Interaction with ICT in Language Learning among Pre-school Children in Saudi Arabia

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ABSTRACT

The purpose of this research is to investigate the significance of tablets in the classroom and to find whether the tablets can enhance the metacognitive competencies, core competencies and language competencies among the preschool children of Saudi Arabia. The study used the mixed method approach to find how preschool children interact with Information and Communication Technology (ICT) and consequentially to understand how ICT can be introduced for teaching English as a Foreign Language (EFL) to preschool children in Saudi Arabia. The study data were collected by conducting English tests with the two groups of children before and after ICT intervention, and observation analysis of the children and teachers in the class during the intervention. The findings confirmed that two aspects play a role in the effectiveness of using ICT for teaching EFL to Saudi preschool children. These are, first, designing the right course content suitable for Saudi context and, second, equipping the teachers with skills and capabilities to interact and engage properly in using the ICT for teaching EFL. The findings confirmed that the use of ICT in the language learning process for the preschool children can enhance their language learning skills. It provides them with the opportunity to explore various new areas and improves their knowledge construction.

Keywords: Interaction, ICT, Tablet.
التفاعل مع تكنولوجيا المعلومات والاتصالات في تعلم اللغة لدى أطفال ما قبل المرحلة في المملكة العربية السعودية

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ملخص:

هدف البحث الحالي إلى استقصاء أهمية توظيف الأجهزة اللوحية داخل البيئة الصفية. وتحديد إذا ما كانت الأجهزة اللوحية بإمكانها تفعيل الكفاءات ما وراء المواطنة والكفاءات الأساسية والكفاءات اللغوية لدى أطفال ما قبل المرحلة بالمملكة العربية السعودية. ولقد استخدمت الدراسة النموذج المختلط لتحديد جودة تفاعل أطفال ما قبل المرحلة مع تكنولوجيا المعلومات والاتصالات (ICT)، وبالتالي فهم كيف يمكن إدخال تكنولوجيا المعلومات والاتصالات لتعليم اللغة الإنجليزية كغابة أجنبية (EFL) لأطفال ما قبل المرحلة في المملكة العربية السعودية. تم جمع بيانات الدراسة عن طريق مسح اختبار اللغة الإنجليزية مع مجموعتين من الأطفال قبل وبعد إجراء اللغة التجريبي باستخدام تكنولوجيا المعلومات والاتصالات. قبل التحليل القائم على الملاحظة للأطفال داخل البيئة الصفية. ولقد أكدت النتائج أن هناك عدد من بلديات دوراً أساسياً في فعالية استخدام تكنولوجيا المعلومات والاتصالات لتعليم اللغة الإنجليزية كغابة أجنبية للأطفال في سن ما قبل المرحلة بالمملكة العربية السعودية. وهم: تصميم المحتوى التعليمي المناسب للفعلية المحلي، وتوزيع المعلومات بالحارين والقدرات للتفاعل والمشاركة بشكل صحيح.

في استخدام تكنولوجيا المعلومات والاتصالات لتدريس اللغة الإنجليزية كغابة أجنبية، كما أكدت النتائج أن استخدام تكنولوجيا المعلومات والاتصالات في عملية تعلم اللغة للأطفال في مرحلة ما قبل المرحلة يعزز مشاركة التعليمات لدينا، ويوقع لهم الفرصة لاستكشاف مختلف المجالات الجديدة وتحسين نبات المعرفة.

الكلمات المفتاحية: التفاعل. تكنولوجيا المعلومات والاتصالات. الكمبيوتر اللوحي.
Background of the Research

The debate on whether technology should be used in early childhood education (ECE) or not is not new (Alper, 2011; Blackwell, 2013; Cordes and Miller, 2000; Edwards and Bird, 2015; House, 2012; Kirkorian, Wartella, and Anderson, 2008; Lindahl and Folkesson, 2012; Morgan, 2010; Parett, Quesenberry, and Blum, 2010; Plowman, 2014). The critics of the use of technology in early childhood education argue that young children must comprehend the knowledge using concrete materials, not just visual ones (Healy, 2004; House, 2012; Plowman and Stephen, 2003). Some critics argue that spending too much time on the digital screens can overwhelm senses of young children which may lead to other negative impacts such as poor concentration and attention disorders (Cordes and Miller, 2000; House, 2012). The literature also reports possible ill health effects of the use of technology in early childhood education such as visual impairments (Cordes and Miller, 2000) and musculoskeletal injuries (Cordes and Miller, 2000; Plowman and Stephen, 2003). Critics also suggest that use of technology in early childhood education can lead to several cognitive issues such as lack of creativity and reduced literacy skills (Cordes and Miller, 2000), as well as poor social interaction skills and increased social isolation (Healy, 2004). At the same time, a number of authors have argued that use of technology in early childhood education can improve their ability to learn (Blackwell, Lauricella, and Wartella, 2014; Blackwell, 2013; Hillman and Marshall, 2009; Lindahl and Folkesson, 2010; Parett, Quesenberry, and Blum, 2010; Plowman, Stevenson, McPake, Stephen, and Adey, 2011).

Today’s society is knowledge-based, and information technology is one of the key aspects of this society (Aldhafeeri and Palaiologou, 2016; Arnott, 2013). In this society, knowledge is the main capital and progress is entirely dependent on the creativity and knowledge of its members (Kozma, 2003; Plomp et al., 2003). With continuous and rapid developments in technology, we now have access to a wealth of knowledge at our fingertips (Marsh et al., 2017; Yelland et al., 2008). In addition, technology has completely altered how we communicate and even whom we communicate with (Edwards, 2013).

