did not incorporate technology effectively and appropriately in their work. Some studies indicated that there are some obstacles that teachers would confront and will prevent them from incorporating technology effectively in their daily lessons (Palak & Walls, 2009; Joshi et al., 2010). The second set of obstacles vary in nature, and they include the insufficient preparation given to the teachers to enable them to use technology in teaching. Another obstacle is the outdated hardware found in many schools, which is of no help to the teachers to achieve their goals. The third obstacle is the design of curriculums in a way that does not give much space and freedom to the teachers to design their lessons in a way that guarantees the utmost use and benefit of technology to the children (Alrasheedi, 2009; Lam, 2000).

The second dimension of technology, as tackled in literature, is the perspective of a parent concerning the impact of technology on their children's development. Parents were found, in general, to have firm beliefs that technology would enhance the development of their children's language and social skills. They indicated that they allow their children to use technology at home for many purposes. This perspective was, however, bound by the ability of the parents to use technology themselves and whether they have access to technology. Despite this, there was another group of parents who showed much concern that the use of technology could lead to slow development of their children's social and language skills as some children would become isolated and anti-social due to the use of technology. In both cases, it was found that it is necessary to have parental guidance and observation when the children are using technology (Hollingworth et al., 2011; Stephen et al., 2013; Formby, 2014).

The third dimension was the impact of technology as shown in research. There are two

opposing opinions in this regard: The first promotes the use of technology by children at a young age as it leads to enhancing their abilities and their creativity. If used in the right way and under supervision, technology is most likely to help developing the children's different skills and would make a difference in performance between students who use technology over those who do not use it. The second opinion states that technology is believed to hinder the children's capabilities to interact with those around them, and it could be a significant hindrance to their language abilities, as technology does not allow them to deal and interact with people around them (Young, 2001; Perry and Moses, 20111; Fox, 2014). According to the American Academy of Pediatrics, there are some recommendations that should be followed to ensure safe use of media by children and development of their skills. It is recommended that pediatricians raise the awareness of parents concerning the right time to start allowing their children to use technology as it is advised they do not use it before the age of 18 months. In addition, they should make parents devise a clear media plan for the benefit of their children and use only programs of high quality that would stimulate the children's mental development. It is also recommended that parents monitor and guide their children when they use technology in any means. Media should be considered as a means of teaching the children, and not to be used as a means of entertainment or distraction only for the children (Council, 2016).

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter addresses the design of this project, the research questions, and the theoretical framework of the research. Within the framework section, I address the qualitative research approach, ethics, and the interpretive approach, as well as observations and interviews as research methods. I also discuss the interview questions. This chapter also covers Vygotsky's social development theory. Additionally, I cover study participants, data collection and management, and the data analysis procedures.

3.2 Initial Design

The main goal of this research study was to critically examine and understand the experiences and perspectives of parents and teachers regarding young children's use of technology at home and school, and its perceived effects on children's language and social development. Interviews were conducted to gather information about how technology is used in the preschool and home settings, and to gain a deep understanding of how parents and teachers perceive the effects of that technology use on children. In addition, I conducted classroom observations to provide a broader perspective on the investigated topic.

3.3 Research Questions

As participants shared their opinions, personal experiences, and perspectives, data were collected to answer the following questions:

1. How is technology being used in early childhood classrooms and homes of children in two Kindergarten and Elementary schools (Grades 1 & 2) in Kuwait?

a. What are teachers' and parents' views about their roles in children's use of technology?

b. What are factors that facilitate or hinder the use of technology in the EC classroom?

2. What are the perspectives of teachers and parents in two Kindergarten and Elementary schools in Kuwait about the influence of technology on the social and language development of children?

    a. What changes, if any, have parents and teachers observed with regards to their children's interaction with others?

    b. How have the children's oral and written abilities changed after the use of technology for literacy purposes, if at all?

3.4 Social Development Theory

The social development theory was developed by Lev Vygotsky. This theory is considered to be the basis for many instructional approaches and techniques. Vygotsky's theory makes a clear connection between the social and cultural surroundings of children and their skills development in reaction to these conditions. Technology has become an integral part of people's culture and social lives. Therefore, social conditions play a major role in the influence of technology on the development of children's social and language skills.

This theory was selected due to the different dimensions the theory touches upon and that are related to the development of the children as complete characters. First, the theory does not separate the children from the environment surrounding them. This relates to the investigation of the teachers' and parents' perspectives concerning the use of technology by their children. In addition, the theory focuses on the social and language development aspects of the children. The theory points out the relation between the children's abilities and their achievements in any aspect. These aspects were the best to be applied to the research at hand as this study focuses on

the social and language development of the children in relation to their surroundings at home and at school.

3.5 Vygotsky's Theory

Vygotsky's theory is useful for interpreting human development in relation to culture. Vygotsky argued that certain aspects of culture, such as the types of interaction that take place between children and those around them, affect the development of children's cognitive abilities. As children interact with parents or other adults on a daily basis, even without intending to, these adults teach children things which result in developing their thinking skills. As Rogoff (2003), said in the cultural nature of human development:

> Vygotsky provided a useful framework for thinking about the integrated, dynamic nature of individual, cultural, and species development. He proposed the study of four interrelated levels of development involving the individual and the environment in different time frames: microgenetic, ontogenetic, phylogenetic, and cultural-historical development. Developmental psychologists traditionally deal with ontogenetic development, which occurs in the time frame of the individual life span, such as across the years of childhood. This is merely a different time frame from the other three developmental levels. Phylogenetic development is the slowly changing species history that leaves a legacy for the individual in the form of genes, transforming over centuries or millennia. Cultural-historical development changes across decades and centuries, leaving a legacy for individuals in the form of symbolic and material technologies (such as literacy, number systems, and computers) as well as value systems, scripts, and norms. Microgenetic development is the moment-to-moment learning of individuals in particular contexts, built on the individual's genetic and cultural-historical background. (p. 65)

Another major dimension of Vygotsky's theory is the zone of proximal development (ZPD). This refers to the points of potential achievements and abilities a student can reach under the supervision of guiding figures like parents and teachers versus the accomplishments he or she can achieve on his or her own. This zone is the area where actual learning occurs. It shows that children need to have both guidance and independence in order to develop skills. According to Shabani , Khatib , and Ebadi (2010), "the ZPD was understood by Vygotsky to describe the

current or actual level of development of the learner and the next level attainable through the use of mediating semiotic and environmental tools and capable adult or peer facilitation." Vygotsky showed that when children are kept within this zone of development, they would achieve development of their own skills. It is of significance that the needs of the children are taken into consideration so that they are able to develop. The idea here is that learners work collaboratively either with each other with their teachers or parents which enables them to accomplish the same tasks done collaboratively when they work individually afterwards.

Vygotsky's sociocultural model was applied in my research to describe the development of children's social and language abilities and skills based on their cultural surroundings. The perspectives of teachers and parents regarding the effects that technology use has on children's development can best be understood through deep understanding of the culture surrounding these children and through understanding the extent to which these children are influenced by the interactions they have with people in their culture. In this research, the zone of proximal development for the children is their use of technological devices and how they learn whether by working under teachers' supervision or parents' guidance and become able to accomplish tasks and learn on their own afterwards. According to Kozulin, et al. (2003), ZPD is applicable to any type of learning task, and they confirmed that the teacher or the parent play a vital role through their interaction with the children to achieve learning objectives. For example, when teachers or parents interact with the children while using technology whether by observing, guiding, or interfering with the children's work, the development of the children's skills and abilities is influenced in different ways.

The theory of the zone of proximal development (ZPD) was used in my dissertation to make a connection between the concrete practices of using technology by both parents and

teachers and the extent to which adult practices influence how children apply what they learned from their interactions with the adults. Since the adults in children's lives often take a supervisory role, the children are able to watch these knowledgeable figures to gain knowledge of both helpful skills and good behavior.

3.6 Participants

3.6.1 IRB and Recruitment Procedure

First, I received approval from the Institutional Review Board from the University of North Texas. Next, while in Kuwait, she submitted her research proposal to the Educational Research Administration in Kuwait and subsequently received its approval, including my desired school district, which was related to feasibility for conducting the study. The selected school district, which is part of Kuwait City, also gave its approval for the research study and provided four schools that could participate. I selected one primary (Kindergarten for 4- and 5-year-olds) and one elementary school (Grades 1 and 2 for 6- and 7-year-olds) in the area based on the frequency and diversity in their use of technology in their classrooms. Finally, the school principals of two selected schools gave their consent for conducting the research study, including the interviews and classroom observations.

3.6.2 Teachers' Recruitment and Sample Selection

The first phase of the selection process was to get a sample of parents and teachers to interview, and teachers and students to observe. Participating classes were selected based on the extent of technology application during lessons and usage in their English and Arabic language classes. Preliminary information was provided by the two school principals as well as the

department heads for the subjects of English and Arabic, based on their knowledge and past observations of their teachers. The kindergarten supervisor suggested potential teachers from four classrooms because these teachers used technology more intensively during classes than the others. For Grades 1 and 2, the elementary school department head suggested eight teachers she thought would be best for the study. After the suggestion from the kindergarten teacher and elementary school administrators, the kindergarten teachers and the elementary school teachers completed a questionnaire. Since the kindergarten teachers' answers were similar, I chose specific classrooms from that group. I was then granted permission to observe two classrooms from the kindergarten school (KG1 and KG2). These teachers were selected specifically for their abilities to use technology within the classroom. In order to determine who would be best, the department head regularly observed the teachers in the classroom and kept detailed records of her observations.

Independently from the department head's recommendations, I gave the ten potential teacher participants (5 teachers from kindergarten and 5 teachers from elementary school) a pre-study questionnaire. Specifically, the questionnaire included these questions for the teachers: "How often do you use technology in your classroom for educational purposes?" and "How often do your students use technology in your classroom?" After reading the teachers' responses, I selected the teachers I thought would be the best subjects for the study. The teachers were asked to voluntarily participate. Those who agreed signed a consent form.

3.6.3 Parents' Recruitment and Sample Selection

After teachers had been selected, the first step that I took to identify parents to participate in the research study was to distribute a questionnaire to the parents of all students in the four

participating classrooms (two in the kindergarten and two in the elementary school). The number of questionnaires that were distributed were 100, since each age-level classroom has 25 students. This pre-interview questionnaire had questions about the hours that students spend using technology at school and home. The pre-interview questionnaire for the parents had these questions: “How often does your child use technology outside of school?”, “What type(s) of digital technology does your child use?”, and “How often do you use technology in your daily life?” The goal was to interview parents whose students spent a lot of time using technology and who would voluntarily agree to participate in the research study. Parents voluntarily submitted the questionnaire. On average, 19 parents submitted a questionnaire from each class of 25 students. After reading the responses, I selected prospective parents based on the regular use of technology in the students’ home, including smart phones, tablets, and television. Once the potential parents were identified, I got the parents’ consent through the students’ teachers when the teacher asked if they would be willing to voluntarily participate in the study. After this step, I obtained contact information for the parents who agreed to be interviewed. Finally, the 20 parents who agreed to participate signed a consent form and were informed of the process, goals of the research, and confidentiality.

3.6.4 Classroom Observation Procedures

In the observation portion of the study, I observed four classrooms, one from each age category. Each classroom was observed twice per week during 4 weeks for a total of 8 observations per classroom. Although the school day was from 7:30 a.m. to 12:30 p.m. for kindergarten, each classroom observation lasted 115 minutes and focused on the language classes (Arabic and English). These were divided into 20 minutes for group work, 55 minutes for

centers, and 45 minutes for a lesson selected by the teacher. The Grade 1 classroom observations were 90-minutes-long each of the 8 days, consisting of 45 minutes for the English class and 45 minutes for the Arabic class. The observations in Grade 2 classrooms also lasted 90 minutes, 45 minutes for the English class and 45 minutes for the Arabic class. Before observing each class, I took a copy of the lesson plan from the respective teacher to review it to know the sequence of procedures and the different technological equipment that were used in the lesson to facilitate the learning process for both the students and the teachers. This also facilitated the process of taking notes during the observation.

3.7 Participants

The demographics for parents included 5 males and 15 females. Just as the students observed were Kuwaiti, the parents were also. Some parents had a degree from a university, but not all had attended college. All at least had a high school diploma. The demographics for the teachers included two of Egyptian descent and eight were Kuwaiti.

Once the teachers and students were selected for observation, I classified the participants in the study into four main categories based on the age level of the children. As the study was investigating the children from ages 4 to 7, each category included a different age. The first category of kindergarten children (Kindergarten 1) included 4-year-old children and the second (Kindergarten 2) included 5-year old children. The third category which involved the elementary school included 6-year-old children (Grade 1), and the fourth included 7-year-old children (Grade 2).

I interviewed a total of 20 parents and 10 teachers for the study. It should be noted that the KG2 classroom was taught and managed jointly by three teachers and KG1 was managed by

two teachers. For Grade 1, there is one full-time teacher and one substitute teacher for the Arabic class and one teacher for the English class. For Grade 2, there is one English teacher and one Arabic teacher. Therefore, it was determined to be reasonable to interview all teachers for each class. I interviewed five parents from each class, which is 20 parents total. Both the kindergarten and the elementary school are public schools and are separate facilities. Since these schools follow Kuwait policy, the students who comprised of the classrooms observed were all Kuwaiti.

Tables 3.1 and 3.2 summarize the demographics of the parents who were interviewed and their children's ages, as well as, those of the teachers who were observed and interviewed. It should be noted that tablets refer to iPads and similar devices.

In the interview portion of the study, the participants included the 10 selected teachers in addition to 20 parents whose children are in the classes that were observed. The teachers who were interviewed consisted of 3 teachers of Arabic language, 2 teachers of English language, and 5 kindergarten teachers. All teachers had 4-year teacher education degrees and hold teacher certifications. The children whose parents were selected ranged in age from 4 to 7 years of age.

Table 3.1

Demographics of the Parent Participants

		KG1[1] (n = 5)	KG2 (n = 5)	Grade 1 (n = 5)	Grade 2 (n = 5)
Students' age (in years)		4	5	6	7
Parents' gender	Males	3	1	1	0
	Females	2	4	4	5
Parents' Age (median)		32	35	38	38
Technology Used at Home	iPad	5	5	5	5
	iPhone	5	5	5	5
	PCs	1	0	4	5
	TV	4	3	1	0

[1] KG = Kindergarten

Table 3.2

Demographics of the Teacher Participants

		KG1[1] (*n* = 5)	KG2 (*n* = 5)	Grade 1 (*n* = 5)	Grade 2 (*n* = 5)
Teacher' Nationality		Kuwaiti	Kuwaiti	Two Kuwaiti and One Egyptian and	One Kuwaiti and One Egyptian
Teaching Experience Range		5-7 Years	2-17 Years	4-23 Years	5-10 Years
Technology Used in the Classroom	Smart Phones	2	3	2	2
	Computer	2	3	0	0
	Laptop	2	1	2	2
	CD Program	2	3	0	0
	Projector	2	3	2	2
	Tablets	2	3	2	2
	Overhead Projector	0	0	1	0
	TV	2	3	0	0

These parents could be different in their backgrounds and characteristics, their gender and age are included in Table 3.2, information about parent's marital status, education, and the number of children they might have is not available for all parents, and therefore, is not reported.

In this section, the procedures followed to collect and manage the data are explained in detail. First, the data collection process is described with regards to the methods used and how they were applied. Second, the basis on which analysis of the data was conducted is described.

3.7.1 Data Collection Procedures

The collection of the data for the purposes of the current study was done through two main methods: 1) interviewing the participants and 2) observing classroom teaching practices.

The interviews were conducted with both parents and teachers. The children whose parents took part in the study had at least one technological device at home, to which their children had free access all the time. These parents allowed their children to use their technological devices for learning in addition to playing. During the interview, I explained the aims of the study and its significance in the field of education for all the parents selected. I am a native Arabic speaker so I conducted data collection. I made sure that all the data gathered was confidential and ensured that no one else was allowed to observe classrooms or perform interviews as part of this study, except myself.

