Perceptions and Beliefs of the Teachers of Kindergarten and the First Primary Stage for Employing Digital Technologies in the Education Process in Jordan

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Abstract

This study aims to explore the reality of employing digital technologies in the education of kindergarten children and the primary stage. It also aims to determine the views and perceptions of children towards these technologies and how to deal with them. The study also aims to determine the perceptions of kindergarten teachers and the primary stage towards employing digital technologies in children's education. This study included two approaches: the qualitative to reveal the reality and perceptions of employing digital technologies through conducting interviews and recording observations, and the second one quantitative by preparing a scale to measure teachers' perceptions towards employing digital technologies in children's education (PBDT), which consists of (62) paragraphs measuring (6) Various aspects. The sample consists of (64) children from kindergarten and primary stage, from both the government and private sectors. As for the sample of teachers, it reached (99) teachers from kindergarten and primary stage teachers from both the government and private sectors. The study concluds that the majority of children use digital technologies, and this use is done under the supervision of parents; (YouTube) is the most used application, electronic games are the most topics that employ digital technologies, then religious studies and music. The study also shows that children prefer traditional games, story-telling from a mother or teacher, and studying through books instead of using digital technologies. The study also shows that teachers' perceptions of employing digital technologies are moderate. Besides, the number of years of experience, the teaching stage, and the level of knowledge of digital technologies are all factors that do not affect teachers' perceptions towards employing digital technologies.

Keywords: Perceptions, Teacher Beliefs, Kindergarten, Primary Stage, Digital Technologies

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INTRODUCTION

Human beings are in rapid evolution and change. The rhythm of our current lives is so fast that we should react quickly to these changes. With the use of computers, communication technology, and digital technology, we have reached a point of no return, meaning that we are moving rapidly and continuously to further development, employment, and use of this technology and can no longer go backward. This situation places a heavy burden on education and educators in dealing with the issues of teaching and learning in an era of rapid change, many developments, innovations. The goals and means of education have changed, and the goals of education have evolved. Access to knowledge is no longer a goal sought by the teacher and the student due to the smooth and easy access provided by technology. More critical and influential goals have emerged on the horizon.

The learner today needs more than just to acquire knowledge, he needs to manage and process this knowledge, to scrutinize it, and to judge its validity and credibility. The learner needs ways to access information and to acquire skills in dealing with modern technological means. He also needs a set of skills that enable him to play this role, such as thinking skill/decision making/problem solving/self-learning/continuous learning) Aljaberi, 2010). The shift to digital technology and the rapid spread of non-global ICT change our daily lives and behaviors in different age groups. It also represented a change in childhood. As children's interests, games, and ways of receiving information change, digital technology has provided them with greater access to information, useful play, and hobbies and skills development (UNICEF, 2017). In the twenty-first century, linking the employment and use of digital technologies and changing the performance or behavior of children has become commonplace for parents or teachers. They are often linking these technologies with the activities of children in leisure (Owate, Afolabi, & Akanwa, 2017). Digital technologies have invaded our children's lives, learning them under the weight of the digital world, and the acceleration that it imposes on them so that psychologists have recently called this age the digital childhood. Children spend too much time on smartphones and tablets, also, so they become addicted, (Aljaberi, 2012; Prensky, 2001). (Papadakis, Kalogiannakis and Zaranis, 2016) emphasize that many studies have supported digital technologies and their role in creating a useful, attractive, and innovative learning environment for children. Their study highlights the positive relationship between the use of digital technologies and the development of mathematical thinking in early childhood. There are also several studies on the impact of children's use of digital technologies that have shown that there are many advantages and benefits for children who trained to use these technologies, including by enhancing their knowledge and social capabilities. Other studies have shown that there are many disadvantages to children's growth if they become accustomed to the use of technology, including the difficulty of focusing while studying. Digital technologies have had a significant impact on children. Their children are fascinated by these technologies, unable to live without them, and today's children have difficulty imagining a beautiful life without such elements as video games, the Internet, the smartphone, and iodine devices. (Aldhafeeri, Palaiologon, and Folorunsho, 2016) argue that early-childhood and education scientists are still discussing the introduction of digital technologies in the education process, particularly in the area of childhood education that suits this stage and where game-based education through digital technology is still in its beginning. Whether it is good or bad, society must adapt to the fact that these technologies will continue to evolve, and are essential to children's and society's lives. Innovation will not stop at a specific limit. (Nasr, 2018) emphasizes the active role of communication and information technology in the learning process and the significant impact on the content and design of the curricula and educational activities that depend on the employment of computers, the Internet such as drawing programs, listening to music, listening to stories and re-recording them, and employing Computer networks, electronic games, mobile phones, and educational software. (Mahmoud, 2018) asserts that children under two and a half years can learn more from live interaction than from TV or video. The use of some smartphone applications and software such as spoken eBooks has contributed to the child's learning from 2 1/2 to 5 years of speaking correctly and with a good reason. Computer technology has shown to help develop the classroom learning process as it makes the learning process more participatory by providing new ways to explain complex concepts and critical thinking. (Zabatiero, Strakar, Mantilla, Edward & Danby, 2018) emphasize that the use of digital technologies in the childhood learning process affects the health and social and