Realising its potential benefits for the society as a whole, there has been a deliberate and conscious effort to push for the use of technology in education. This is aimed at generating two benefits; the first is to give children access to an abundance of high-quality information as well as tools to utilise this information (Edwards and Bird, 2015). The second benefit is to give children skills and competencies to continuously develop their skills in this rapidly changing environment (Aldhafeeri and Palaiologou, 2016).

With the increasing development of ICT in society, the world’s organisations are also becoming engaged in promoting the significance of ICT in education. The new educational agenda in the world mainly emphasises the effective role of ICT in transforming the process of...
learning and teaching (British Educational Communications and Technology Agency, 2006, 2008). The evidence from the literature displayed the contribution of ICT to improving teaching and learning processes in education and it is considered as the innovative factor in education (Sangràand and González-Sanmamed, 2010). In Europe, the effective use of ICT in education has been signified as an important approach that can improve the quality of education. Also, according to the study of Sangràand and González-Sanmamed (2010), the European Commission (EC) is also promoting the use of ICT in learning and teaching. One of the important aims of the EC by integrating ICT in education is to improve the quality of learning by increasing the access to various learning resources and promoting collaborative learning (Ehlers, 2005). The OECD asserts that “perhaps the factor most identified as heralding a fundamental change in the structure and organization of schooling is the spreading impact of ICT on learning” (OECD, 2001: 66).

Except for the world organisations, many global companies have also joined the campaigns promoting the use of ICT in education. One such global organisation is Microsoft which is also promoting the use of ICT and enhancing the process of teaching and learning (Microsoft Corporation, 2016). ICT is also a very supportive tool for the teachers for exploring the various teaching methodology and quality skills improvement for communication and language learning (Loveless, Burton and Turvey, 2006). The study of Trinidad (2003) has also acknowledged the significance of ICT by explaining that a "Technology-rich learning environment using e-learning can engage the learner giving them a sense of empowerment where they are no longer dependent on the specific and often limited knowledge of their educator'' (p.110). This is the reason that there has been increased focus on the organisation of the ICT policies for appropriate integration in education and curricula across the complete education system. The developed and industrialised nations of the world like the USA, the UK, South Korea and Singapore, and many developing nations like Chile, Estonia and Ethiopia have developed detailed and comprehensive nationalised strategies for the education sector (Desai, 2010).

The main aspect of the educational strategies involving the use of ICT is that these strategies have the same objective, which is to support the integration and use of ICT tools in teaching and learning systems of primary, secondary and higher education. The main focus of these strategies is mainly on improving the access and facilities within the schools and investing in the sufficient integration of computer provision and Internet access for the purpose of teaching (Hennessy et al., 2010). However, the main aim of integrating ICT is to expand the provision of basic education and to develop essential skills in the children (Desai, 2010). Another significance of ICT can
also be understood by the fact that it promotes equal opportunities for obtaining information and education (Desai, 2010).

ICT has great potential for early childhood education. The young children of the current society are very intelligent, and are fast learners: they are also referred to as ‘digital natives’ (Bolstad, 2004). It can also be said that ICT is becoming the ubiquitous component of the social and physical environment that is occupied by the young children (Aldhafeeri and Palaiologou, 2016). ICT tools are the important component of the private and work lives of those who have a significant role to play in the learning and development of young children, such as parents, grandparents, childhood educators and caregivers. It has also been found that early childhood education experience for young children should connect and reflect their interactions with the wider world. Therefore, ICT matters very much in early childhood education, because it has already affected the people and the environment surrounding the young children (Aldhafeeri and Palaiologou, 2016). Therefore, there has been a strong need that has been discussed in the literature regarding the significance and role of ICT in early childhood education (Hennessy et al., 2010).

Children have been exposed to various ICT tools for at least 15 years, and have interacted with them on a daily basis (Tapscott, 1998). When the ICT technologies started becoming prevalent in the society, great debate arose from this growth on how ICT can be integrated into education and the early learning and teaching environment. Many scholars have supported the integration of ICT in education, while some are still against it (e.g., Cordes and Miller, 2000). However, most of the literature associated with the use of ICT has reported that integration of ICT in preschool education has significant benefits for the cognitive and social skills development of children (Samara and Clements, 2002; Yelland and Siraj-Blatchford, 2002).

ICT offers opportunities to strengthen many aspects of the child’s development and early childhood educational practices. ICT offers great potential for the education sector that includes opportunities to enhance and support the play and learning experiences of children, opportunities to support and strengthen the development and knowledge of the practitioners, and various opportunities to support the process of communication and language learning (Stephen and Plowman, 2002). However, some studies have found that for making a technological society, ICT also poses many challenges for the practitioners (Kirschner and Selingor, 2003; Loveless and Dore, 2002; Scrimshaw, 2004). The researchers involved in finding the significance of the integration ICT in education have faced a number of issues that are required to be understood in detail before the integration of ICT. Some of the problems are the attitude of practitioners towards integration of ICT (Albirini, 2006; van

There are the significant pieces of the literature that support the use of ICT in preschool education and the positive attitudes of the practitioners in taking well-informed decisions(Buckingham, 2007; Downes et al., 2005; NAEYC, 1996; O’Hara, 2004; Siraj-Blatchford
The main aspect of the literature is on their experience of ICT, and ways in which children use it (Bolstad, 2004; Yelland, 2005). Therefore, it is believed that it is significant to meet the demands of the important stakeholders before implementing the new technologies in the classrooms. The growing demands of society also support the idea that ICT should be implemented in the early stages where children can form their base to use the technology throughout their life (Brito, 2010). Some researchers have significantly focused on evaluating the thinking and concentrating processes of children that are enabled by ICT. Some of the studies have also focused on finding out and evaluating the interaction of children with technology based on the wider social context that includes parents, teachers and early childhood education settings (Hendrick and Weissman, 2009).