The second part of the data collection was done through direct observation of four of the classrooms in which teachers were using technology more frequently in their teaching practices. With the permission of the administration, I attended these classes and took detailed notes concerning the different steps and procedures that were taking place in the classroom when teachers and students were using technology. As mentioned in the sample selection criteria

section, classrooms were selected among those that used technology more frequently. In addition, teachers identified specific times during the school day in which they used technology to conduct the observation. These targeted observations lasted about 45 minutes each. Also, the observations were conducted only during Arabic and English language teaching classes. This was intended to give me the chance to observe the use of technology in the classrooms in a more focused way.

I focused on several specific aspects to examine and understand through class observations. The first one was the means through which the teacher incorporated technology in the lesson. I also observed the teachers' methods of directing and guiding the children when dealing with technological devices and applications in the classroom. Furthermore, I focused on understanding the extent to which teachers depend on technology in the different steps of their teaching. I took comprehensive notes while observing each class.

After conducting the classroom observations, I conducted the interviews with the teachers selected to participate in this study. Their consent was obtained prior to conducting the interview through their respective administration. At the beginning of the interview, I briefed the teachers on the significance of this research and assured them that their input was completely confidential. The interviews were conducted after the classroom observation to allow me to discuss any notes taken in the classrooms when observing teachers' practices, providing more insight on the topic discussed. Table 3.3 gives a summary of the data collection procedures for both parent and teacher interviews and classroom observations.

Table 3.3

Summary of Data Collection

Data Source	Nature of gathering data	Duration	Total number
Interviews	Ex post facto	30-60 min each	30
Observations	Real time	115 minutes each time, KG 45 minutes each time, Grades 1 & 2	8

3.7.2 Data Management Plan

All the data collected was organized in accordance with the participants that provided it. In other words, data obtained from the parents was kept in a separate file from that obtained from the teachers.

All data was kept with me only. All the data collected through interviews remained confidential and was used only for academic purposes. The identity of the kindergarten, the elementary/kindergarten, and the teachers who participated also remained confidential. All the participating teachers and parents provided a written consent prior to the administration of the interviews. All the data provided by the teachers were not shown to the administration of the kindergarten or the school as a part of the ethics of the study.

Different files were kept for the participants who were selected from each school. In addition, I confirmed that every participant's identity remained confidential by assigning a number to each participant, and no one, including the administration of the school, was allowed to view their individual responses.

3.7.3 Data Analysis

According to the interpretative approach, the interpretation of data should be developed

based on logical arguments which are based on persuasive evidence provided by the data (Cohen & Crabtree, 2008). Qualitative analysis begins by deconstructing the collected data into segments which are then coded. This coding allows a researcher to be able to categorize the different segments according to their similarity and relevance.

To begin data analysis process of the interviews, I compiled the answers provided by all parents and teachers from the interviews to analyze them. I transcribed each of the 30 interviews (20 from parents and 10 from teachers) in Arabic as that was the language the interviewees used. Once the interviews were in written form, I started coding the answers obtained from the interviews inductively. I read all the transcripts of interviews thoroughly to form a complete idea about their contents and all the points that could be related to the research topic of this study or any new points that could open new directions for the study. The first group of interviews conducted and subsequently analyzed were the 5 kindergarten teachers. All responses by participants which were related to the question were coded. Most responses that received codes were repeated by more than one participant. However, codes that were only reported by one participant were included when they were related to the question at hand. All the data was coded so that it could be easily processed using the Excel software program.

After completing the coding of the interviews in Arabic, I translated all Arabic transcripts into English, and re-coded the interviews in this language. Through this process the same codes were identified in both languages. The agreement in the coding in Arabic and English assured me that information provided was not being excluded or misinterpreted. The next step was to compare parents and teachers' perspectives based on the codes developed from their interviews. Findings from this comparison are discussed in the results section.

A similar data analysis procedure was followed for the observation field notes. Detailed

field notes were taken from each classroom observation, individual observations were coded, themes were identified, if an action or behavior was repeated across the eight observations, it received a code. The codes were then entered in an Excel spreadsheet.

The Excel program was easy to use since it can manage large amounts of data, which helped my data coding efforts. Once the codes were determined from the class observations and interviews, the codes were entered into Excel. Tables including codes, definitions, and examples are included in Appendices D and E. Then, Excel calculated and formatted the codes into visual representations that depicted the frequency of the observations and interview responses. This also allowed for the free emergence of certain patterns and ideas based on the real texts provided. As a result, it was accurate, as it did not force a specific idea or concept; rather, all emerging ideas were based on the actual collected data, and patterns were subsequently generated. Additionally, the use of this software allowed for the shuffling of the coded texts according to my needs, which allowed for more interpretations to be made (Jones, 2007). Table 3.4 is an example of a table created by Excel that shows responses from a parent interview question. Parents were asked the open ended question on how much time their children spend using technology at home, they provided a range of times, the three codes below were created by grouping the responses.

Table 3.4

Duration their Child Spends Using Technology at Home

Code	No. of Parents
More than 3 hours	11
3 hours	8
Less than 3 hours	1

The results are presented in three stages: First, the results of the interviews are shown based on the questions included in them. Second, the results of the interviews are introduced. Third, the findings and patterns based on the results are introduced.

3.8 Trustworthiness

Trustworthiness of qualitative research encompasses four elements concerning the study or the research; credibility, transferability, confirmability, and dependability. A qualitative research is considered credible when the findings of the study are truthful and real. This was done in this study by using two methods of collecting the data to triangulate the results. I used interviews and observations as methods to gather data. After the coding process, agreement was found between observations and interviews, findings were based on the responses from both. Transferability refers to the extent that the findings of research can be applied to other field and other studies. In this study, the findings can be applied to Kindergarten and elementary schools in Kuwait that have some degree of access to using technology in the classroom. Confirmability refers to the idea that the findings of the research are solely based on the data acquired from the participants and not based on any speculations or hypothesis I made, which was applied in the present study. As for the dependability of the research, it refers to the fact that if the study were re-conducted by other researchers, the same findings would be reached.

3.9 Summary

This chapter included a discussion of the methods that were used to understand the use of technology in early childhood classrooms and the homes of children in Kindergarten and Grades 1 and 2, as well as, teachers' and parents' perspectives about the influence of technology on the

social and language development of children. The first part of the chapter dealt with the qualitative research, specifically, the interpretative approach as it was the approach implemented in this study. In addition, a complete description of the methods applied through this approach was provided as well as the justification for choosing these methods: interviews and observations. Second, the chapter provided the theoretical basis for this study as it is based on the social development theory by Vygotsky with special emphasis on the idea of zone of proximal development. In addition, the chapter provided a full account of the participants selected for this study as well as the procedures of data collection and the analysis of the data.

CHAPTER 4

RESULTS AND DATA ANALYSIS

4.1 Introduction

We live in an era of technology overflow, and it is very hard to succeed in life without using technology in our daily routine. The recent time has witnessed a number of changes in this regard, and one of them is the children's introduction to technology in a very early phase of life. It is a common sight that children use technology at an early age, and even schools are found using technology as early as the kindergarten level. This use of technology is not only by the teachers; the students are also supposed to get involved in this process for the sake of a quicker, better, and longer-lasting learning.

This research project was aimed at studying and understanding the impact of using technology in educational settings and critically analyzing the perspective of both parents and teachers on the implementation of technology at an early stage of life. The study was specifically focused on understanding the use of technology in early childhood classrooms and the homes of children in Kindergarten and Grades 1 and 2, as well as, teachers' and parents' perspectives about the influence of technology on the social and language development of children. I conducted observations and a number of interviews with the teachers and parents of kindergarten and elementary school-going children to gain insight of their views and ideas on the topic. The study employed the social development theory of Lev Vygotsky (1978) to provide the theoretical framework for interpretation of results. This theory that is focused on the learning process of children is based on two major principles:

1. The early years of an individual's life are a critical period for cognitive development.
2. A full cognitive development of an individual requires social interaction.

Lev Vygotsky's (1896-1934) work has provided the basis for a wide body of research in the domain of cognitive development, and his social development theory has gained a special acclaim over the period of several decades. This theory puts a special emphasis on social interaction. Vygotsky emphasized that "learning is a universal aspect of development process of individuals and social interaction helps in development of culturally organized, explicitly human psychological function" (Vygotsky, 1978, p. 90). He strongly believed that social experience plays the basic role in the process of devising meaning. According to Vygotsky, social learning tends to precede cognitive development (Crawford, 1996). Furthermore, to understand the individual's development, one needs to understand the social and cultural context within which it is rooted. According to Vygotsky (1978, 1980), social interaction is the basis for higher mental processes in the individual. He stated: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people and then inside the child" (p.57). Two important features of Vygotsky's theory are the more knowledgeable other (MKO) and the zone of proximal development (ZPD), where the MKO depicts the role of teachers and parents and ZPD explains the students' ability to improve their performance under the guidance and supervision of teachers and parents.

As this study was based on the Vygotsky's theory of social development, I conducted my own observation of classes as well as conducting the interviews. I visited the elementary school 16 times, and another 16 times for kindergarten school (i.e., 8 observations x 2 classrooms x 2 schools). The observation of classroom lessons were 45 minutes for each elementary class and 30-45 minutes for each kindergarten class. Then, interviews were conducted with 20 parents of kindergarten and elementary school-going students and 10 teachers who instructed those students.

After collecting the data through the classroom observation and the interviews, I coded the different responses that were given by the participants in relation to each separate question. All the possible answers that emerged during the actual observations and interviews were coded, and the codes were inserted in the Excel software. Since 30 people participated, I coded and analyzed 30 different responses for each question. Teachers were asked 10 questions and parents were asked 5. The analysis was divided up into two groups in separate files; one group was comprised of 10 teacher interviews and class observations and the other group consisted of 20 parent interviews. Each column in an Excel sheet represented one of the questions I asked the parents or teachers, and the cells in that column contained every answer the teachers or parents gave to that question. Each row of cells contained all the answers given by one teacher or parent. So, every answer was placed in a cell. The role of the respondent (parent vs. teacher) determined which sheet the answer belonged in, the question being answered determined which row an answer belonged in, and the identity of the answerer determined which row in that column the answer belonged in. (The answers quoted above were only examples, which is why there were answers from only four teachers although we received answers from ten. For example, "What is the role you play when your students are using technology?"

> Teacher #1: I think it is mandatory for teachers to guide their students while they are using technology in educational settings. If they are given an unlimited and unsupervised access to technology, they will lose focus on their target topic and material. Furthermore, they need supervision to ensure that they are using technology in the required manner thus the teachers' role as a guide and supervisor cannot be considered optional. It is obviously mandatory.
>
> Teacher #2: At the beginning of the year not all the children are familiar with computers, so I should help them when they use the computer at centers time. I teach them how to open it, shut it down, what kind of program they should use, how to use the mouse in the right way, and how to sit on the chair properly.
>
> Teacher #3: I would like to constantly check how my children use the computer or any kind of devices to make sure they use it in the best way to achieve our goal of the day. I

know most of them are familiar with the tablets, but not all of them are familiar with the computers, so that is why I need to check on them frequently.

Teacher #4: I want to guide my students how to use technology in an effective manner, but sometimes I realize that they know it better than me. They are good at using these digital devices whereas I usually struggle with them. It gives me an uncomfortable feeling and makes me reluctant to use the technology in the classroom. I want to play a better role in this regard, so I decided to monitor their use instead.

Teacher #5: I used to observe the students when we used any kind of technology in our classroom.

Teacher #6: I am always checking and helping the students in my classroom how to use the computers at center time at least each 10 minutes from the 55 minutes. I go and come back to computer center to make sure this student is doing well.

Teacher #7: I just give my students direction about what they are supposed to do when they use computer or tablet in the beginning of the lesson.

Teacher #8: Observing.

Teacher #9: before I start the lesson of the day I write on the white board instructions to remind the students what they have to do when they work on any devices I will provide them in the classroom.

Teacher #10: Monitoring and observing.

For example, Teacher 4 said that she wanted to "guide" her students, but after carefully studying her answer we realized that her answer should be coded as "Monitoring" not "Guiding." This was due to the fact that she actually indicated later in her answer that she did not provide any instruction whatsoever since she was "reluctant to use the technology." Therefore, her response was coded as "Monitoring." Whereas, Teacher 2 said that she showed the students how to "open" the programs, "shut" them down, and which ones to "use." This response was coded as "Taking part in the process." Teacher 1, on the other hand, implied that she provided some instruction "to ensure that they are using technology in the required manner," but did not give any hands-on training. This was coded as "Guiding from a distance." The key differences between the 3 classes can be summarized as follows. "Taking part in the process" implies some

sort of hands-on individual training. “Guiding from a distance” implies some kind of instruction but no individual attention or personal training given at each computer or tablet. “Monitoring” implies that no hands-on training was given nor was any instruction given at the white board.

Using the Excel software allowed me to calculate the frequency of the answers based on their codes, which gave a clearer picture about the different trends and responses related to the research. A key component of the coding process was to determine which participant responses related to the specific research questions. Codes were being added as the analysis of individual interviews and observations were conducted. A final, shorter list of codes was created. In addition, quotes that were good representations of each of the codes that emerged in the analysis were kept in a Word file to illustrate the code’s topic. Tables with codes, definitions, and examples are provided in appendices, Tables D.1 and E.1.

The participants’ responses highlighted a number of factors that affect the learning process through the use of technology. I gathered a host of opinions from them regarding the use of technology in school and at home, and how this use of technology may have influenced the children’s linguistic and social development. Most of the teachers and parents agreed that the children were closely surrounded by technology, both at the home and at school. They also shared a single view that this presence of technology has a significant impact on students’ learning in different domains.

To fully comprehend how the students’ use of technology impacts their social and linguistic development, I divided this analysis into two separate sections: The first part of this analysis is dedicated to the teachers’ responses to the interview questions and the corresponding classroom observation, and the second part is focused on the parents' responses to the interview about their perspectives on the issues under discussion.

The following responses from the teacher and parent interviews and the classroom observation are used to answer the study research question 1: How is technology being used in early childhood classrooms and homes of children in two Kindergarten and Elementary schools in Kuwait?

4.2 Technology Used in Early Childhood Classroom

4.2.1 Time Students Spend with Technology Daily

In response to this question, teachers gave varied responses, but most of them stated that the children used approximately 5-45 minutes working with technology in their language studies at the elementary level. The teachers gave three distinct time periods for this interview question regarding the theme of the time students spend using technology in class. Since these answers aligned with the time frames I observed, this combination of answer and observation determined the codes. Teachers spent either 5-15 minutes, 35 minutes, or 45 minutes per class using technology. According to the teachers interviewed, this time duration differed due to the type of subject and the number of students in class, which in turn, affected the access to technology and the devices required for this purpose. I observed that in general, kindergarten schools usually spent 45 minutes a day with technology when they were doing centers. On the other hand, elementary students used technology most when learning English. While learning Arabic, classes were much less likely to use technology, only about 5 minutes in length. For example, the Grade 1 Arabic teacher said: “It depends on the curriculum and what the material allows me to do, but it is usually 5-15 minutes.” Both of the English teachers for Grade 1 and Grade 2 stated: “I try to apply technology for most of the lesson, so it is usually 35 minutes.” A Kindergarten teacher stated: “We apply technology most intensively to the Centers time which is 45 minutes every

day." Table 4.1 contains observational data while Figure 4.1 contains interview data. On Table 4.1, the codes represent the number of minutes that technology was used in the classroom. For the figure, the numbers in the column on the left represent hours of technology use and the numbers in the row across the bottom indicate code numbers. Although 10 teachers were observed in total, one of the teachers missed class frequently. Therefore, data corresponds to the time in which she was in her classroom and the times in which there was a substitute teacher in the same classroom. As a consequence, the total number of teachers for whom there is observation data is 9 and not 10. Therefore, for all tables which indicate teacher responses, the total number of teachers being observed is 9, not 10.

Table 4.1

*Teachers' Responses on Time Students Spend Daily Working with Technology (*N = *10)*

Observation	Number of Teachers		
	Code 1 5-15 Minutes	Code 2 35 Minutes	Code 3 45 Minutes
Observation 1	2	2	5
Observation 2	3	1	5
Observation 3	1	3	5
Observation 4	2	3	4
Observation 5	2	2	5
Observation 6	2	2	5
Observation 7	2	2	5
Observation 8	3	2	4

Note. Ten teachers were observed in total, but one was a substitute for one of the teachers, thus, the total number of teachers being observed was always 9.

The periods indicated by the teachers refer to the total amount of time spent in the classroom using technology, including teachers interacting with students and both teachers and children using technology independently. The use of technology in this case refers to the

different ways teachers applied the technology to their daily lessons. Some of the teachers just showed some educational videos to the children. Then, they had a discussion with them afterwards. Other teachers used the interactive programs and educational applications and they involved the children in the process during the classroom time. The classrooms had projectors which allowed the teachers to show everything on a large scale for all the children to observe and interact accordingly.

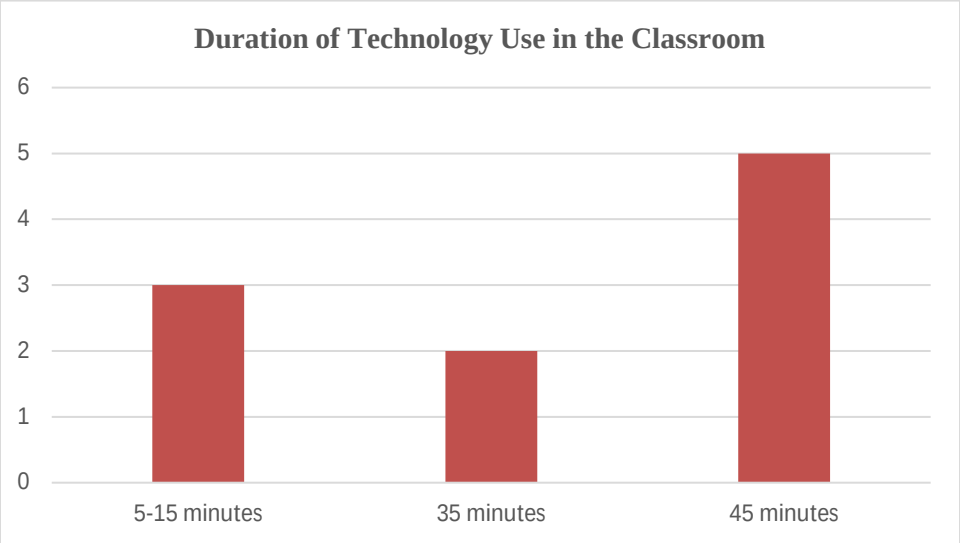

Figure 4.1. Teachers' reports on duration of technology use in the classroom

I observed a specific situation in which the teacher incorporated the textbook along with technology for her lesson and the result was that the teacher and students interacted with the technology together to achieve their learning goals for the day. For example,

> at the beginning of a grade 1 English classroom, a teacher used the ABC Game for Kids app, by using her tablet and a projector to show the students the alphabet. She asked the class what letter they had learned the day before. She called on a student, who named the letter, pointed it out on the screen, and traced the letter on the tablet for the class to see on the projector. Then the teacher used a similar app for numbers. Finished with the review, the teacher then sang a song from YouTube about the new letter of the day. She used the projector to show the students a word that began with the letter of the day and an image to go with that word. Then she asked a student to trace the letter of the day in the word, and held a competition in which the students tried to match words with pictures. Then the teacher taught from the textbook using the projector while the students copied her answers into their textbooks. Thus, the teacher spent 35 minutes using technology.

Based on teacher interviews and class observations, I found mixed results concerning the children's overall benefits from their access to technology in classrooms. The elementary school did not make the computer lab available for students aged seven and younger, prioritizing computer space for the older students instead. For a tracing activity performed by six of the 10 teachers, one hundred percent of the teachers brought the iPad to the student already prepared with a specific letter. I observed that tracing at the kindergarten level was for Arabic letters and tracing at the elementary level was for English letters. In all cases, all the student had to do was trace his or her finger on the letter. The children expressed a negative point of view by way of negative body language because they were not totally involved in the use of technology. The children were not able to open the program themselves, nor operate the device independently. However, the children's experience with instructional *technology* was not entirely negative. This was exemplified by the children's participation in the Kindergarten Centers, which were areas used to provide learning tools such as computers to help students work on their learning skills in areas like math, science, and reading. While in the Centers the children were relatively more involved with the technological devices. One hundred percent of the kindergarten teachers allowed every kindergartener to actively work with the computers by themselves while working on different lessons at different stations. One teacher indicated that this was because the computers were government-issued, not teacher-owned. She went on to explain the reason for that was because the teachers mainly used technology for presentation purposes and not for interaction among the students, reflecting a lack of computers and smart devices available in the classrooms and schools. Additionally, even though the elementary school, which goes from first through fifth grade, has computers, the younger grades were not allowed to use them nor attend computer class. When the students had a rare chance to use the computer lab, in many cases

students were only able to have one lesson in a computer room the entire week. Another related issue was that the available computers were much fewer than the number of students who needed to use them. Based on the observation from the two kindergarten classes, it was found that in kindergarten class number one, which consisted of approximately 25 students, only four computers were allocated for centers. However, only two computers of these four were functional in Kindergarten Class 1, while only three out of four computers were functional in Kindergarten Class 2.

Based upon classroom observations, I found that the elementary school classrooms did not have a single computer. Therefore, the teacher would occasionally provide a laptop or smart device for the classroom with her own money. When this happened, teachers could use their own device during the teaching process; however, this was not a consistent solution for the students. Although the teachers' use of their own laptops may have improved the quality and speed of instruction, it did not actively involve the students in the interactive process of technology use. One English teacher mentioned that while she used her own device for class lessons, she was wary to let her students operate it independently due to the fragile nature of the device.

I spent 16 observation periods in Arabic language classes with equal time devoted to two classes. The Grade 1 class had two teachers, one being an assistant; I observed this class 8 times. The Grade 2 class had one teacher, and I observed this class 8 times. When I observed the Arabic language classes, two teachers controlled the use of the technological device most of the time. One teacher indicated that she believed that this control was the most efficient use of class time. I also observed that two Arabic teachers used tablets and one teacher used an overhead projector. From teacher interviews, I learned that these teachers used technology to show what was in the book to help students with worksheets. During 8 of the 16 observations for both grades of

Arabic, I found a class listening to songs from YouTube to match with a lesson from the book. These three teachers indicated that integrating this technology in the first few minutes or the last few minutes of class was sufficient for the lesson. The Arabic teachers also indicated that the students did not need to use the devices independently.

There was consensus among the majority of teacher respondents that such a limited access to digital devices could be considered a hindrance for the students' use of technology in the learning process. Teachers interviewed also indicated that there were very few opportunities to use the technology, which dampened expectation to its use in the subjects like English or Arabic. According to the teachers interviewed, these language courses could be taught more effectively by using the computer technology with puzzles and tracing activities.

Due to class observations, findings also indicated almost no substantial differences between the kindergarten (students aged 4 to 5) and intermediate levels (students aged 6 to 7) of elementary school regarding the time spent working with technology. Only some minor differences were observed that can be justified as the differences in the access and availability of digital teaching aids for different schools and teachers. These digital aids included the less common teaching aids, such as interactive whiteboards. It was observed that generally a laptop, or any kind of smart device, connected with a projector was the most important and commonly used teaching tool in the educational setting in these schools. In the recent times, smart devices, such as tablets, have become the most frequently used digital device in the classroom. From the interview and observation processes, it was noticed that the teachers were becoming more and more conscious regarding the use of technology in the field of education. Excluding two of the three Arabic teachers, all of the teacher participants indicated that they tried to employ it in every possible manner, whether it is in the classroom, with their students, or to communicate and share

the knowledge with their colleagues. At the same time, it was also observed that the teachers at these schools also tried to avoid the use of technology for the homework assigned to the students. Teachers mentioned that the reason for this practice was students' unequal access to computers at home in comparison to their access to technology at school (Figure 4.2). This was especially important as assigning mandatory homework to all students, despite their unequal access to technology, could result in a segregation of some less-privileged students from the whole group. Figure 4.2 shows the access that students have to technology at school. Only two answers to the question of accessibility were given by the ten teachers. Thus, the codes were "average" and "good." One teacher mentioned: "The accessibility is average." One of the KG2 teachers said, "Accessibility to technology in the classroom is moderate. It's not worse. At the same time it's not good." Another teacher, from KG1, said "The accessibility to technology in the classroom is good."

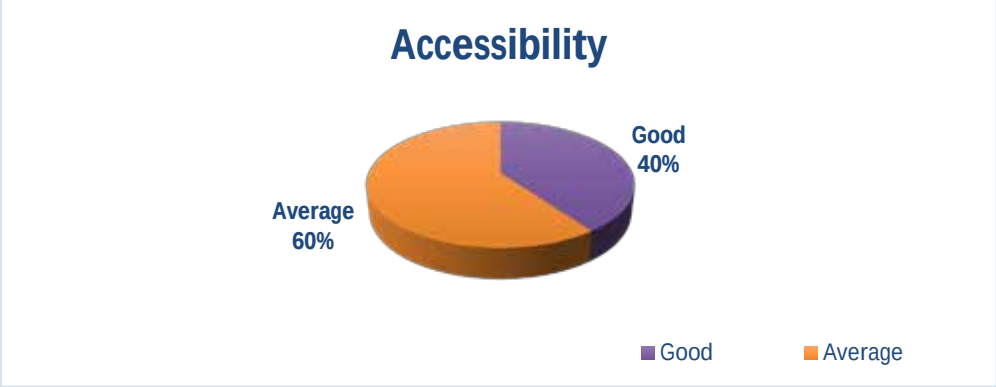

Figure 4.2. Teachers' report on accessibility to technology in the classroom.

4.2.2 Types of Programs Used in the Classroom

In response to this question, the teachers mentioned four types of programs and applications with which children usually work. Based on their answers, four codes were assigned to clearly show the responses to this question. These four codes were the App Store, which

included applications downloaded for mobile phones and tablets; YouTube, which included all videos of children's stories, movies, and children's songs—everything the teachers found on the internet for the class; other educational applications and programs, provided by the Ministry of Kuwait and created by educators, which included lessons on different subjects such as math, culture, and language; and language and number programs which covered only letters and numbers related to their curriculum and all came from a store exclusively from educational staff, which were free in every instance. It should be noted that when these teachers speak about their students, they almost always refer to them as children or kids, especially at the kindergarten and elementary school level. This is part of the culture in Kuwait. This results in a more familiar and comfortable atmosphere that fosters learning for the younger students. As they grow older, independence is encouraged by renaming the students as "students."

The first theme that emerged from this study was the teachers' implementation of various technological applications within their classrooms for the purpose of both education and entertainment within the classroom. The first two types of programs used in the classroom for the purposes of education and entertainment were the App Store and YouTube. For example, the Grade 1 English teacher said:

> I use the educational and pedagogical devices and games from the App Store such as Animal Words, School Alphabet Letters, and Kids Academy where kids trace letters, along with other Microsoft software in PC while the children use different sites such as YouTube for the sake of education and entertainment.

One of the Grade 2 teachers indicated that she guided the students' use of technology to bridge the gap between old knowledge and new information. For example, one of the Grade 2 English teachers stated:

> Children use a number of applications that provide educational material, such as puzzles and quizzes, which help the students recognize old numbers and words while teaching

> them new ones. Most of the time they use sites and materials selected by their teachers or parents.

Additionally, the same answer was also given by the elementary school teachers with regards to the use of YouTube as the most used type of program in the classroom. The Ministry of Education provides CDs for teachers and sends technical support workers to download software onto the Centers' computers. The software includes information about the culture of Kuwait, numbers, new words, 5 characters (mother, father, two kids, one cat), lifestyles in past and present Kuwait, memory games, and coloring. These products are only provided for kindergarten centers. The kindergarten and elementary school teachers who taught English held the opinion that educational applications helped in the development of the children's ability to learn and increase their interest, thus motivating them to learn new things. One teacher revealed that utilizing various applications to reinforce the students' learning of alphabets and rhymes. The kindergarten teacher for 4-year old students also mentioned:

> The 3D version of rhymes and alphabets proved to be interesting for their little brains. It helped the children identify the alphabet as well as learn rhymes easily. The children most commonly used the application "YouTube kids." Generally, the children are not allowed to select these programs and content on their own and they have to use the material selected and provided by the teachers or the parents. Also, we have a specific educational program provided by the Ministry of Education, which we mostly use in "centers" time.

The Ministry of Education provides CDs for teachers and sends technical support workers to download software onto the Centers' computers. The software includes information about the culture of Kuwait, numbers, new words, 5 characters (mother, father, two kids, one cat), lifestyles in past and present Kuwait, memory games, and coloring. These products are only provided for kindergarten centers. Furthermore, interviews and class observations also established that selection and access to the material to be used for educational purposes, such as educational applications, music, movies, and other online materials, varied from school to

school, and sometimes it even differed amongst the teachers working in the same school. Teachers' knowledge and expertise in this regard was also an issue that was directly expressed. For example, one of the KG2 teachers who participated in the research stated:

> The majority of teachers are unaware of the authentic and reliable sources of digital educational material thus they tend to create these materials on their own by searching on Internet or they share them with their colleagues and generally the quality and quantity of these materials is highly dependent on skills and experience of the teacher creating them. The teachers' better understanding of technology and its effective use can result in a better teaching and learning process that would be definitely beneficial for the students' better understanding of the subject matter.

When I sat in a kindergarten teacher's room, I noticed that one of the other teachers was trying to ask that teacher to help her find the most appropriate application on the Apple Store that would help her with teaching specific words or numbers so that she could make the teaching more fun and interesting. She also wanted songs from YouTube to show her students the words and their pictures to give the words more meaning and relevance. The younger teachers tended to believe that students would benefit from technology, while the older teachers were less optimistic. Of the 10 total teachers participating in the study, three indicated that they were uncertain how to download digital materials. One of these teachers was an elementary teacher who used only an old overhead projector. This Arabic teacher had 23 years of teaching experience. Another kindergarten teacher that knew little of technology and how to use it in the classroom had 17 years teaching experience. I observed that she asked younger teachers for help with technology several times. In contrast, the other seven participants were younger teachers with less teaching experience. Their responses indicated that they were much more likely to know how to retrieve digital materials and download educational tools on digital devices but were more likely to ask more experienced teachers which content was best for a lesson. Table 4.2 summarizes the types of computer programs used by students. Figure 4.3 summarizes teacher

responses.

Table 4.2

Types of Programs Teachers Provided to Students in the Classroom

Observation	Number of Teacher			
	Code 1 App Store application	Code 2 YouTube	Code 3 Educational programs	Code 4 Language and math programs
Observation 1	2	8	5	7
Observation 2	3	5	5	6
Observation 3	5	4	4	7
Observation 4	2	8	4	5
Observation 5	5	8	5	7
Observation 6	2	8	5	6
Observation 7	2	7	4	7
Observation 8	5	8	5	5

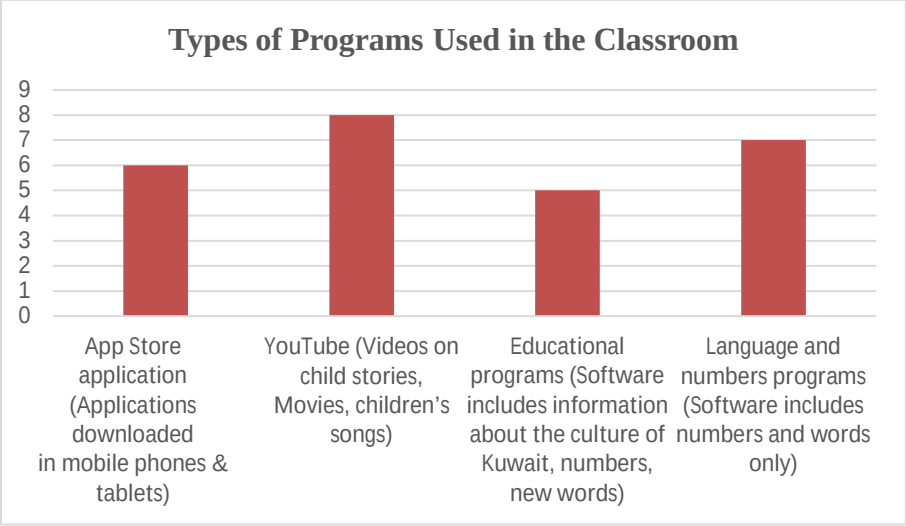

Figure 4.3. Teacher reports of types of programs used in the classroom

4.2.3 Teachers' Preparation and Training of Technology

Teachers' knowledge and ability to use technology in teaching and the learning process is another factor that is especially important in the use of technology in educational processes.