This research looks at how Saudi preschool children interact with ICT in learning EFL. ICT is a very broad term including a range of tools such as multimedia, projectors, software applications, PCs and display devices, among others. This research focuses solely on the use of the tablet. The tablet is currently not being used for preschool education, but the researcher believes that it is one of the devices which can be very useful for teaching preschool children subjects such as language. Language learning is more about learning how to communicate meaningfully using words that comprise any language. In this respect, preschool children learn words through their audio-visual sensors. Using ICT devices with audio graphical displays such as a tablet can be extremely useful in this case because such devices can be used intuitively and without much technical language. Here, the researcher had limited time to conduct the study experiment and using the tablet was the least intrusive way, particularly because it required little technical knowledge among the users. Along the same line, the researcher believes that devices with audio graphical interfaces can be used to make learning more effective in preschool education.

**ICT in Preschool Education in Saudi Arabia**

According to Stephen and Plowman et al. (2012), an ideal opportunity for pedagogical reflection is the development of a national strategy for ICT for the preschool education. Due to the unclear plan of integrating ICT in the preschool education of Saudi Arabia, there has been uncertainty in the use of ICT practices in early childhood education. The situation found in Saudi Arabia is not very different from the situation in other countries. There has been a great uncertainty about the integration of ICT and the correct age of the children when they should be exposed to the use of ICT in education. The use of ICT in the primary and secondary education of Saudi Arabia has been well recognised (MoE: General Directorate for Planning, 2005). Due to the significant boom in technology, the value of technology is now well recognised by the society, and the government also obligated to work towards forming technological
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This programme is based on the agenda of development of ICT in education and gives priority to the issues associated with ICT in the school education sector. In 2009, the first International Conference on E-learning and Distance Learning was held in Riyadh, the capital of Saudi Arabia. The main aspect of the Conference was that it made some significant recommendations regarding the development of the national strategies related to e-learning and distance learning in primary, secondary and higher education (Bingimlas, 2009).

In comparison to ICT usage and integration in the school sector, very little is known about integration in the preschool education. It is also clear from the above-mentioned conference that ICT in preschool education is significantly excluded from policy making and educational agendas. Studies have found that use of ICT in education is important for the development of the children and for providing them with the opportunity to learn in the information age (Bingimlas, 2009). The research evidence has shown that some of the ICT tools have been used in the preschool education for a very long time — for example, these tools can be the video player, television, and audio equipment. Some computer resources were also used; yet there is still a lack of the appropriate integration of ICT, and there is also a lack of a holistic plan for integration. The studies have recognised that the successful integration of ICT mainly requires the efforts and positive attitude of the teachers (Tubin et al., 2003). The individual efforts of the practitioners and teachers can make the integration successful, but differences in the approach and attitude of the practitioners to the integration of ICT in the daily programmes and curricula of preschools have become difficult (Tubin et al., 2003). This has been difficult for both private and public sectors, and researchers assert that these challenges have to be effectively addressed.

There are various policies and programmes in Saudi Arabia to address the new approach of integration of ICT in education, but none of the approaches addresses the issue from the perspective of the preschool teachers. This research identifies the important role of the teachers in the integration of ICT in preschool education and language learning. The preschool curriculum of Saudi Arabia also fails to specify the significance and integration of ICT in early childhood education. The Developed Curriculum for ECE (Samadi and Marwa, 1991; MoE, 2005) does not encourage the use of technology in any sense in the preschool education; nor does it include any of the practical aspects of ICT. However, the major reason for this problem could be that this curriculum was developed in 1991 when the use of technology was very limited, but when this curriculum was revised in 2005, no information regarding the integration of ICT was included in it. Several attempts have been made in the SA education sector to encourage the use of technology, but these efforts have not been successful. The lack of a clear plan is the main problem that restricts the integration of ICT in preschools (Al-Dayel, 2009).
Research has also shown that there is a lack of locally applied research about ICT in Saudi Arabia regarding the use of ICT in preschools and there is insufficient evidence to support the potential and significance of ICT in SA preschools (Hammed, 2011). Some researchers such as Al-Dayel (2009), Al-Shoaiby (2010) and Al-Showayer (2006) have considered this problem and challenged it in their studies. Most of the studies are focused on the specific context, but with unclear evidence, such as the role of computers in learning for young children (e.g., Al-Showayer, 2006; Al-Shoaiby, 2010). Some studies have also investigated the children’s behaviour that is influenced by the use of technology (e.g., Al-Dayel, 2009) and the role of software in preschool education (Hammed, 2011). However, these studies have focused on the very simple question of: Should children engage with and use technology or not? Although this is a valid question for the research, the issue has to be seen from the broader perspective and from more complex challenges. This is mainly relevant because technologies are now used in every aspect of human life and broadly used in the homes and playrooms, so young children are highly exposed to technology and use it without the instructions of the adults. Therefore, the more relevant question for the research is to understand: How do children engage with technology? Moreover, technology is being used by young children, so a further question can be: How are the educators taking advantage of the ICT tools to enhance the development and learning among the children by eliminating the potential harm?

In this context, the key important studies are those that have designed according to the perspective of the practitioners, which are valid and are of great interest for this research. However, the main problem with these studies is that they provide very limited findings, which displays the lack of consideration of the whole preschool environment. The studies lack displaying and provide the findings related to the engagement of the teachers and learners with technology.

The purpose of this research is to address this gap and consider users’ engagement with technology to understand and improve the role of ICT in preschool education in Saudi Arabia. According to Tondeur et al. (2008a; 2008b), the current studies related to the use of ICT in education address single perspective or opinion, while further research needs to focus on the wider perspective and should include various elements of the integration of technology in preschool education. No studies have significantly concentrated on the nature of engagement of the users with technology. Therefore, it is very important to look from the two-way perspective, which includes the practitioner’s or teacher’s perspective and the preschool characteristics (Tondeur et al., 2008a).