Findings from this study indicated that the teachers' skills and experience proved to be a decisive factor in this regard. It was further noticed that a teacher's inadequate knowledge in this domain hindered the use of technology, even if full access to technology, digital devices, and teaching aids was available. Table 4.3 indicate the responses of the teacher participants to the question: "How much preparation and training did you have as a teacher related to the application of technology?" In response to this question, three main answers were given by the teachers. The first response indicated that they receive adequate training to apply technology in the classroom. For example, six teachers believed their training related to using technology was good. The second response that the training the teachers was not that good and not that poor as two of the teachers believed that the training was average. The third response showed some teachers were not satisfied with the training level to use technology in the classrooms as two stated that the training had been poor and could use improvement. Whether a teacher's answer indicated good, poor, or average was based on the teacher's very short answer. If a teacher said "It is very weak," I marked the answer as poor. If a teacher said, "It is not very good, but at the same time it is not bad," I put it down as average.

Table 4.3

Teacher Preparation and Training Related to the Application of Technology

Code	No. of Teachers
Good	6
Average	2
Poor	2

Another theme that emerged was the apparent need for teacher training. These research findings also revealed that there was a strong realization amongst the teachers about the need of training. For example, the Kindergarten teacher for 5-year old students stated:

> Teachers are not as advanced at using technology as the children are. They struggle with technology while the children are much more advanced than them. There are some teachers who get themselves updated each day to follow the pace of their students in technology whereas some teachers fail miserably and they complain that the school managements are least bothered about all these.

Despite a varied opinion about the condition of their knowledge and skills and the availability of advance training courses in the domain of technology use, most of the teachers agreed that junior (younger) teachers possessed more developed general knowledge and ability to use technology for educational purposes. Some teachers also stated that contrary to this, the senior teachers had problems dealing with technology in classroom settings, and thus, they tended to avoid its use. One of the major reasons for this condition was the inconsistency of the teachers' training. One teacher reported that when a training was available, schools typically sent one or a few teachers, and those teachers were selected by administrators. The teacher went on to report that the selection of teachers was not based on who would benefit from the training and the learning opportunity the most.

Nine of the teacher participants believed there should be basic as well as advanced courses provided for all the teachers. They believed that these courses could enable them to better deal with technology for educational purposes. The one teacher who did not express this view felt that she was already well-trained in this area. This teacher graduated from a university two years ago. It was also stated that there were a number of courses available in this domain that dealt with different aspects of knowledge, skills, and the level of expertise, and either the schools or the teachers themselves should be able to choose a course in accordance to their need for development. One teacher suggested that if these courses were available for all the teachers (without any discrimination), the situation could be much better. During this research study,I noticed that teachers who graduated from education college had a qualitatively different

experience with technology from teachers who graduated from university. Out of the 10 teachers interviewed, 6 attended universities and 4 attended education college. Eight teachers received their education in the State of Kuwait and the two Egyptian teachers studied in Egypt. Teachers who graduated from university had relatively more experience with technology because they were required to take more than two classes related to technology for the classroom. Because they have been more exposed to the use of technology in the classroom, the teachers who attended university seemed to show a level of comfortability with technology that the teachers who attended educational institutions did not.

In addition, the teachers indicated that their school did not provide any workshops to train them on new instructional technology. Particularly, the teachers with 17 or more years of experience expressed a need for additional training on how to implement instructional technology in their classrooms. These teachers mentioned that their level of knowledge of technology were poor at the current time.

4.2.4 The Integration of Technology in Lesson Plans

There was a host of opinions by participating teachers in response to how to integrate technology in a lesson plan. Three main themes arose in relation to the response for this question: school policies, facilitation of work in the classroom, and teachers' expertise in handling technology within the classroom. The first theme was the integration based on the school policy of education. The most commonly mentioned manner of integrating technology in the lesson plan was its accordance to the school or education policy. Based on the class observations and interviews, two teachers at these schools incorporated technology in their lesson plan in accordance to the school's policy. Regardless of the teachers' training and skill

level with technology, all teachers were expected to use technology in their classrooms. For example, one senior kindergarten teacher stated:

> I incorporate technology in my lesson plan in accordance to my own expertise in this domain. I am not comfortable with my own command of technology, and thus I keep it at the minimum level - a failure in using technology in the classroom can be embarrassing for me, but it is a rule, so we have to follow it.

The second theme that emerged was the facilitation of the work in classrooms. Some teachers showed that they integrated technology in their teaching practices as it makes their work easier. There were four teachers who specifically stated they use technology to save time. A junior teacher responded to this question by stating:

> Using technology for the sake of the subject matter makes my work quicker and easier. I feel comfortable while teaching with the help of technology in such situations. My only concern is effectively supervising the students while they are working on the given task. Yes, the use of technology differs based on the content. Some material makes it easier to incorporate technology in a lesson plan. Also, some of the context makes it hard to apply technology, so you need to figure out what the best application is for it to make the lesson interesting and have the students interact with it.

The third theme that emerged was that some teachers integrate technology in their work as they have adequate expertise that enables them to manipulate technology for the benefit of their teaching objectives. Three teachers followed not only the school policy, but also their own level of expertise in this domain. For example, the Kindergarten 2 teacher said: “I try to apply the technology to match my level of experience with technology. Since I don’t have a workshop to learn from, I use technology in my own free time to learn about it and get more comfortable using it.” Regarding the differences in the use of technology, most of the teachers replied that the level of technology used could vary from class to class, in accordance to the students’ level of expertise.

It was clear from the observation that the senior teachers who had 17 and 23 years of experience did not want to change their ways of teaching because both of them believed that the

traditional style with lectures was the best way for students to learn the necessary material. They thought that this way sufficiently prepared students for the next stage or grade. The experienced teachers also noted that applying traditional methods was especially important when teaching the Arabic language. In addition, the curriculum did not allow for the Arabic teachers to apply technology to the lessons because there were so few options available in terms of applications and other digital programs. In particular, the grammar in Arabic is very difficult, and a textbook was viewed as the resource that goes most in-depth.

One junior teacher expressed the sentiments of the others with nine or fewer years of teaching experience, explaining that she felt confident and capable of incorporating technology into a lesson. She went on to clarify that new teachers typically follow what is new in technology, and they believe that most of the children have access to technological devices. She added that teachers early in their careers come to school with a lot of knowledge about specific technology and have more likely been using technology in their daily lives for years. She further noted that the teacher is a role model for her student, particularly with respect to their use of technology. Since students see teachers using their own devices in a positive, responsible way, they are able to see technology as beneficial to their educational experience, as well as their daily lives. Finally, she indicated that teachers reinforce this idea by verbally encouraging their students to interact with educational applications and programs while at home.

Based upon teacher interview data, it was also clear that the use of technology changed by grade levels. The kindergarten classes used technology in an intensive way, applying it as much as possible. On the other hand, elementary classes used technology less often. Grade 2 teachers used technology less than those teaching in Grade 1 because the students were able to focus and pay better attention to the teachers and more traditional lessons with lectures and

books. Table 4.4 contains summary of interview data.

Table 4.4

Deciding the Way to Integrate Technology into a Lesson Plan

Code	No. of Teachers
School or Education policy	3
Makes the work easier, saves time	4
Level of expertise (how to use technology)	3

4.2.5 The Use of Technology in the Classroom

The data collected for this study highlighted the teachers' awareness in relation to the importance of using technology for education purposes. Three themes emerged for responses for this question, so the codes became: assists, hinders, and both assists and hinders. The first theme indicated that technology has a positive and assistive role in the classroom. Most of the teacher participants stated that the use of technology assisted in the student's learning in the classroom. Technology can assist in the classroom by helping students and teachers with pronunciations when they are uncertain. For example, one of the KG2 teachers said:

> Using technology tools through the class time is so helpful to me and to children too, especially with shy and struggling students. Most of the class wants to participate when I use the iPad. Also, in kindergarten we started to teach English words and letters. Since I do not have good experience with English to pronounce the words in a good way, I just use an application from the App Store or use YouTube to show the children how they can pronounce it in the correct way.

The second theme was the complete opposite of the first one, as it was found that technology could hinder the natural flow of the lesson. A few of the teachers believed there were some hindrances that could occur during the technology time, such as an inability to access technology when the teachers need it. The kindergarten teacher for 4-year old students stated:

> Use of technology proves to be a hindrance sometimes in the learning process when the teacher has a lesson plan based on technology but the access to it is not possible. In such cases, effective delivery of subject matter becomes problematic and has a negative impact on children's learning process.

The third theme was indicated by only one teacher who believed that technology could play both roles. A teacher who taught English in the elementary school stated that she saw the technology use in her classroom as a hindrance and assistance as the same time and stated:

> It is great assistance to use technology in our classroom. It is useful to increase children's attention and interaction with me and with their peers, but sometimes the teacher is not able to execute her technology based on the lesson plan due to some technical problems. It is the teacher's responsibility to have a plan B to deal with such situations, otherwise it will affect the learning process in a negative manner.

As observed during English language classes, technological issues occurred often. In one class, the teacher was teaching the students when the iPad turned off by itself in the middle of class. When the teacher tried to reconnect it, the outlet did not work. She asked for help, but the support assistant did not come to school that day. To solve the problem, the teacher went back to the traditional teaching method of using the textbook. Figure 4.4 shows a summary of interview results.

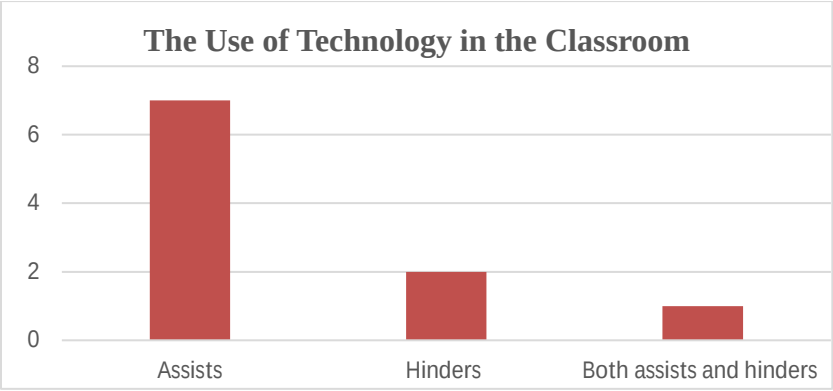

Figure 4.4. Teachers' perceptions about the use of technology in the classroom

4.2.6 Teacher's Role When Students Use Technology

The teachers who participated in this research study had a similar response to this

question; most of them stated that they play the role of a guide and monitor while their students are using technology. These responses were fit into three codes: taking part in the process, guiding from a distance, and monitoring. For example, one of the KG2 teachers stated:

> I think it is mandatory for teachers to guide their students while they are using technology in educational settings. If they are given an unlimited and unsupervised access to technology, they will lose focus on their target topic and material. Furthermore, they need supervision to ensure that they are using technology in the required manner thus the teachers' role as a guide and supervisor cannot be considered optional. It is obviously mandatory.

Another teacher from KG1 said:

> At the beginning of the year not all the children are familiar with computers, so I should help them when they use the computer at centers time. I teach them how to open it, shut it down, what kind of program they should use, how to use the mouse in the right way, and how to sit on the chair properly.

In contrast, another teacher from KG1 stated:

> I would like to constantly check how my children use the computer or any kind of devices to make sure they use it in the best way to achieve our goal of the day. I know most of them are familiar with the tablets, but not all of them are familiar with the computers, so that is why I need to check on them frequently.

A Grade 2 Arabic teacher responded to this question by stating:

> I want to guide my students how to use technology in an effective manner, but sometimes I realize that they know it better than me. They are good at using these digital devices whereas I usually struggle with them. It gives me an uncomfortable feeling and makes me reluctant to use the technology in the classroom. I want to play a better role in this regard, so I decided to monitor their use instead.

From observation of the kindergarten, it was found that most of the teachers believed that a majority of the children come to school and have enough knowledge about how they could use the different kinds of devices, such as the tablet or smart phone, because they use them at their homes most of the time.

Therefore, the teachers only explained how a specific application worked in the beginning of the class, which almost always took around just one minute to do. They did not

report how to use the device itself; rather, they described the instructions on how to perform a specific educational activity. Table 4.6 describes the self-reported role of teachers when students are using technology in the classroom. Figure 4.5 summarizes teacher responses.

Table 4.5

The Role the Teacher Plays When Her Students Are Using Technology

Observation	Number of Teachers		
	Code 1 Taking part in the process	Code 2 Guiding from a distance	Code 3 Monitoring
Observation 1	2	3	3
Observation 2	3	1	4
Observation 3	2	3	4
Observation 4	2	3	4
Observation 5	2	2	4
Observation 6	3	2	3
Observation 7	2	3	4
Observation 8	1	4	3

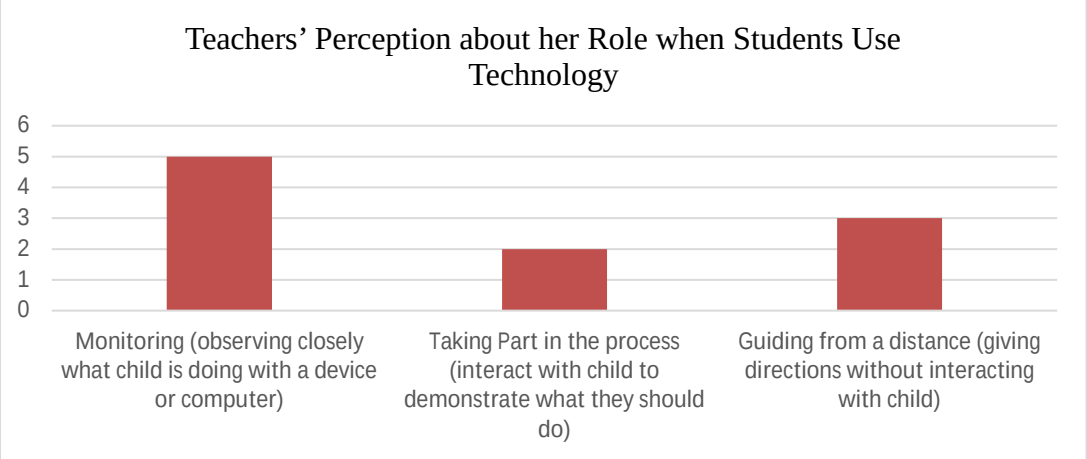

Figure 4.5. Teachers' perception about her role when students use technology

Below is an example from my notes that reflects the teachers' role concerning technology in the classroom.

> From KG1, before they go to the Centers the teachers give them feedback or review with them the lesson of the previous lesson. Then each student chooses the center he or she wants, and the teacher sits on her chair and observes what each student is doing, including the students who are using the computer center, all 45 minutes. She does not take part in the process or give them directions on how to turn the computers on or off, or give them any other information.

4.2.7 The Role(s) of Technology in the Classroom

The responses of the teachers participating in this study indicated that the use of technology in the classroom was necessary for a student's school experience. The digital devices and programs supported the teachers in the delivery of subject matter. In addition, it facilitated an interaction between the students and between the student and his or her teacher. Teachers reported that technology could be considered useful for the sake of demonstration as well as interaction. For this question, the teachers' responses were divided into two codes: technology used as a demonstration and technology used as demonstration and interaction. Nine teachers expressed that during a lesson, they demonstrated using the technology and then allowed the students to further interact with the technology. A KG1 teacher research participant said:

> Of course it plays an important role. It is used to demonstrate and motivate the interaction between students and between students and me. It is a helpful and encouraging tool for all the students in the classroom. All of them want to participate and play with it, such as tracing, looking at a story, or listening to music and dancing along to songs and videos. It makes the lesson more interesting. The use of technology serves the purpose of interaction amongst the stakeholders of the educational process. Students and teachers or students and their peers can interact with each other through the technology used in the classroom. It can facilitate the presentation of the subject material.

In contrast, the one teacher who said she used technology solely as a demonstration was the Grade 1 Arabic language teacher, who stated:

> Usually I used it for demonstration purposes in my lesson for a few minutes because when I use technology, I do not notice a kind of interaction in the classroom between students or me.
>
> From the observation, the most interaction in the class occurred between the children

when the teacher used technology, especially if there was a contest between two or more students. Interaction with the teacher did not occur as often because the teacher was always seen as the guide. In this case, technology was helpful because it drew out the students who had a shyer disposition. These students wanted their team to win, so they became more active and engaged in the activity. Table 4.6 shows a summary of observational data. This is followed by Figure 4.6 which shows a summary of interview results.

Table 4.6

Role of Technology in the Classroom

Observation	Number of Teachers	
	Code 1 Use it as a demonstration means of teaching	Code 2 Use it as an interaction and demonstration
Observation 1	1	8
Observation 2	2	7
Observation 3	1	8
Observation 4	0	9
Observation 5	1	8
Observation 6	2	7
Observation 7	1	8
Observation 8	1	8

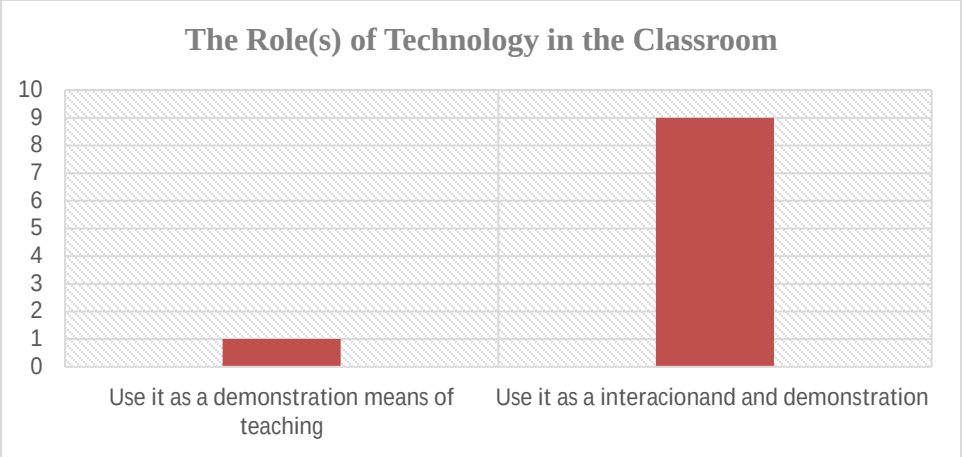

Figure 4.6. Teacher reports about the role(s) of technology in the classroom

4.2.8 Obstacles While Using Technology in the Classroom

The data collected from the teachers indicated that there was pressure on teachers to use technology in the classroom, especially new programs. The most prominent barriers to adding more technology in schools and effectively using it were the limited access to technology and inadequate skills of the teachers, which resulted in a sluggish adaptation of technology in schools. Another physical obstacle to the teachers' use of technology in the classroom is the fact that teachers must move from room to room; they do not stay in one room all day, so any technology they choose to bring from home must be carried with the teacher all day. Four themes emerged as a result of this question, so four codes were subsequently created. Two teachers said that the barriers were related to inadequate skills and a low level of knowledge. One focused on the electric problems inside the classroom as the barrier. Two teachers brought up the barrier that is created by traditional curriculum. Lastly, five teachers stated that they had an inadequate access to technology. One elementary school teacher pointed out the power outage and lack of backup system as an important hindrance in applying technology in classroom settings. She stated:

> I devote a significant amount of time in preparing a technology-based lesson plan but sometimes I am unable to execute it due to unexpected power outages and as there is no backup power supply system, I have to work with my plan B (manual delivery of subject matter). Thus, all my efforts go wasted. It demotivates me and I do not want to put in effort in preparing another technology-based lesson plan.

Teachers interviewed for this study mentioned the teachers' low level of knowledge as a major obstacle in using technology in classroom. Two teachers from kindergarten and one teacher from the elementary school also mentioned during interviews that it was not only the low level of knowledge about technology that hindered its application, but it was the teachers' attitude towards it that was of significant importance.

My research findings also indicated that the majority of teachers had an enthusiastic and positive attitude towards the use of technology in educational settings, though there are some teachers who still believed that there was no need for technology in an education department and a subject's curriculum, and that sometimes using technology was even an obstacle in the teaching process. Only two of the Arabic teachers expressed a preference for traditional curriculum. The third Arabic teacher replied to this question by stating:

> Generally, the main reason for the teachers' negative opinion about using technology in the classroom is their naivety or incompetence to acclimatize with the use of technology in educational settings. Another reason for such behavior is the teachers' personal hesitance and aversion to using technology along with their belief in traditional teaching methods. Fortunately, the teachers with such opinion and state of mind are just few in number.

Five teachers noted that they believe there was an inadequate access to technology at their schools with old and unsuitable devices. This aligned with what I observed in Kindergarten Level 2 the projector in unmovable and only shows on a tiny part of the wall. The teacher could not seem to control the settings to get a bigger, clearer picture due to the projector being on the ceiling. Furthermore, they indicated that teachers lack knowledge and a receptive mindset regarding the use of technology in the classroom. Another teacher of the English language provided additional details, noting:

> The classes are not prepared with any technology devices or tools. We have only one overhead projector inside the class, and I don't think it is as useful as the iPad. So, I bought everything from my own money because I believe that integrating the technology in our lesson will be more fun and interactive, and at the same time it will save me time and effort rather than preparing in the traditional way. Also, the administration of our school encourages us to use it in our lessons, but occasionally I feel tired to carry the projector and laptop from class to class because it is heavy.

I observed that four teachers from the elementary school had their own projector, iPad, laptop, and manual pull down wall. One teacher noted that in Kuwait, teachers move to each class throughout the day, so they do not have a permanent home room. Therefore, the teachers

felt the need to point out that carrying multiple technological devices throughout the day, in addition to other teaching material, could be tiresome. However, the teachers still believed that technology was important for the students, so they were willing to purchase expensive, high-quality devices with their own money. Out of the ten teachers interviewed, seven teachers told me that they had spent their own money on technology for their lessons. Another observation of a teacher participant was that she tried to apply technology to curriculum for a specific lesson as much as possible. She went on to note that the context needed lecture and teacher instruction more than just a supplemental application. Table 4.7 shows a summary of observational data; Figure 4.7 shows a summary of interview results.

Table 4.7

Obstacles with Respect to Using Technology in the Classroom

Observation	Number of Teachers			
	Code 1 Inadequate skills and low level of knowledge	Code 2 Electricity problems	Code 3 Traditional curriculum	Code 4 Inadequate access to technology
Observation 1	2	1	2	4
Observation 2	2	1	2	4
Observation 3	2	0	3	4
Observation 4	2	0	1	6
Observation 5	1	1	2	5
Observation 6	2	0	2	5
Observation 7	3	1	2	3
Observation 8	2	0	3	4

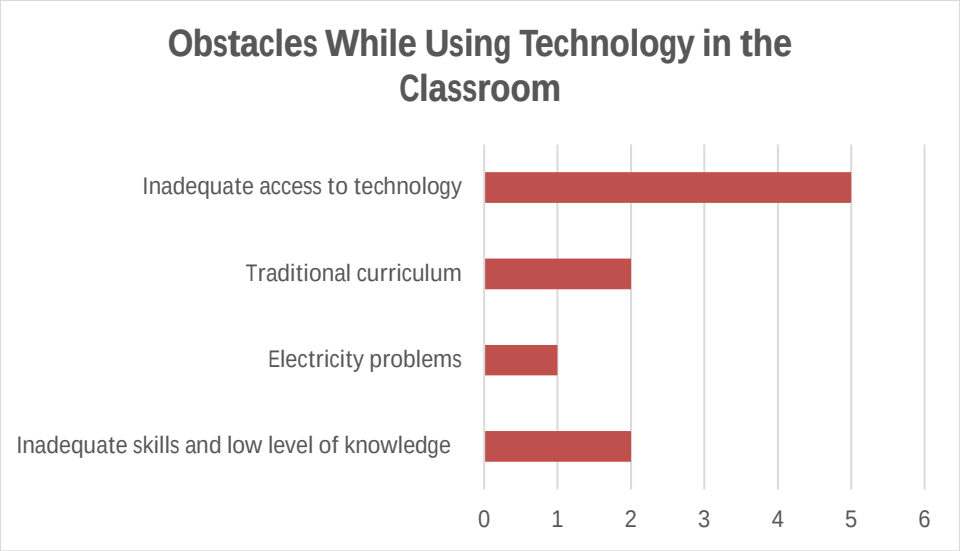

Figure 4.7. Teacher reports about obstacles while using technology in the classroom

4.3 Parents' Perspectives about Children's Use of Technology at Home

4.3.1 Time a Child Spends Using Technology

The parents were of the view that their children spent a sufficient amount of time working with technology. The 20 parents gave five different responses to this question, so each response became a code. Every parent that was interviewed said that their child spent either 10, 7, 5, 3, or 2 hours with technology every day. The most popular response was given by eight parents who replied that their children spent almost three hours working with technology each day outside of school. It was also mentioned that the time spent using with technology had a significant impact on the students' ability and growth in this domain. One of the parents of a 5-year old kindergarten student stated:

> Children spend enough time working with technology and it has a prominent impact both on their ability and their development in the field of technology along with their growth in language acquisition and social interaction. Due to the differences in duration of time spent using technology, the children's level of knowledge and expertise may vary.

However, nine of the 20 of the parents agreed that time spent in using technology had increased

with the passage of time, and now they spent much more time with technology in comparison to the time their older siblings had spent at the same age. According to parents interviewed, there were some aspects that play an important role in the time spent in using technology. One elementary school parent research participant stated:

> The children's time spent in working with technology is highly dependent upon the environmental and economic factors. It is absolutely clear that the children's time spent with technology has a significant impact on their educational outcomes and the children from low socioeconomic backgrounds who are lacking expertise in this regard may demonstrate a low level of educational outcomes.

Based upon interview and observational data, I noticed that the children who used technology in their home most of the time tended to use technology often in school. The kindergarten students whose parents were interviewed preferred to use computer centers more than other centers in class. The students of the parents interviewed knew how to turn on the computer, go to the program that contained his or her lesson without asking for help, and turn it off when done. Table 4.8 shows a summary of interview results. The responses include both weekday and weekend usage and many children use technology all day on the weekends.

Table 4.8

Time the Child Spends Daily Using Technology at Home

Code	No. of Parents
10 hours (weekend only)	2
7 hours (weekend only)	4
5 hours (during the week)	5
3 hours (during the week)	8
2 hours (during the week)	1

4.3.2 Types of Programs Children Use

The parents' responses to this question were similar, as all of them mentioned the use of

educational material by their students. As educational materials can include many options, seven themes emerged that classified various educational material into more specific types of programs. Thus, the codes were as follows: games (in equipment: PlayStation, Xbox), App Store (Applications downloaded in laptops, tablets, and phones), entertainment (videogames in laptops, tablets, and phones), YouTube (videos of children's stories, movies, and children's songs), combined subject programs (math, science, religion, and others), language programs (only language related), and math programs (only math related). Most of the parents mentioned the use of material available on YouTube or the App Store. For example, one of the KG2 parents said:

> My child loves to use technology. He can operate his iPad independently, but he can only access the programs that I have selected and downloaded from YouTube, such as cartoons or songs from the Internet and App Store, such us numbers or math, alphabet letters, and words in English and Arabic language for education purposes. He cannot select the material himself.

Technology was also used for entertainment at home. For example, another Kindergarten parent of a 4-year old student responded:

> My child usually uses his iPad for entertainment or watched cartoon programs and the educational material available on YouTube. He selects the rhymes and poems himself and changes them if he feels them uninteresting. He also uses games, tracing, coloring, or puzzles and can solve them independently.

From the observation, most of the students who were familiar with technology liked to use videos, puzzles, or tracing, especially kindergarten students. The types of devices and applications the students enjoyed seemed to be easy to use, even at their age.

The findings of this research study indicated that most of the parents agreed that the students were well-versed in the use of technology and that there were no problems regarding their knowledge, skills, or operating capabilities as they could easily surf the Internet and use the function of graphics applications and word processor. One of the parents said: "Using an iPad is not so difficult for a child, but to use all the functions right, then to be self-critical online,

knowing which pages are better than other ones - that needs to be taught."

It is important to note that generally the parents had a positive opinion about the students' capabilities regarding their use technology. Most parents allowed their student to use technology for three hours a day and did not see this as harmful to their student's development, particularly with language. One parent indicate that these programs could help their student increase their vocabulary to communicate with others and express their feelings or ideas in the best way. Nevertheless, there were some concerns regarding the length of time students had access to technology during their free time at home, shown by one parent research participant who stated:

> The students' skills are dependent upon how much access to technology they have outside the school and how often they use it. In addition, it is also important which activities they use the device for, other than games and Internet surfing.

Table 4.9 shows a summary of interview results. For this question, parents were able to respond with more than one answer, so the total number of responses will be higher than the total number of parents at times.

Table 4.9

Kinds of Programs the Child Works with

Code	No. of Parents
Games (in equipment: PlayStation, Xbox)	7
App Store (Applications downloaded in mobile phones & tablets)	17
Entertainment (Videogames in laptops, tablets & phones)	10
YouTube (videos on child stories, movies, children's songs)	18
Combined subjects programs (math, science, religion, others)	11
Language Programs (Only language related)	11
Math Programs (only math related)	15

4.3.3 The Parent's Role

In response to the question regarding the parent's role, there were a variety of answers.

five codes were made for this question: monitoring, taking part in the process, guiding from a distance, rarely checking, and no specific routine. Eleven parents replied that their role was to monitor their child and that they performed the role of supervisor while their child used technology. For example, one of them stated:

> My child can access only a few websites independently. Furthermore, I select the material that my child can see or play with and I observe him while he is using the iPad or any other kind of devices at home. I do not allow him to select the material himself as there is a lot of material that I consider unsuitable for him to watch.

Other parents support the previous finding by indicating that they use observation to monitor their children's use of technology at home. For example, another parent explained that she observed her child by saying:

> I let my child use technology on her own. I feel good that she can operate the iPad or iPhone independently as the use of technology is important for her future growth. But I am checking what she is doing as I know that she can select something that is inappropriate for her.

The data collected for this research indicated that most of the parents agreed with the idea that the students' use of technology should be supervised so they can access the material that is suitable for them. However, the parents express varied opinions about the level of parental control on their use of technology. One of the Grade 2 parent interviewees mentioned that she guided her child, but from a distance. She explained this by stating:

> I strongly believe that I should guide my child's use of technology, but I cannot manage to do it due to my professional responsibilities. I occasionally discuss with her what she has been doing on the iPad, iPhone, or computer and check the search history, though I feel it is not enough. I want to play a better, more active role in her use of technology.

Five parents gave brief answers in response to this question. For example, one parent said, "I always try to be a part of the process when my daughter uses her iPad, especially when she downloads something." In contrast, a parent of a Grade 2 student said she rarely checked on her child: "I don't check on my daughter all the time when she uses technology. She knows what

she is allowed to use and not use. I want her to know I trust her when she uses her iPad by herself. I am confident she can use technology appropriately. I think it is important to let her have some freedom as it builds her own self-confidence." Table 4.10 shows a summary of interview results.

Table 4.10

Role the Parent Plays When Their Child Uses Technology

Code	No. of Parents
Monitoring (observing closely what child is doing with a device or computer)	13
Taking part in the process (interact with child to demonstrate what they should do)	2
Guiding from a distance (giving directions without interacting with child)	2
Rarely checking	2
No specific routine	1

The following responses from the teacher and parent interviews and the classroom observations are used to answer the study research question 2: What are the perspectives of teachers and parents in two Kindergarten and Elementary schools in Kuwait about the influence of technology on the social and language development of children?