The variations and changes in the usage of ICT in education are mainly due to the partial explanation of the significance of ICT in education. This is the reason that isolated focus of the research has resulted in the poor integration of technology in education (O’Dwyer
et al., 2004; Tang and Ang, 2002). However, ICT cannot be considered as an isolated instrument, because the ranges of other ICT tools are interwoven within the learning environment (Lim, 2008). Therefore, a more detailed and holistic approach has to be taken to understand the importance of ICT (Fullan, 2001; Kennewell et al., 2000; Kozma, 2003; Salomon, 1991). Contemporary researchers have failed to lead the holistic approach in the field of ICT in education.

Laverick et al. (2008) asserted that integration of ICT in preschool education is a multidimensional and multifaceted process that requires different approaches and strategies. If the goal of ICT integration is significantly achieved, the ICT can potentially impact the development and growth of the children in the technology-led world (cited in Siu and Lam, 2005). ICT has the potential to become the most important part of the early learning experience of children (Fischer and Gillespie, 2003) and also make them confident learners and ICT users (Stephen and Plowman, 2002). When ICT becomes an integral part of the preschool life of children, it allows them to become lifelong learners (Swaminathan and Yelland, 2003). In other words, for preschool children using ICT, it is more about developing competency in using ICT for educational purposes. This competency perspective is the key pillar of this research.

The outcomes of this research make significant recommendations for the use of ICT for teaching EFL to preschool children in Saudi Arabia. These recommendations are relevant to learn the lessons and pitfalls in the integration of ICT in ECE and what changes or additions can be made in the preschool policy or system in Saudi Arabia. In particular, there is poor understanding of how to use ICT in the preschool education system. This research is looking to understand how teachers and preschool children might interact with ICT tools such as tablets and this is likely to then guide the policy makers towards how to effectively integrate tablets in the Saudi preschool education system.

**Theoretical Significance of the Research**

The review of the literature explained that there has been a scarcity of findings related to the significance of ICT in early childhood education. There is a lack of findings that can support the integration and significance of ICT in a preschool setting (Stephen and Plowman, 2002). The criticism of the technology or the use of ICT in the preschool education is mainly due to the lack of empirical research (Couse and Chen, 2010; Schmidt and Vandewater, 2008; Yelland, 2008), where the results of the current studies have been drawn from some of the limited old research studies. According to the study of Plowman et al. (2010), it has been significantly discussed in the literature that opportunities and challenges posed by the technology must be effectively addressed for compulsory education. The role of ICT for the older school children and those of university age who are going to enter the workforce soon have been discussed, but much less attention has been paid towards the significance of ICT for the young preschool children. According to Shore (2008), more research is
required to find how children develop the learning skills with the use of technological tools and how the participation of the adults in the child’s learning process can be effective. With some exceptions (i.e. Kirkorian et al., 2008; Marsh et al., 2017; Rideout 2007; Plowman et al., 2010), there has been a lack of full-fledged research of the use of technology by young children for the purpose of learning and education. Also, structured research on the area of use of ICT in preschool education in Saudi Arabia is currently very limited. This research is, thus, a valuable addition to the field.

Cognitive development of individuals is a path to the ‘mastery of language’ (Palaiologou, 2010). Using cognitive development in line with the theory of constructivism can help us understand how children may learn languages. This is the approach adopted in this research — the process of language development is assumed to initiate with the development of Metacognitive competencies which lead to the development of core competencies which eventually lead to the development of language competencies. Using this approach is useful in that it helps us understand which Metacognitive competencies should be focused upon in order to initiate the process and how to track the progress of children's linguistic competencies.

**Practical Significance of This Research**

Introducing ICT into preschool education is not simple as adopting the policies and strategies similar to the integration of ICT for the education of older children (Plowman et al., 2010). In spite of the great developments in the field of technology, it must be considered that ICT tools have some limitations. The significance of ICT has been discussed in many countries including Australia, the UK, Finland and New Zealand (Cooper, 2005; Downes et al., 2005; Kankaanranta and Kangalasso, 2003; O’Hara, 2004; Plowman et al. 2010; Bain, 2006).

These studies suggest that over the last few decades there has been a significant shift in the use of technology and preschool education. The studies have also found that there has been an increase in the political interest in the integration of ICT in preschool education. However, the changes in preschool education had not been equally implemented in comparison to changes in society and are mainly seen as the ‘fun’ activity tool. Technological devices like computers, touchscreen devices and other ICT tools are considered to be the source that drives the standards, as mentioned in the No Child Left Behind legislation. However, it has not been significantly considered as important in preschool, as in the case of higher schools (Plowman et al., 2010). The literature has also explained that, in the context of preschools, the meaning of integration of ICT is still associated with the use of desktop computers but, for the practitioners, the use of more sophisticated tools of ICT in the preschool education
remains challenging (McManis and Gunnewing, 2012; Plowman et al., 2010, Siraj-Blatchford and Siraj-Blatchford, 2006).

ICT facilitates great access to information and knowledge and also provides the opportunity for multiple learning situations. Therefore, the ICT tools must be seen as powerful tools that can improve the process of teaching and learning. They also have the potential to fulfill the needs of the children towards growth and learning. Mioduser et al. (2000) have asserted that presence of the technology in the preschool can be considered as the ‘hardware reality’ that has not become the reality of the technically sound learning environment in preschools. Higgins (2003) suggests that providing ICT tools to children in the preschool is not sufficient, and does not fulfill the purpose of education. Therefore, these tools must be used in more meaningful manner. Schibeci et al. (2008, p.2) state, “first hardware-based enthusiasm then pedagogical reflection is a widespread phenomenon when it comes to integrating technology into the learning environment”.