4.4 Teacher Perspectives on Technology in Early Childhood Classrooms

4.4.1 The Impact of Technology on the Social and Language Development of Children

The data collected and analyzed for the sake of this study highlighted the teachers' positive opinions about the changes that take place in students' linguistic and social development. Eight of the teacher participants agreed with the idea that using technology had improved the students' linguistic knowledge and social interaction, especially when learning English. One of the teachers stated: "Using technology has increased their vocabulary and

reading, especially the alphabet letters and a few words. The children who use technology more frequently understand and use more words in comparison to those who use technology less frequently." This teacher's statement highlights the teachers' belief that technology is a useful tool when teaching language.

The teachers' opinions about the students' social interactions and linguistic knowledge were also positive, and eight of the teachers mentioned that they had observed a better level of communication and reading by the students who used technology in school settings as well as at home. For example, one of Grade 2 English teachers stated:

> The students who frequently use technology have a wider social circle. They know more people in comparison to their counterparts who do not use technology so frequently. These students are usually more interactive and like to show their understanding about technology in their peer group. They are socially more active than their classmates who less frequently use technology.

Two teachers stated that their opinion was that technology did not cause improved social interaction or language skills. For example, one of the Grade 2 Arabic language teachers stated that:

> I do not think using technology in my classroom will give more interaction or improve the student's social or language skills because we are focusing on writing, reading, and grammar. The writing needs pencil and paper more than anything else.

It was observed that out of every 25 children who were familiar with technology, 20 always tried to involve themselves more than other children when the teacher used any kind of technology. Specifically, this occurred in the kindergarten and English classes. These students were more active with their peers to solve problems, and were able to read a few words, whether their teacher showed the material through the projector, laptop, smart phone, or tablet. Regardless of grade, the students wanted to use the device that their teacher used in class. The one exception was during Arabic lessons. In this case, the material was almost always shown on

an old projector, and most often lasted only 5 minutes. Based upon teacher interviews, I learned that the material typically taught during Arabic language instruction course was not typically shown on technological devices. Table 4.11 shows a summary of interview results. In Figure 4.9, the numbers in the row along the bottom indicate the number of teachers who responded in a certain way.

Table 4.11

The Impact of Technology on the Social and Language Development of Children

Observation	Number of Teachers	
	Code 1 Better social interaction & lang. skills	Code 2 No social interaction & no distinguished lang. skills
Observation 1	8	2
Observation 2	8	1
Observation 3	9	0
Observation 4	8	1
Observation 5	9	0
Observation 6	7	2
Observation 7	8	1
Observation 8	8	1

4.4.2 Suggestions for the Improvement on the Use of Technology for the Benefit of Children

There was an agreed upon notion among all teacher research participants that the use of technology in the field of education had facilitated their teaching and learning process in a number of ways. Now, the teachers said they were capable of creating the educational material on their own, as well as copying available materials in no time. Furthermore, the teachers who were interviewed believed that it was also possible for them to produce and use presentations, movies, and music as this all accelerates the teachers' work and interests the learners. Once

again, the effectiveness of using technology seemed to be dependent on teachers' skills and experience in this domain.

Most of the participating parents and teachers in the current study were of the opinion that there is room for improvement in the use of technology in educational settings. Both parents and teachers mentioned a better access to technology, provision of better and adequate devices, and basic and advanced training for the teachers as the basic elements for improvement in this domain. Three codes were made to include responses of this question: teacher training, integration of technology into the classroom, and the need for better access to quality equipment. Four teachers responded by saying that teachers should be well-trained, which aligns with the first code. For example, the Grade 2 English teacher stated:

> Teachers' training is a basic need for improvement in use of technology in the field of education. Without well-trained teachers one cannot expect any change in the current situation as the teachers work not only as a guide and facilitator but as a role model as well. Their use and expertise in using technology can motivate their students to advance in this domain.

Three teachers expressed the idea of each grade having a customized program to help integrate technology into the classrooms. A Grade 1 Arabic language teacher stated that:

> For me, as an Arabic language teacher who taught different grades of elementary school and worked with traditional curriculum, I would suggest creating a customized program for each grade, based on subject material. This original programming could be delivered to the students on a CD or similar technology. It would be more helpful for me to integrate the technology in my lesson easily and be more interesting, particularly when the work is created by two departments, or more, such as the Arabic language department and a computer department. It will be more attractive to the students if it facilities the process of teaching, especially with reading and grammar.

Three teachers suggested that the teachers have better access to better quality equipment. For example, a kindergarten teacher for 5-year old responded to this question by stating:

> In order to make the use of technology more beneficial for the children, there should be better access and up to date equipment along with suitably trained teachers. At the same time, we cannot neglect the parents' positive attitude and encouragement for this purpose.

Well-trained teachers and parents can guide and help the students to get the most benefits by using technology.

From the observation, kindergarten school teachers were the ones who took time to connect the projector with the device for the lesson. The teachers did this because they were the ones who brought their own devices to school for the benefit of the class. This wasted at least 3 to 5 minutes of the class time. Also, sometimes the device did not work due to a defective outlet, which placed the teacher in an uncomfortable position when relying on technology for the content of a lesson. During the teacher interview phase, some teachers said they tried to prepare two lessons in case another plan was needed. Table 4.12 shows a summary of interview data.

Table 4.12

Suggestions for the Improvement on the Use of Technology for the Benefit of Children

Code	No. of Teachers
Creation of customized programs for each stage	3
Provision of better and adequate devices	3
Well-trained	4

4.5 Parents Perspectives on Technology in Early Childhood Classrooms

4.5.1 The Use of Technology and its Effect on a Student's Social and Language Development

In response to Question, 14 of the parents shared the opinion that use of technology had a positive impact on students' social and language development. It was mentioned that use of technology by students in schools and at home was becoming more commonplace, and technology was used in the classroom and school in a number of ways. Parents were aware that the teachers used technology not only to show presentations, but also for various activities. They were of the opinion that all of this not only supported the educational process, but at the same

time improved their students' linguistic knowledge and social abilities. Regarding the impact of technology on the students' linguistic knowledge and social interaction, a parent of a 4-year old student in kindergarten stated:

> The technology is valuable for children and they are more involved in the subject when teachers use technology tools for explaining it. They understand more, and it gives them linguistic enrichment and from a social perspective it increases students' interactions with their mates. I think it is a motivating tool and it increases the children's competence in language and social interaction. I feel it is helpful in their educational development.

Another parent noted the relationship between linguistic and social development with the child's use of technology. This parent, whose student was six-years old and in Grade 1, responded to this question by stating:

> Technology is developing them a lot and this development is evident in their linguistic and social abilities. My daughter has shown a rapid growth in her linguistic knowledge and she is good at communicating with others including her classmates and friends along with her grandparents. She has a good understanding of what she studies at school as it is taught in an interesting way that is easy to remember. I feel that this all happened due to her access to and command of using technology.

Technology use can also potentially improve a student's vocabulary. For example, another parent, whose student was 5 years old and in kindergarten, brought up another aspect by stating:

> Technology is helping the linguistic understanding of children. The children who are well versed at using technology get to know more words in comparison to those who do not use technology. However, there is important to note that even though their vocabulary has improved, they hardly know to write the new words they have recently learned. On the other hand, use of technology has definitely developed the skills of the children from a social perspective and they are able to and do communicate better and sometimes read at a higher level in comparison to the children of previous times and their counterparts who do not frequently use technology."

Parents seemed to be very excited about the emergence of technology and their students' familiarity with it. They stated they were happy that their students could easily handle the devices which they themselves could not manage to handle. All of them said that they loved watching their students learn things which took them years to understand. Most of the parents

agreed with the idea that the use of technology had improved their students' literacy. Understanding and using more words had been mentioned as a positive, and most of the parents considered it to be the result of using technology at home and school. According to the parents interviewed, students were more involved in the educational process when teachers used technology tools for explanation of subject matter. One of the parents interviewed whose student is 5 years old and in kindergarten stated:

> I think that the use of technology has improved my son's speed and level of learning. He knows much more in comparison to what his elder brother knew at this age and the basic reason for his better knowledge is that the use of technology was not available for my elder son. Technology has a positive impact on his subject knowledge.

While 14 parents responded that their child had better social interaction and language skills as a result of using technology, four believed that technology caused lower social interaction and language skills. This was expressed by some parents who mentioned negative impacts of using technology on their student's social interaction, with one elementary school parent of a six-year old stating:

> My daughter spends a considerable time with her iPad. In such times, she prefers to sit alone and does not talk to us or go outside for visiting family or friends. Sometimes I feel that her communication in virtual settings has been improved but she is communicating less in the real-life situations. I am worried that this behavior can make her self-centered and isolated in her environment.

Another 4-year old kindergarten parent research participant mentioned aggression and violence as another negative impact of using technology. He stated that:

> Sometimes I feel that my son is so aggressive due to the content that he watches online. This aggression has a negative impact on his communication in his environment. He is not liked by his classmates and I feel that this use of technology has a negative impact on him. Technology is isolating him.

From attending classes and observing the students, I noticed that the effects of technology on children were both positive and negative. Some of the students preferred to use the computer most of the time when the teacher allowed them. They did not seem to want to interact with

others because they were focused on their computer during the computer center time or when the library center had an iPad. Some of them sat together and tried to copy specific attitudes and behaviors of famous characters they saw on YouTube. One student tried to hit other students because he pretended to be the famous wrestler, John Cena. On the contrary, when they used it in a group, one could see that the students cooperated and communicated with each other to try to win the game or contest through the use of technology. Some of them had more information than their peers who did not use as much technology. Table 4.13 shows a summary of interview results.

Table 4.13

How the Use of Technology Affects the Social and Language Development of the Children from the Parent's Point of View

Code	No. of Parents
Better Social Interaction & Language Skills	14
Lower Social Interaction & Language Skills	4
No Social Interaction & No Distinguished Language Skills	2

4.5.2 Parents' Suggestions to Improve Technology's Benefit

Parents had a number of suggestions regarding this question, but they all were of the opinion that a better access to technology could have a better impact on their usage and command on it. One of the kindergarten parents interviewed stated:

> Sometimes the children are not motivated to work with technology and the main reason for it is bad access to technology. If it happens at school, the children have to work in groups on one computer. Sometimes old and slow computer devices demotivate the children due to their long processing time, so there should be improvement in this regard.

It was also discussed that an easier way to improve the student's time spent using technology and their capability to use it could be permitting them to use their personal devices

such as laptops or tablets during class. Research participants were generally positive about this idea; its approval was dependent on the school's policy in this regard. One of the parents also mentioned that such permission could be taken as unfair if some students could not bring their own devices to be used in school. Thus, while most teachers and parents agreed that technology had benefitted students, there were different opinions on how to implement it more in school for student's development.

Parents also expressed the desire to limit the time their children use of technology, especially on weekends. Most mentioned the ideal time would be two hours a day. They wanted to be able to tell their child when it was time for a different activity, rather than continuing to use an iPad for hours at a time. One kindergarten parent of a 5-year old student mentioned health concerns, especially with eyesight. Four parents expressed worry that their child would experience social isolation due to focusing too much on devices. Another concern was the potential for aggressive tendencies. Therefore, they believed that limiting the use of technology would lower the risk for these potential outcomes.

CHAPTER 5

DISCUSSION

We are living in the era of technology, and every passing day is bringing a host of changes in the ways of doing daily routine tasks. Technology is playing a vital role in every walk of life, and the ability to use technology is considered one of the fundamental skills that is required to be successful in any field of life, whether it is an industry or the field of education (Zhao, 2007).

The present study was conducted through classroom observations and interviews with teachers and the parents of some of their students who were selected for this study and voluntarily gave their consent to participate. I made several visitations to the schools to conduct the observations and interviews. Specifically, I made two observations per week for each classroom, with a total of 8 observations within the period of one month. These observations were completed based on the daily schedules of the school and the different classes conducted for each grade (K-2). I observed only Arabic and English language classes focusing on teachers' and students' use of technology.

This study was aimed at understanding the use of technology in early childhood school and home settings as well as its impact on students' social and language development. The study was set up to focus on two main research questions. The first question was: How is technology being used in early childhood classrooms and homes of children in two kindergarten and elementary schools (Grades 1 & 2) in Kuwait? Along with this question, two sub questions were created. The first sub question was about the teachers' and parents' views about their roles in children's use of technology. The second sub question addressed the factors that facilitate or hinder the use of technology in the early childhood classroom. The second main question was:

What are the perspectives of teachers and parents in two kindergarten and elementary schools in Kuwait about the influence of technology on the social and language development of children? In the same manner, two sub questions were created to further explore the main question and theme. The first sub question for Question 2 was: What changes, if any, have parents and teachers observed with regards to their children's interaction with others? The second sub question was: How have the children's oral and written abilities changed after the use of technology for literacy purposes, if at all?

5.1 Use of Technology in the Early Childhood Classroom and Homes

Based on the analysis conducted in the present study, the findings from the first main question of the study agreed with the findings of previous research conducted on the same topic. For example, findings from a study conducted by McGrail (2005) aligned with the findings of the present study, as both found that most of the teachers agreed that they would use technology where it was appropriate, and where it could lead to increasing the motivation of the students, thus enhancing their learning experience. In the schools in the present study, all teachers must use technology in their classrooms to some degree as required by school policy. The majority of teachers preferred using technology in an interactive and meaningful way to make lessons easier or to save time, however, there were a few teachers who only include technology as a basic and mostly non-interactive way to comply with school policy (e.g., use a projector). This supports McGrail's finding because in both cases most teachers wanted the technology they implemented to have a purpose and improve the educational experience of their students. Also, both studies found that a few of the teachers tended to only use technology as an assistive aid in the classroom. For example, in the present study, two of the Arabic language teachers at the

elementary school used technology to facilitate their presentations of lessons. In other words, these teachers tended to use technology as a visual aid as part of their lecture. This, of course, limited the opportunities for students' interactive use of technology and thus, for them to be active participants in the lessons. However, these teachers stated that this was the only practical way for them to apply technology in the classrooms, especially with large numbers of students and the lack of means of technology they had. Using technology only as a visual aid in the classrooms was most likely not able to help a student go from what was known to what was unknown based on the zone of proximal development.

The findings of the present study are also in line with what is posed concerning the ZPD in Kozulin, et al. (2003). Both studies showed that the interaction between the children and the teachers is an important element that leads to the moving the children into the comfort zone, which in turn leads to the development of their abilities and skills. It is, therefore, clear that interaction between the teachers and the children improves learning outcomes when the children are learning how to use computers and tablets.

Regarding the factors that facilitate or hinder the use of technology in the early childhood classroom, the present study revealed an important aspect that affects teachers' use of technology in their classrooms: they felt that they were not as competent as many of the students in using the different means of technology and smart devices. Teachers reported that they still struggled with some of the smart devices, and that most of their students were competent to the extent that it made the teachers feel embarrassed about their own shortcomings. They did not want to put themselves in such an awkward position in front of their students. This would possibly become a role reversal with the teacher no longer being the more knowledgeable other, an important aspect of Vygotsky's social development theory (Vygotsky, 1978, 1980). Related to this finding, many

teachers reported that they did not have adequate training on the integration of technology into their daily teaching practices. Only a few teachers, selected by the school administration, could attend some of the trainings that did take place. In addition, they believed that the schools did not provide the advanced technological equipment needed, especially in elementary schools (Grades 1 & 2).

We found that teachers who had received more training on the use of technology felt more confident in developing an impactful lesson and could help guide and support students when they used technology in a lesson. This coincides with the findings in a literature review on the use of computer technology by Keengwe, Onchwari, and Wachira (2008) that state that a lack of training may result in teachers' ineffective use of technology in the classroom. In both the literature review and the present study, the findings seemed to show the importance of training in that no matter how many devices were available, it would be ineffective until teachers were comfortable and confident with using and teaching the technology.

This aligns with the research by Alrasheedi (2009) who found that teachers in Kuwait responded positively to training in Information and Communication Technology (ICT). The teachers gained more self-confidence with integrating technology into lesson plans when they received training on how to use ICT. In addition, several wanted customized programs for each grade to help them integrate technology in lesson plans. Al-Awidi and Ismail (2012) found that one particular program, CALL for English as a Second Language (ESL), was positively received by teachers in the United Arab Emirates. Most teachers enjoyed using the CALL program in their lesson plans as it allowed for more interaction, motivation, and creativity amongst the students. Although the main purpose of the CALL program was not to improve reading skills, the program was successful in making learning more fun for students.

Teachers at both the kindergarten and the elementary school emphasized that they believed it was crucial to integrate technology into instructional activities – both devices and programs – such as digital games, puzzles, tracing activities, and songs from YouTube in their practices and instructional activities but many obstacles presented themselves. This study finding aligns with the research conducted by Palak and Walls (2009) which found that if obstacles presented themselves, teachers would be more likely to omit the use of technology in a lesson. It was observed that teachers with a low-level of knowledge and skills regarding use of technology considered the system through which they were updated, and new data was added, quite problematic, while ones with better capabilities appreciated the opportunity to access a variety of resources at any time as it improved the speed and quality of their work.

According to Vygotsky's zone of proximal development, the social and cultural backgrounds of the teachers and parents influence their own use of technology. In turn, their students and children are impacted by their use as they pass down their views and experiences of technology. In addition, the students may have their own unique aspects of a social and cultural background that help influence, such as their friends and other mentors. Each of these elements work collectively to impact the children's social and language skills. Concerning this study, the parents and teachers who appreciate and utilize technology pass along their personal feelings and opinions of technology to their children and students. Furthermore, the teachers who have had proper training are more likely to incorporate technology regularly into their lessons.

As reported in the results section, the elementary school had an overhead projector for each class, but the teachers tended not to use it. The projector was old and not attractive or exciting to the students. Similarly, the kindergarten had only one computer laboratory, and it did not have enough seats for all the students. In addition, the computers in the lab did not all

function properly, which made using them difficult and was an ineffective use of time for the teachers. Moreover, sometimes the computers were not able to access the Internet, which made it difficult for the teachers to use interactive activities other than the Ministry of Education programs. There were teachers, especially in the elementary grades, who spent their own money on digital devices and other necessary equipment for which to operate the technology.

This study findings related to teachers' limited access to training and limited availability of advanced technology in the classroom as obstacles for the use of technology are consistent with findings in previous studies, including a study by Davidson, Richardson, and Jones (2014) that found that there seems to be some factors that inhibit the use and integration of technology, including outdated equipment, inadequate training and technical support, and the lack of classroom infrastructure. The present study found that the teachers experienced electricity problems when using technology in the classroom. One teacher reported having electricity problems to the point that it hindered her use of technology in the classroom. In addition, some of the schools do not provide any modern technology in the classrooms. Some teachers from the present study reported having access to only overhead projectors in the classroom. These findings correspond with Davidson et al, (2014) who found that problems like outdated equipment and lack of infrastructure lead to lower use of technology. Also, Lam (2000) reported that obstacles that teachers faced in the use of technology include the lack of access to computers, lack of confidence to use them, and a lack of knowledge, in general, in how to be flexible and incorporate technology into a lesson.

The present study also found that that using a traditional curriculum that mostly consists of textbook-based learning may be the most prevalent problem a teacher faces. In addition, the present study found that the teaching of the Arabic language, and grammar in particular, is

usually not conducive to new-age applications and digital programs. This finding is also consistent with findings from AlAqaad's study (2010) which found that some curricula are more aligned with lecture-based learning rather than activity-based learning. There is not an abundance of articles concerning the use of technology in the Middle East. The few studies found, which were considered in this research, were limited in scope, and they are especially focused on how the traditional curriculum is applied in relation to technology. These studies focused on technology in other geographic areas, not specifically the Middle East.

The use of technology seemed to have improved the communication amongst the teachers, between the teachers and students, and between the teachers and parents. The frequency of this communication seems to be highly dependent on the teachers' working environment. Furthermore, the attitude, willingness, and ability of teachers regarding the technology's use and their access to it inside and outside the school may determine the type and level of this communication. However, the teachers' contact with the parents could be highly dependent on their awareness and willingness to use technology (Hollingworth, Mansaray, Allen, & Rose, 2011).

5.2 The Effects of Technology Use on the Social and Language Development of Children

The second research question was concerned with the perspectives of both teachers and parents regarding the relation between the use of technology and its impact on the language abilities and social development of the students. Overall, the majority of parents and teachers indicated that they felt the students spent enough time at home and school working with technology, which was usually three hours at home per day, 35 minutes per day with instructional activities in English classes, 5-15 minutes for Arabic classes, and 45 minutes for

kindergarten centers. According to Hinchliff (2008), children should be limited in the amount of time that they are allowed access to technology, and any technology they use should be monitored by a more knowledgeable adult. Some education leaders advise that a student's earliest possible contact with technology is the most suitable strategy, although they emphasize the use should be in moderation. The American Academy of Pediatrics suggests that children younger than 18 months should avoid digital media (Council, 2016). The Academy goes on to recommend high-quality programming for children 18-24 months old used with an adult and limited to one hour per day. The National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center in the United States recommend limiting the use of passive and non-interactive technology for kids aged 2-5, such as television, but encourages children this age to interact with technology with a parent or guardian, albeit still on a limited basis. This present study found that most of the teachers and parents made efforts to limit the time students used technology in a day. Additionally, there seemed to be a correspondence between the amounts of time a student spent using technology at home versus school. During the observation period, those students who used technology for longer periods of time at home seemed to interact with technology more confidently at school. However, this will need to be further examined in future research.

Findings of the present study revealed that the parents and teachers agreed that there was a great impact of technology with regard to these two aspects: social and language development. This aligns with other research previously conducted which supports Vygotsky theory. They found that technology increased students' interactivity, stimulation, and visualization (Shabani, Khatib, Ebadi; 2010). This relates to the social development theory because social interaction is necessary for full development and learning in a student. In the schools that were used for this

study, English classes also seemed to benefit from technology's role as an information resource. Technology in English classes in Kuwait is probably vital when the teacher may not have enough knowledge of the language or correct pronunciation of words the students may learn. It was further revealed that the teachers considered this impact as positive and helpful for their educational purposes, along with being supportive in real-life situations. In line with previous research findings in this domain, such as those of Hollingworth, Mansaray, Allen, and Rose (2011), the data collected from the parents and teachers at these schools indicated a positive impact on different types of learning (i.e. social and language). This coincides with the work done by Lin and Griffith (2014) who focused on online technology in writing classrooms. In addition to enhancing language skills, technology also seemed to be helpful in increasing participation and motivation in students. Bahadorfar (2013) found similar results in increasing language skills and motivation when studying the CALL program, an educational program that helps a student improve English vocabulary, in Iran. Joshi et al. (2010) focused on the perceptions of kindergarten teachers from both the United States and Japan, specifically regarding whether the use of computers led to a greater inspiration for the students. This study found mixed results with the Japanese teachers more likely to hold a negative opinion of the use of computers and American teachers more likely think positively concerning the use of computers in kindergarten classes. In addition, Subrahmanyam et al. (2000) found that specific computer games seemed to lead to positive effects on specific cognitive which included improvements in reading, mathematics, computer knowledge, following directions, and grammar for the American students who participated. In these cases, the learner was able to go from what was unknown to what was known as the zone of proximal development states and increase their knowledge and independence.

My results and analysis align with these studies because most parents showed support for the use of technology by their children at an early age, as they noticed that this interaction with the different technological devices seemed to enhance their children's different abilities. In the parents' opinion, the children became more capable with the use of the language, especially the foreign languages such as English. Some parents and teachers have not studied English so YouTube videos and other technology could help students learn to pronounce English correctly. The different applications found on the smart devices, according to the parents, were of substantial benefit to the children's language abilities. Similar results were found in a study by Fox (2014), which documented the progress of a third-grade student in the United States in regard to reading. By using technology, the student was able to enhance her motivation and gain more confidence to read aloud in front of peers and adults. In the present study, data from the classroom observations indicate that children in classes where more technology was used started forming a wealth of vocabulary, and they could recognize the sounds and pronunciation of different words. Specifically, technology taught them new words, thus increasing their vocabulary and knowledge of which words and phrases were appropriate in different contexts. With the children's newly acquired language skills from the technology, they seem to be better able to express themselves, communicate and interact with other peers as well as adults, and know how to behave in certain social situations which led to an increase in their cognitive development as stated by Vygotsky's social development theory. These observations indicate that future studies could include data gathered through student assessments to provide evidence of changes in children's language and social development that could be attributable to their use of technology in the early childhood setting and at home.

Perry and Moses (2011) conducted a study on Sudanese refugees in Michigan and the

impact of their language skills through watching television and concluded that the use of technology positively affected the learning abilities of the children, the pace of their improvements and growth, and their literacy skills. Furthermore, the children showed more motivation towards the process of learning. Regarding the improvements in the linguistic ability of students, the present study showed that both the teachers and parents at the kindergarten and elementary schools were of the view that there is a marked improvement in vocabulary of the children because they were positively affected by watching and listening to videos on YouTube.

There is some evidence to indicate that young children learn best from face-to-face interactions as opposed to learning with technology. According to the Academy of American Pediatrics, younger children (under two years of age) best develop "cognitive, language, motor, and social-emotional skills" when they receive the opportunity to develop personal, "hands-on" experience through interacting socially with caregivers. Because younger children have not yet matured emotionally, they are unable to use "traditional digital media" because they find it challenging, or even impossible, to transfer "that knowledge to their 3-dimensional experience." The study by Council (2016) found that the best way for younger children to absorb information from the television was to watch it with a parent and then have that parent repeat and re-teach the information to them.

Furthermore, through the conclusions reached by the parents and teachers, the present study seemed to indicate that children with a higher level of technology use are generally able to understand and use more words in comparison to those who do not use, or less frequently use, technology in their school and at home. At the same time, some kindergarten teachers and parents mentioned that this improvement was witnessed only in the verbal use of language, and the students were not able to read or write these newly learned words. For example, the children

were comfortable with using technology and programs that required the tracing of letters but had difficulty when it came time to write letters with a pen. This supports Vygotsky's idea posed by Shabani, Khatib, Ebadi (2010) that the student would face difficulty doing something alone by themselves for the first time, they need to do it jointly with others such as their peers or with their teachers or parents until they enter their comfort zone and be able to it by themselves. None of the parents nor the teachers in the present study were able to give positive, conclusive answers as to whether technology benefited their children's abilities to write. In the present study, most parents said they took the role of monitor when their children used technology at home and knew which programs their children were using. Likewise, a majority of the teachers in the present study also reported a preference to monitor students when using technology; only one reported frequently checking on students. However, the present study was limited because it did not investigate thoroughly the kinds of programs and applications used by the students as it relates to educational improvements. It is, therefore, recommended that further research should be conducted on the types of programs, websites, online games, and applications used by the children to determine the ones that would lead to the most positive influential effect.

On the other hand, there were conflicting views from the parents and teachers regarding the development of social skills of the children. Technology does not always have a positive impact on the students' social and communication skills. There are some factors that clearly interfere with this outcome. One of the most important factors noticeable during this study was that if students use technology as a substitute for all other sorts of interaction with other people in their surrounding environment, their social skills were not usually enhanced as desired and expected by most parents. This aligns with the study done by Subrahmanyam et al. (2000) who found that some students showed cognitive changes such as increased aggression during

playtime. Another important negative factor is the sheer amount of lost time. If a child spends 10 hours on a Saturday using technology, then he or she has lost basically his or her entire day. This is further reinforced by the National Association for the Education of Young Children, which found that too much time spent using technology takes away from the child's playtime. Furthermore, Hashjeen and Mammedhuseyn (2003) stated that reduced playtime due to the increased use of technology affects the children's ability to interact with each other.

Therefore, based on the results of the present study formed by the perspectives of the parents and teachers, it seems that use of technology at an early age can be beneficial for children to support their language and social skills, however, this should be done under adult monitoring and guidance regarding the type and amount of time children are exposed to technology. From the present study, it can be concluded that technology seem to have a role in developing the language skills and learning abilities of children at different ages at these two schools in Kuwait. These children seem to have acquired language-related skills through their use of smart devices and technology in general. During this study, teachers and parents perceived that the children were able to acquire new vocabulary in addition to enhance their skills in using the language orally and to be able to express themselves freely without facing any hindrances or problems. As mentioned above, a future study should include assessments of children's language and socio-emotional development to further examine this view.

Findings of this study are also aligned with the social development theory of Lev Vygotsky that is concentrated on the learning abilities of a student. The two major principles of this theory are:

1. The early years of an individual's life are a critical period for cognitive development.
2. A full cognitive development of an individual requires social interaction.

The current research and social development theory were fully justified with each other, and based on teachers and parents perceptions, the use of technology was found to be beneficial for the development of linguistic abilities and social interaction patterns in the children. These are considered vital abilities for human progress in any walk of life. This statement is in accordance to the work by Crawford (1996).

Importantly, the research findings of this study justified the use of technology at an early stage of educational process that is aligned with the idea presented by Young (2001) that children should use technology while being guided and supported by a parent or guardian. Furthermore, technology should not take the place of social interaction. Still, there should be a concern for the comments of some parents and teachers who mentioned specific points, such as the students' better communication in virtual settings but less communication in real-life situations, such as the classroom. This obstacle may be overcome with the conscious support of the teacher and by involving the student in the communication processes through some educational activities. Furthermore, some teachers and parents mentioned that the students were unable to write the newly learnt words, and this new vocabulary was limited to its verbal and reading use. This limitation may be removed by implementing additional support for writing skills. It is highly recommended that the teachers and parents monitor these aspects and try to overcome them by the means of being intentional in planning the activities for children to engage with technology, as well as, offering effective supervision and support, as they are considered to be the student's more knowledgeable other. This also aligns with Eagle (2012) who found that students benefitted more from parents and teachers as supporters who allowed a level of freedom and the ability to explore using technology rather than as guides who set stricter goals and rules.

The teacher's role of a guide and supervisor seems to be as important as the parent's role.

The language of the more knowledgeable other should be seen as important to pass positive language down to children. While digital devices have applications and programs to aid in educational instruction, technology should not replace teachers' encouragement and words of instruction. As the zone of proximal development depicts, it is important for teachers to integrate the material tools, which includes technology, with the psychological and language tools he or she has accumulated, based on experience and personal relationships he or she forms with the students (Shabani, Khatib, Ebadi; 2010). Teachers' knowledge and experience should be taken as equally important, if not more, than the access to the technology. Although technology has become an integral part of education, and the children enjoy using technology in the classroom and at home, a teacher's ability to positively impact his or her students with model behavior should not be overshadowed. This conclusion from this research study supports the zone of proximal development and the importance of the language used by the more knowledgeable other, as defined by Vygotsky. While technology is increasingly important in education and the development of children, it should be used in tandem or as a supplement to the teachings by parents and teachers.

In terms of Vygotsky's theory, we believe that the interactions we have coded as "Taking part in the process" are the ones that are most likely to facilitate what Vygotsky classifies as cultural development on the social plane that would later lead to cognitive development of the child. In fact, we have observed substantially more social interaction between the students and the teachers when one-on-one training was being provided. During the white board-only instruction, students were rarely observed engaging in any kind of social interaction with other students or the teacher that seemed likely to facilitate the cultural development of acquiring the use of technology.

According to the conclusions drawn by the parents and teachers, there seem to be two factors at play in regard to a student's independence. First, using the right type of technology in the educational process, such as a specific device or program, may increase a student's independence more quickly. Additionally, the right amount of support by a guiding role model regarding why, how, and when to use technology could eventually lead a greater independence for the student and his or her ability to problem-solve using technology without assistance. This independence and enhanced learning should, of course, be the goal of all students and is congruent with Vygotsky's theory.

The use of technology in educational settings is not aimed at serving a singular task, but its objective is to enhance a number of capabilities, including language learning and social interactions. Furthermore, it may facilitate the access of both the teachers and learners to a wide variety of educational resources which may not be possible otherwise. It improves the future prospects of the learners as one cannot survive in today's world of quickly progressing technology without being well-versed in its use (Hollingworth, Mansaray, Allen, and Rose, 2011). The increasing use of technology in education is the new norm, and this trend reflects the culture as a whole. As the social development theory by Vygotsky stated, there is a connection between social and cultural surroundings (Crawford, 1996). The technological skills developed by students early on will help them adapt to daily life and prepare them for the workforce. However, the use of technology has to be purposeful, with clear objectives and be developmentally appropriate, taking into consideration research-based recommendations about when and how is appropriate to introduce technology to support young children's development and learning. In this study, neither the teachers nor the parents seem to be aware about what constitutes the development or the appropriate way to use technology with young children that

are part of the recommendations coming from research and professional organizations.