The changes in the educational system and integration of technology in education have led to changes in the teaching approaches and strategies; this is the reason that pedagogical approaches for the integration of ICT in preschools are still emerging. There has been a very slow change of pace in the integration of ICT according to one published report of Becta. In reference to the use of ICT in the schools rather than their integration in the preschools, this report states that:

“The development of new pedagogies can be a substantial professional challenge: teachers must learn new skills and rethink and refashion the teacher-learner relationship. Developing pedagogical approaches of active learner engagement, facilitating and scaffolding learning rather than transmitting knowledge, using new, more open, questioning techniques, and undertaking assessment for learning all provide significant challenges to a teacher’s role and identity. A lack of time, willingness or the resources to develop new pedagogical approaches is a major barrier to fully exploiting the educational potential of digital technology.” (Chowcat et al., 2008, p. 20)

Use of ICT tools is not easy, and is not similar to other subjects. The integration of ICT requires special efforts from the school administrations and teachers so that this integration can be successful. The planning should be clearly grounded in the purpose, practices and social context of the early childhood education (O’Hara, 2004). For the direct integration of ICT, it is important that clear educational objectives should be made that can promote and make the process successful (Sugar et al., 2004). The objective of the education that encompasses the use of ICT is different from the normal preschool culture, and includes the professional practice, flexible curriculum, learning through play, and assessment process.

In Saudi Arabia, the journey of integrating ICT into preschool education is in its infancy and there is currently little evidence of any efforts to use ICT in preschool education. Part of it can be blamed on
lack of Saudi policy towardstheuse of ICT in preschool education and the part can be blamed on lack of poor social awareness towards benefits of technology (Kalas, 2010; Plowman et al., 2010; Plowman, 2014; Taguma et al., 2012).

The findings of the research will (1) contribute to enhancing the knowledge and boosting the already existing but limited research in Saudi Arabia. Therefore, this research will also encourage further research in the field of preschool education in Saudi Arabia and how ICT can be integrated into early childhood education in a meaningful manner (2) The research will also provide significant information for the policy makers and the decision makers with detailed information regarding the appropriate use of ICT in the context of Saudi teachers and preschool children and what issues teachers face in integrating ICT in preschools. (3) Present and future educational policies and curriculum guidelines can also be influenced by the recommendations and findings of the research and can provide information regarding the successful integration of ICT in teaching and learning EFL in preschools of Saudi Arabia. The results from this research will also be beneficial for guiding the integration of ICT in the preschool education of the developed and developing nations.

Many countries have developed or are in the process of developing the preschool guidelines for ICT integration in the preschool education; therefore, the findings of this research will provide the substantial lesson for the policies and curricula worldwide. The preschool settings, that have initiated the use of ICT, will benefit from the findings of the research. The findings will also provide recommendations that can revolutionise the current preschool education practices. This research can also be of particular significance to the Ministry of Education in Saudi Arabia.

Aims and Objectives

The main aim of this research is to evaluate preschool children’s engagement with a tablet for learning EFL. In essence, it evaluates the effectiveness of using a tablet for teaching EFL to Saudi preschool children and looks at ways of making better use of devices such tablets for teaching EFL to Saudi preschool children. In this context, this research assumes that the focus should be on the mechanism of learning and building capacity to learn as language learning is a competency which allows individuals to learn language through their life experiences. Using the constructivism approach this research aims to investigate how the use of tablets affects the ability of children to not only learn EFL but also acquire skills that will help them to continue their learning of EFL during the course of their lives.

Objectives of Study

The overarching aim of the study will be achieved through the fulfilment of the following objectives:
1. To understand the process of learning EFL in preschool children.
2. To understand the mechanism through which ICT affects the learning of EFL among Saudi preschool children.
3. To explore how preschool children engage with technology for learning EFL.

Research Questions

To complete any research, it is important to consider the role of the research questions to be able to provide guidance in the research process (Creswell, 2009). Bassey (1999: 67) defines research questions as “the engine which drives the train of inquiry.” Robinson and Lai (2006) also define these questions as the anchor for planning research because they provide important clues on how to make research decisions. The questions identified for this research were formulated within the professional/personal contexts (Plowright, 2010); these are:

- How does ICT affect the Saudi preschool children’s EFL learning?
- How do children interact with ICT in relation to language learning?

The first research question aims to identify the effects of ICT on preschool children’s EFL learning. The second research question focuses specifically on how children interact with ICT in relation to English language learning. It is critical to understand the mechanism of interaction between the use of ICT (i.e. tablet) and improvement in language skills.

Purpose of the Research

One important motive for conducting this research is the huge gap in the literature about how and why the use of ICT tools such as tablets may affect the ability of preschool children in learning EFL. Lack of knowledge of this ‘how’ and ‘why’ has been the main stumbling block in effectively deploying technology for improving the knowledge of children from an early age. While past technology was considered too complex for children to use, but the introduction of gadgets such as the tablet has made it quite intuitive and easy for very young children to use. This research is aimed primarily at understanding how the use of tablets can affect the ability of Saudi preschool children in learning EFL. In other words, the researcher wanted to understand the mechanism or the process through which the use of technology promotes improved learning of EFL.

Research Paradigms

This is required because the aim of this research is to evaluate how the use of ICT affects the learning of EFL among Saudi preschool children. It is quite difficult to measure the key aspects of this research quantitatively because it is almost impossible to structure a questionnaire which will accurately reflect the relationship between
the use of ICT and learning of EFL among preschool children. However, this was addressed by statistically analysing the test scores for the English language competencies of children on five scales: Listening, Speaking, Reading, Writing, and Reading Stories.

However, quantitative data alone were not sufficient for this research because the limitations of quantitative methods mean only a certain amount of information could be included. Qualitative data were used to obtain in-depth insight into the perspectives of the teachers who can provide insights into their perceptions of how tablet use may be affecting children’s language skills. In addition, the researcher collected observation data as well to ensure that she observes how the children interact with tablets and how it affects their learning abilities.

Research methodology is driven by the research questions. The nature of research questions, as well as the author's perception of the data and their availability, also affects the choice of research methods (Saunders et al., 2015). This research is looking at several factors which can be primarily divided into two stages:

- First, whether the use of the tablet improves EFL learning among Saudi preschool children
- Second, what is the mechanism/process through which the tablet improves EFL learning among Saudi preschool children?

The researcher employed the use of both quantitative approaches to measure the levels of engagement, and the qualitative approach to gain a deeper insight into what is observed so as to explore the similarities in the data collected. This enabled the researcher to delve further into a dataset to understand the nature of this research and to use one method to verify findings from the other method (Leech and Onwuegbuzie, 2008).

**Research Design**

A research design is the set of methods and procedures used in collecting and analysing measures of the variables specified in the research problem. The present study adopted a case study approach. Yin (1984, cited in Patton and Appelbaum, 2003:60) defines a case study as an empirical inquiry that explores and investigates “a contemporary phenomenon within a real-life context where the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used.” It typically combines data collection methods which include archival searches, observation and questionnaires (Eisenhardt, 1989). Lee and Baskerville (2003:181) define a case study as “an in-depth, multifaceted investigation of a particular object or theme where the object or theme gives it its unity.”

This study focuses on the use of ICT in the learning of EFL in Saudi Arabia. It is also anchored on the recent attempts by the Saudi
government to introduce English as a subject in the curriculum of elementary education subsequently attesting to the increasing importance of teaching EFL to younger children. Particularly, the main purpose of this study is to explore children’s and teachers’ experiences of the use of ICT in learning EFL at the foundation level (children aged 5-6) in private schools in Saudi Arabia.

**Case Study Design**

This research involved allocating tablets to children to learn EFL. The tablet was carefully programmed to ensure that children could not use any other app (except for those which could not be disabled as these were system-integrated). Allocation of the tablet was one per group of three children during a special activity hour. The study began with the researcher interacting with the teachers in charge of the classes that were going to participate in the study. She carefully explained to them what she intended to do and what the purpose of the research was. The purpose of the interaction was to further refine the data collection strategy. Understanding how the school functions, what the key aspects of the curriculum are and other such issues was essential for this study. English test scores for children were obtained before and after the introduction of the tablet. These tests were designed to measure EFL skills on five aspects: Listening, Speaking, Reading, Writing, and Reading Stories. In addition, the researcher prepared observation protocols based on the conceptual framework.

During the session, the teacher had one tablet which she used to demonstrate to the children what to do and how to use the tablet. As discussed above, most of the apps on the tablet were disabled, and only the apps which were system-integrated were retained. New apps for EFL and some additional general knowledge apps in English were installed. This was done just in case the children chose not to use the app that they were asked to use. The idea was to see if they can explore more than they were asked to and, for this purpose, new apps were installed so that even when they explored other apps, they learned something related to EFL. All the apps on the screen except the Google Chrome browser were English learning apps with PEGI rating. (PEGI) Pan European Game Information - is a content rating system established to help adults make informed decisions when buying video games or apps for children through the use of age recommendations and content descriptors.

**Data Collection**

Data were collected using English test scores and observations. The experiment was conducted using ICT devices (tablets with apps). Touch-enabled ICT devices were considered most suitable for this research because it ensured that children could use them without much effort and guidance. Seeing and touching are two senses which are intuitively developed at the very early stage. The results of the pilot study confirmed that other forms of ICT tools such as laptops and PCs are too complicated for young children; instead, touchscreen devices can be used intuitively by children.
Qualitative Data Analysis

Data collected from observation of children participants which consisted of field notes were coded and manually analysed. According to Brophy, Snooks and Griffiths (2008:136), for less structured observation such as open observation, data “can be coded and analyzed in the same way as the texts of interview transcripts — carefully relating the codes to the evaluation aims and objectives.”

Thematic analysis was used to analyse the data. In the current study, specific questions were developed. Therefore, codes were established based on the variables explained in the conceptual framework section at the end of the literature review. Consequently, the coding followed two procedures. The first was prior coding, where the categories were based on what has been obtained in the previous study. Second, open coding was used for the purpose of defining the new categories that arose during the examination of the data. As a result, it has created two new categories called the teacher’s role and ICT utilisation.

Findings of the Research

This research is focused on finding the efficacy and evaluating the effectiveness of using tablets for teaching EFL in the preschools of Saudi Arabia. This research used the case of one preschool in Saudi Arabia and employed the mixed method approach to find the qualitative and quantitative data. Saudi Arabia as the country is significantly advancing in the field of technology and education. Use of ICT in early education is a highly debatable topic. A great array of research has evaluated the significance of ICT in preschool education and language learning among young children. Since technology has affected all areas of human life, the field of education is not untouched by its benefits. There are various ICT and technological tools that are being used to open new ways of enhancing learning and process of teaching (Noor-Ul-Amin, 2013). Early childhood education and quality of early childhood education is a very important component of the education system in Saudi Arabia. With the rapid development of the country, the standard of education is also developing.