5.3 Conclusion

On the basis of a comprehensive literature review and the findings of this research study in Kuwait, it can be concluded that the use of fast-paced and ever-changing technology has an impact on every walk of life, and the field of education is not an exception. Furthermore, it suggests that the use of technology could have an impact on educational systems and the students' development from the very early in life, and that it could be influencing the children as well as impacting the adults they interact with. It is also recognized that the students at these particular schools in Kuwait have good access to technology and seem to be well-versed in its use; whereas, the teachers are not satisfied with their own access, knowledge, and pace of adaptation to technology in educational settings and mention that there is a great need of training and learning on the part of teachers. As it sometimes happens, the students seem to be more aware and skilled at the use of technology in comparison to the teachers, who are sometimes found struggling when using technology in the classroom settings.

In addition, use of technology may improve the children's linguistic ability and communication skills, as both the teachers and parents from the schools in the study had a positive opinion regarding this. Both skills could be vital as they are considered as a key to success in cognitive and social development and growth of career at later stages of life. The research has also highlighted that the parents' use of technology and their positive opinion in this regard has a constructive impact on their children's expertise in this domain as they are also considered to be a more knowledgeable other.

5.4 Limitations and Recommendations for Further Research

Although this study has been successful in achieving its aims and objectives, it still has its limitations and shortcomings. First, due to constraints of time and resources, the study was limited to a small sample. Therefore, I suggest that future research be conducted in other schools for more observations and teachers' perspectives, both in Kuwait and in other countries, for comparison. Furthermore, this research work was restricted to study the impact of the use of technology on the language learning and social interaction of students, whereas future studies can focus on the impact of using technology on all developmental domains. Also, future studies can determine the impact of the use of technology on children by assessing changes in children's developmental domains (language, socioemotional and cognitive development) and comparing the results obtained with and without the use of technology. Another future study could focus on E.L. Thorndike's Trial and Error Theory of Learning, which states that a child learns from trying and failing and then trying again until he or she is successful. Moreover, a study involving the student's beliefs and perspectives in relation to the use of technology could yield interesting results, as their opinion could reveal the factors, which others cannot understand. Future studies can uncover these limitations because adults usually identify in a different manner in comparison to children.

Finally, the present research is limited because it did not investigate thoroughly the kinds of programs and applications used by the students. I therefore recommend that further research should be conducted to examine the types of programs, websites, online games, and applications used by the children to determine the ones that would lead to the most positive influential effect on the social and linguistic development of students.

APPENDIX A

INVITATION TO PARTICIPANTS

Invitation to Participants

Dear Parent/Teacher:

As a graduate student in the Department of Early Childhood Studies at the University of North Texas, I am conducting research as part of the requirements for a Ph.D. The title of my research project is " The use of Technology in Early Childhood Schools and Homes and Its Impact on the Social and Language Development of Children: Perspectives of Parents and Teachers in Kuwait". The purpose of my research is to understand, from the perspective of teachers and parents, how the use of technology influences students' language and social development.

I am writing to request your participation in a face-to-face interview with me.

In the 20-30-minute face-to-face interview, I will ask you about how your child uses technology both at home and at school. The data will be used to understand, from your perspective, how the use of technology influences students' language and social development. The ultimate goal is to ensure that technology is used as a positive influence on children's development. Taking part in this study is completely voluntary, and you are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please provide a signed. In addition, please specify how often your child uses technology outside school what type(s) of technology you and your child use in your daily life. For education research, the school, or district, permission will need to be on approved letterhead with the appropriate signature(s). If you have any questions regarding this IRB approval or the rights of research participants, you can contact University of North Texas Institutional Review Board at (940) 565-4643 or via e-mail at untirb@unt.edu.

Sincerely,

Saffa Alsuhail

APPENDIX B

IRB CONSENT FORM

IRB Consent Form

TEMPLATE A: FACULTY/STAFF INVESTIGATOR AND ADULT SUBJECTS

University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: The use of Technology in Early Childhood Schools and Homes and Its Impact on the Social and Language Development of Children: Perspectives of Parents and Teachers in Kuwait

Investigator: Saffa Alsuhail, University of North Texas (UNT) Department of Teacher Education & Administration.

Purpose of the Study: You are being asked to participate in a research study which involves the understanding, from the perspective of teachers and parents, how the use of technology influences students' language and social development.

Study Procedures: You will be asked to participate in a face-to-face interview with me where I will ask you your perspective about the use of technology in your classroom. The interview that will take about 20 to 30 minutes of your time. In addition, I will observe your class twice a week for one month.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This study is not expected to be of any direct benefit to you, but we hope to learn more about the social and language development of children when using technology in and outside the classroom.

Compensation for Participants: None

Procedures for Maintaining Confidentiality of Research Records: A file with participants'' names/identifiers will be kept in a separate file so that responses cannot be linked to individual participants. Data will be stored in locked file cabinets in the investigator's office. All the data collected will be organized in accordance with the participants that provided them. Data obtained from the parents will be kept in a separate file from data obtained from the teachers. Data will be analyzed and reported as aggregate. All the data collected through interviews shall remain confidential and shall be used only for academic purposes. The identity of the kindergarten, the school, parents and the teachers who participated shall also be maintained confidential. Different files will be kept for the participants who will be chosen from the kindergarten and primary school. The parents' responses will be kept in separate files from those of the teachers. In

addition, the researcher will confirm that their identities will remain a secret, and that no one, including the administration of the school, will be allowed to view their answers and responses.

All interviews will be audio-recorded. All observations in the classroom will be recorded by hand, no children will be audio-recorded at any time. Federal IRB regulations require that the investigator's research records be maintained for 3 years following the end of the study. At that time, all hard copy notes will be shredded and all audio-recordings will be deleted.

Any data collected will help the investigator with her final dissertation for her PhD program, Curriculum and Instruction (specialization Early Childhood Studies), at the University of North Texas.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

· Saffa Alsuhail has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.

· You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.

· You understand why the study is being conducted and how it will be performed.

· You understand your rights as a research participant and you voluntarily consent to participate in this study.

· You have been told you will receive a copy of this form.

_____ Printed Name of Participant

_____ _____ Signature of Participant Date

For the Investigator or Designee:

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

_____ _____

Signature of Investigator or Designee Date

APPENDIX C

INTERVIEW QUESTIONS

Teacher Interview Questions

1- What is the usual duration that your students spend daily working with technology?

2- What kinds of programs does the child work with?

3- What is the role you play when your students are using technology?

4- How has the use of technology affected the social and language development of the students from your point of view? Have you noticed any change in your students' interaction with others? Has the literacy level of the students changed after he started using technology? Explain.

5- What are your suggestions to improve the benefit that children get from the use of technology?

6- How much preparation and training did you have as a teacher related to the application of technology?

7- How do you feel about the use of technology in class with children? Do you think it is a tool that assists or hinders a child’s learning in the classroom? Explain.

8- What role does technology play in the classroom? Is it used only as a demonstration means of teaching or is it used interactively? Give more details.

9- How do you decide on the way that you are integrating technology in your lesson plan? Does it differ from one class to the other or from one context to the other? Explain.

10- What are some obstacles you face with respect to using technology in the classroom?

Parent Interview Questions

The interview portion of the research included open-ended questions that allowed the participants to feel free when answering, hopefully resulting in more ideas and more suggestions that would show the different perspectives of understanding the phenomenon studied. Face-to-face interviews are critical for the success of this study because it is believed that a personal interview will produce more accurate, detailed, and honest responses to the questions, as opposed to participants responding to questions as part of an survey or questionnaire

1- What is the usual duration that your child spends daily working with technology?

2- What kinds of programs does the child work with?

3- What is the role you play when your child is using technology?

4- How has the use of technology affect the social and language development of your child from your point of view? - Have you noticed any change in your child's interaction with others? Has the literacy level of the child changed after he or she started using technology? Explain.

5- What are your suggestions to improve the benefit that children get from the use of technology?

APPENDIX D

CODES, DEFINITION AND QUOTE EXAMPLE FROM TEACHER INTERVIEWS

Teacher Interview Codes	Definitions	Quote Example
5-15 Minutes	Time Arabic teachers spends using technology during the 45 minutes of lesson of the day.	Grade 1 Arabic teacher said: “It depends on the curriculum and what the material allows me to do, but it is usually 5-15 minutes.”
35 Minutes	Time English teachers spends using technology during the 45 minutes of lesson of the day.	
45 Minutes	Time Kindergarten teachers spends using technology during the 55 minutes of lesson of the day.	
Average	Moderate access to technology in the classroom	One teacher mentioned: “The accessibility is average.” One of the KG2 teachers said, “Accessibility to technology in the classroom is moderate. It’s not worse. At the same time it’s not good.”
Good	Decent access to technology in the classroom	
App Store application	Applications downloaded on mobile phones & tablets	Grade 1 English teacher said: “I use the educational and pedagogical devices and games from the App Store such as Animal Words, School Alphabet Letters, and Kids Academy where kids trace letters, along with other Microsoft software in PC while the children use different sites such as YouTube for the sake of education and entertainment.”
YouTube	Videos on child stories, movies, children’s songs	
Educational programs	Software includes information about the culture of Kuwait, numbers, new words	
Language and math programs	Software includes numbers and words only	
Average	Moderate teacher preparation and training on technology use in the classroom.	One teacher mentioned: “It is not very good, but at the same time it is not bad,”
Good	Decent teacher preparation and training on technology use in the classroom.	
Poor	Weak, Low teacher preparation and training on technology use in the classroom.	
School or Education policy	According to the school policy, teachers must incorporate technology or she is going to lose points on her evaluation	One senior kindergarten teacher stated: “I incorporate technology in my lesson plan in accordance to my own expertise in this domain. I am not comfortable with my own command of technology, and thus I keep it at the minimum level - a failure in using

Teacher Interview Codes	Definitions	Quote Example
		technology in the classroom can be embarrassing for me, but it is a rule, so we have to follow it."
Makes the work easier, saves time	Facilitate teacher mission and time of the lesson	
Level of expertise (how to use technology)	How much experience and knowledge the teacher has using technology in the classroom	
Assists	Helping and facilitating the teacher when she teaches her students by using technology	One of the KG2 teachers said: "Using technology tools through the class time is so helpful to me and to children too, especially with shy and struggling students. Most of the class wants to participate when I use the iPad. Also, in kindergarten we started to teach English words and letters. Since I do not have good experience with English to pronounce the words in a good way, I just use an application from the App Store or use YouTube to show the children how they can pronounce it in the correct way."
Hinders	Inability to access technology when the teachers need it for her lesson	
Both assists and hinders	Technology plays both roles by helping the teacher to facilitate her mission of teaching and at the same time obstructing the teacher's mission of teaching.	
Guiding from a distance	Giving directions without interacting with child	One of the KG2 teachers stated: "I think it is mandatory for teachers to guide their students while they are using technology in educational settings. If they are given an unlimited and unsupervised access to technology, they will lose focus on their target topic and material. Furthermore, they need supervision to ensure that they are using technology in the required manner thus the teachers' role as a guide and supervisor cannot be considered optional. It is obviously mandatory."
Taking part in the process	Interact with child to demonstrate what he or she should do	
Monitoring	Observing closely what child is doing with a device or computer	

Teacher Interview Codes	Definitions	Quote Example
Use it as a demonstration means of teaching	Use it without goal to increase student attention or interaction	KG1 teacher research participant expressed her opinion about this: “Of course it plays an important role. It is used to demonstrate and motivate the interaction between students and between students and me. It is a helpful and encouraging tool for all the students in the classroom. All of them want to participate and play with it, such as tracing, looking at a story, or listening to music and dancing along to songs and videos. It makes the lesson more interesting. The use of technology serves the purpose of interaction amongst the stakeholders of the educational process. Students and teachers or students and their peers can interact with each other through the technology used in the classroom. It can facilitate the presentation of the subject material.”
Use it as an interaction and demonstration	Use technology to increase interaction between students and teachers and between students	
Electricity problems	Electricity issues, such as an outlet being out of order	One elementary school teacher stated: “I devote a significant amount of time in preparing a technology-based lesson plan but sometimes I am unable to execute it due to unexpected power outages and as there is no backup power supply system, I have to work with my plan B (manual delivery of subject matter). Thus, all my efforts go wasted. It demotivates me and I do not want to put in effort in preparing another technology-based lesson plan.”
Inadequate skills and low level of knowledge	They do not have enough experiences regarding how, where, and when to use technology	
Traditional curriculum	Lecture teaching	
Inadequate access to technology	Low access to technology	
Better social interaction & lang. skills	Positive impact on children’s social and language development	One of Grade 2 English teachers stated: “The students who frequently use technology have a wider social circle. They know more people in comparison to their counterparts who do not use technology so frequently. These students are usually more

Teacher Interview Codes	Definitions	Quote Example
		interactive and like to show their understanding about technology in their peer group. They are socially more active than their classmates who less frequently use technology."
No social interaction & no distinguished lang. skills	Negative impact on childrens social and language development	
Well-trained	Provide more training and workshops for teachers related to the new technology	Grade 2 English teacher stated: "Teachers' training is a basic need for improvement in use of technology in the field of education. Without well-trained teachers one cannot expect any change in the current situation as the teachers work not only as a guide and facilitator but as a role model as well. Their use and expertise in using technology can motivate their students to advance in this domain."
Creation of customized programs for each stage	Create educational program by specialist educator for each subject, such as software meant only for the Arabic classroom	
Provision of better and adequate devices	Provide the classroom with proper equipment such as projector, laptops, computers, and tablets	

APPENDIX E

CODES, DEFINITION AND QUOTE EXAMPLES FROM PARENT INTERVIEWS

Parent Interview Codes	Definitions	Quote Example
2hours	Time children use technology during the day.	One of the parents of a 5-year-old kindergarten student stated: "Children spend enough time working with technology and it has a prominent impact both on their ability and their development in the field of technology along with their growth in language acquisition and social interaction. Due to the differences in duration of time spent using technology, the children's level of knowledge and expertise may vary."
10 hours (weekend only)	Time children use technology only on the weekend.	
7 hours (weekend only)	Time children use technology only on the weekend.	
5 hours	Time children use technology during the day.	
3 hours	Time children use technology during the day.	
YouTube	Videos on child stories, movies, children's songs	One of the KG2 parents said: "My child loves to use technology. He can operate his iPad independently, but he can only access the programs that I have selected and downloaded from YouTube, such as cartoons or songs from the Internet and App Store, such us numbers or math, alphabet letters, and words in English and Arabic language for education purposes. He cannot select the material himself."
Games	In equipment: PlayStation, Xbox	
App Store	Applications downloaded in mobile phones & tablets	
Combined subject's programs	Math, science, religion, others	
Language Programs	Only language related	
Math Programs	Only math related	
Monitoring	Observing closely what child is doing with a device or computer	One of the parent stated: "My child can access only a few websites independently. Furthermore, I select the material that my child can see or play with and I observe him while he is

Parent Interview Codes	Definitions	Quote Example
		using the iPad or any other kind of devices at home. I do not allow him to select the material himself as there is a lot of material that I consider unsuitable for him to watch."
Taking part in the process	Interacting with child to demonstrate what they should do	
Guiding from a distance	Giving directions without interacting with child	
Rarely checking	Infrequently checking	
No specific routine	Do not have a specific plan	
Lower social interaction & language skills	Negative impact on children's social and language development	One elementary school parent of a six-year old stating: "My daughter spends a considerable time with her iPad. In such times, she prefers to sit alone and does not talk to us or go outside for visiting family or friends. Sometimes I feel that her communication in virtual settings has been improved but she is communicating less in the real-life situations. I am worried that this behavior can make her self-centered and isolated in her environment."
Better Social Interaction & Language Skills	Positive impact on children's social and language development	
No social interaction & no distinguished language skills	No positive or negative impact on children's social and language development	

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