The explosion of technology in recent years has revealed that technology no longer remains simply a source of information, as was earlier considered. Technology is much more than that. Many creative and innovative uses of technology are done to enhance the education system for the young children. One of the major aspects of early education in Saudi Arabia is learning English as a foreign language (Noor-Ul-Amin, 2013). English is the most widely used language all over the world. Currently, the integration of technology in ECE is absent; however, the government of the country is working towards the integration of technology through various policies and programmes. Yet, it is believed that integration of ICT can be very
beneficial for language learning. Saudi Arabia is continuously working towards enhancing the skills and capability of its children and youth by improving their English skills. Therefore, the focus of the research is EFL because learning English as second language can be beneficial for the new generation to make them job-ready and employable in the future. English is also very important for the non-English speaking countries. Also, having control and fluency in English is important for the people in the Arab world, so that they may feel connected to the rest of the world.

The tablet is a very important ICT tool that can help in effective learning and teaching processes. Learning EFL through tablets can be beneficial in two main ways. Firstly, children will gain more knowledge about technology and, secondly, this tool can provide an array of effective English learning applications for young children. Various studies have been conducted on assessing the efficiency of tablets in EFL learning; however, this research has focused on finding the efficiency of tablets in EFL learning for preschool children. The evidence has shown that there has been debate on deciding the current optimum age for language learning. Learning can be a complicated and challenging process for young children, due to various developmental milestones. However, since children in this stage are mainly involved in developing the learning, thinking, and language development skills, early childhood is considered to be the appropriate age for introduction of English as a foreign language.

In countries all over the world, technology and language learning begin in the early ages of life. Although technology may have some negative effects on the growth and development of children, its efficiency cannot be denied. The evidence from different countries has been included in the research to explain the importance of the early introduction of technology and language learning in early childhood education. This is the reason that this research has been taken up to discuss the efficiency of technology as the process of language learning in early childhood education for the development of the Metacognitive competencies in the young children. This chapter summarises the important aspects of the research. It also discusses the findings and contributions of the research, followed by the limitations and suggestions for expansion of the research.

The findings of the research discuss the specific findings concluded by the quantitative analysis of the research related to the improvement in the Metacognitive skills of the children and development in language learning through the use of tablets.

The findings from the literature suggest that ICT can be very significant for the development of the children. ICT tools are very comprehensive and can be used for various educational exercises and activities for learning. Language learning is a very challenging process for the children. Development of language and learning English as a foreign language is associated with the development of Metacognitive competencies and core competencies.
Metacognitive competencies include communication, autonomy, creativity, problem-solving and self-development. Without these skills, children will not be able to develop language learning skills. Such competencies require a change in nature and personality that could not be achieved in a short time span. Core competencies are the skills that can be taught. Therefore, they are easy to achieve in a short span of time.

The empirical analysis of the data suggests the development and improvement of the metacognitive competencies, core competencies and language competencies of the children. The qualitative analysis was undertaken on the English test scores; and pre- and post-English tests were taken. Children were divided into two groups; those in Group A were provided with tablets under the instruction and guidance of the teacher, while the children in Group B were provided with the tablets without any formal instructions and guidance from the teachers. The mean test score for both the groups displayed a considerable difference between the pre-intervention tests and post-intervention tests. The mean score was found to be higher in the post-intervention scores.

Group A displayed the higher rate of improvement in English skills in comparison to Group B. The findings of the research suggest that Group A displayed improvement in the four dimensions of the language learning competencies. Children displayed improvement in listening, speaking, reading and reading stories. The scores for Group B improved in three dimensions — speaking, writing and reading. The listening score for Group B was already high; therefore, it remained unchanged. The findings of the research suggest that ICT intervention can help in improving the speaking and reading skills of children. The data were collected through observations, and the highest numbers of observations were made for analysing creativity among children. The creative skills of the children were improved, with improved autonomy, problem-solving and self-development. However, the major finding in the context of metacognitive competencies was that communication skills of the children decreased.

Integration of tablets in the EFL classrooms reduced communication among children but increased their concentration. However, the focus and concentration of the children were also dependent on the level of interest that children have in the topic. It was also found that level of concentration and focus reduced with the use of tablets because the stripped-down version of the tablets was used, which may be less interesting for the children. The use of tablets also improved autonomy and problem-solving skills among children, because tablets provide various opportunities to the children to solve a range of problems and puzzles, and autonomy was gained as children needed fewer instructions to use tablets. The findings of the research also suggest that very limited improvement was found in the core competencies of the children.
The observation of the teachers was highly significant in this context, as the teachers have a very important role in engaging and empowering children to use tablets. The teachers could not effectively motivate children to use technology for learning English; they were unable to develop practical strategies through which they could enhance the focus and concentration of the children and to enhance communication between them. Therefore, teachers were not very enthusiastic about using technology in classrooms and were less motivated about the development of the new learning environment in the class. One reason behind such an attitude is the lack of training and support through which the teachers can plan the integration of technology.

Due to the lack of planning and practice strategies, teachers were not able to effectively use the tablets for teaching purposes. The teachers were not formally trained in using the various applications on the tablets and had attained only basic knowledge about them. This resulted in less involvement of the teachers with children, and most of them were found sitting idle, while children were busy on the tablets. The lack of implementation efforts from the teachers could be a significant barrier to the successful integration of technology in classrooms with young children.

Research Answers

This section answers the research questions in a detailed manner.

The first research question is — How does ICT affect the Saudi preschool children’s EFL learning? The findings suggest that clear and verifiable impact on the ELF learning ability of the children is achieved through this research. The preschool children displayed improvement in their language learning abilities and displayed improvement in speaking, writing and reading the English language, which means that young children can be involved in the process of learning EFL. Children were also able to display improvements in the Metacognitive, core, and language learning competencies. In some aspects, the improvement is not statistically significant, but the mean score of the pre-intervention English test and post-intervention English test displayed improvements. The main scores of the postintervention English test were higher, which informs us that verifiable impact of the use of tablets was found among the Saudi Arabian preschool children.

The second question of the research focused on finding out — How do Saudi preschool children interact with ICT in relation to language learning? The process of learning EFL is very challenging according to the findings of the research. EFL learning is the process that requires the involvement of the teachers and the children; and such involvement and engagement are based on the skills of teachers, availability of the resources, interest of the children in the topic, and types of exercises and activities used in the class. The use of tablets improved the speaking and reading skills among the children. This means that children were able to read new English words from the tablets and to speak including the pronunciation of words. The
learning process was enhanced when the children were able to apply their creativity in finding new words. Therefore, it can be said that tablets affected the children’s ability to learn EFL, by them displaying the concepts of originality and creativity. Children were interested in searching for information according to their original thoughts and interests. The improved ability to learn EFL is associated with speaking, reading and writing. The use of multimedia tools allowed children to listen to rhymes that improved their language competencies. However, no improvement in the writing skills of the children was analysed, because most of the activities on tablets do not involve writing. Also, the children were very young to write words. According to the observation of the teachers, the children mainly engage with technology by themselves with little or no involvement from the teachers, although some of the teachers made efforts to observe what the children were doing and to provide them with instructions on how to find new information. Yet, this involvement and interaction were very limited. The personal skills and competency of the teachers resulted in their limited involvement.

Equipping children with the necessary skills to use tablets is very important for successful development of independent learning. Self-development of the children is also not clear with the use of tablets. Therefore, it is important that there should be limitations and supervision to avoid problems of isolation and to enhance positive self-development. Another aspect that should be considered concerning the integration of tablets in Saudi Arabian preschools for teaching EFL is to make improvements in the course material.

**Key Contributions**

The first important contribution of this research is that it includes a detailed analysis of the findings regarding the concerns and perspectives of the teachers in a very comprehensive manner in the context of involvement of ICT in EFL learning. With the significant developments in the field of technology and EFL in Saudi Arabia, it became important to identify the role of ICT in improving the language learning skills of children. Therefore, this research is of importance as it focuses on young preschool children, who have not developed many competencies and are at the developmental stage, where they could acquire new skills and competencies. This research will contribute to providing new knowledge about the development and language learning capabilities of young children. The earlier researchers do not provide the pre- and post-intervention responses of the teachers. Another important contribution of this work is that it has discussed the Metacognitive competencies, core competencies and language competencies of the children in detail. Earlier studies have provided very limited information related to these competencies in preschool children; this research therefore provides more comprehensive information and more detailed qualitative and quantitative data. It also contributes by improving various
observational examples to explain the development and improvement of children in three different competencies. This research provides significant evidence for understanding the importance of construction and instruction learning, and also proves the value of the instructional and assistive approach that is significant for language learning. Finally, the research also identifies that learning a language is both an intrinsic process and an extrinsic process so a balance between both is necessary.

**Recommendations**

The preschool children are very young to understand the learning process; therefore, more responsibility lies with the teachers to make the process of teaching and learning EFL effective. An interesting suggestion made by the teachers is their involvement in designing the course material. Another recommendation made by the respondents is to include a course related to learning the use of tablets for the children so that every child is able to effectively use the tablet before starting EFL learning.

**Limitations of the Research**

The research has a few limitations. While a key argument that is regularly brought against case studies like this is the small sample size (Yin, 2009), this design was carefully chosen to enable the researcher to better understand the specific and complex reality of the preschool settings accessed for the study. From the outset, the study was not meant to be ‘representative’ and the researcher would like to stress that ‘representation’ in research is a highly problematic concept (Yin, 2009).

Another limitation of the research is the use of the self-reported observation method. Another limitation of the research is the exclusion of the parental perspective on the improvement of children. The perspective of the parents is very important, as parenting can affect the developmental and cognitive skills of children. Therefore, parents can be involved in future research to find out the efficacy of tablets in EFL learning.

**Suggestions for Further Research**

The researcher suggests that there is scope for further investigation related to the type of learning and teaching material that can be used on tablets. The research also provides the scope for the integration of more preschools in future work, and finding a larger data pool for analysis. The experimental study design can be applied for future works. Another suggestion for future research is to focus on enhancement of the writing skills of the children. This research does not provide significant information about the writing skill improvement in children with the use of tablets; therefore, future research can focus on assessing whether there are improvements in the writing skills of children and types of writing activities on tablets for EFL learning. It is important that the theoretical framework prepared
for future work must combine the teachers, parents, children and system characteristics in a multilevel framework. The involvement of the parents and system characteristics can enhance the quality of the results and provide better practical implications.

**Practical Implications of the Research**

The research set out to assess the efficiency of using tablets for EFL learning in a single Saudi Arabian preschool using the mixed method approach. This research focused on finding the possible chances and outcomes of integrating technology in EFL learning; the aim was to understand the main process of learning among the young children. Early childhood is the stage where the cognitive, social and language development of the children takes place.

Therefore, the research can provide some significant results for future practical implications. The systematic application of the tablets in the EFL classes for young children is important. Since the young children have limited knowledge about English, the practical implications of the research findings can explain how the learning of English occurs in young children. The practical implications of the findings also suggest the mechanism of EFL learning in a comprehensive manner and explain how children in Saudi Arabia can learn English through tablets. The language influence is very high in Saudi Arabia, as children and teachers use Arabic very frequently. Reducing the use of Arabic in the classrooms and restricting the use of Arabic among children can help in improving the teaching and learning process. The challenges identified also provide a clearer perspective for the practical implications of this research.
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