emotional development. (Manessis, 2013) shows that children learn by exploring the world around them by carrying out many activities designed as a toy.

The process of educating children at this stage requires ways to integrate children into play and action-based learning and focus on the use of senses, activity, and pleasure. This reality can be addressed by introducing digital technologies into the environment in which children learn and using them appropriately so that learning becomes fun, useful, and achieves their goals (Wardle, 2000). (Coue & Chen, 2010) assert that children can use the drawing program by selecting the pen from the toolbox, free drawing, and choosing the topological shapes such as circle, line, square, etc. in building a particular picture. Also, choosing letters, synthesizing words, changing colors, and combining them with the ability to cancel any part easily; this opens up new horizons in learning and integrate children into learning teaching proces.

Among the applications mentioned by (Veenstra, Van Geert, & Van der Meulen, 2010) for digital techniques is teaching children to listen to stories and re-record them where the child can make particular drawings and scribbles that represent a specific fact or story and then re-hear it. So this enables the teacher to communicate with the child to explain what he has done, record this novel, know the child's way of thinking and desires, support his abilities and push him to create, develop his verbal and non-verbal skills. (Berson and Berson, 2010) emphasize that children working with digital technologies enhances their mental abilities and their creativity, allows the world to expand around them, and enables them to enter social environments beyond time and space. On the other hand, it emphasizes that the consequences and potential effects of technological developments on children cannot be overlooked. It is necessary to evaluate the role of these technologies as an educational tool and focus on the educational effects and ethical issues related to their use. Numerous research undertaken in the past few years recommends the employment and use of digital technologies as a supporting tool in early childhood education (Papadakis, Kalogiannakis and Zaranis, 2016; Nikolopoulon & Glaamas, 2015). On the other hand, (Wardle, 2008) mentions that If digital technologies are employed indefinitely and thoughtfully, it may affect the developmental needs of children. These needs are not appropriate for these technologies, such as physical games, exploring and adapting to the surrounding environment and society, discovering nature, art, dance, music, specific social skills, moral values, and other things are ignored.

(Manessis, 2013) stresses that the attitudes, perceptions, beliefs, and feelings toward the importance of digital toys in kindergartens are considered as indicators for inserting and integrating digital games into kindergartens and determing if it is successful or not. (Mercer, 2014) stressed the importance of supporting teachers to have a clear idea of how, why, and what technology can be used in the learning environment, and stressed the criteria and recommendations for regulating the process of employing these techniques and stressed that the lower the use in stage 2.5, the better it is for the child. (Manessis, 2013) also emphasizes teachers' beliefs about computer technology and their role in learning and developing early childhood children, and that children without the support of their teachers will not be able to learn and grow on their own, even if they employ these techniques themselves. He also stressed the importance of good digital gaming design in improving children's learning and cognitive development. The spread of technology in recent years has led to the emergence of a new generation of stories, digital stories, which combine computer-based technologies with narrative art. Digital stories have proved useful in the educational process, and are suitable for visual and auditory learners, adding fun and excitement and growing the ability to solve problems. It is ideal for different age groups and can be used in most fields of study (Rahimi & Yadollahi, 2017). (Blackwell, Lauricella & Wardella, 2014) believe that supporting the use of digital technology, learning experiences, and teacher-qualification technology are all requirements for having the teacher's self-confidence in the application and employment of digital technologies. And therefore, there is a definite trend to engage them in the learning process actively. (Niederhauser & Stoddart, 2001) emphasize that digital technologies cannot change educational practices unless teachers adopt them, and through the strength of the influence of teachers can influence students' learning. (Mantilla & Edwards, 2019) reported that digital technologies are an essential part of children's lives today and that determining how digital technologies are used and employed by children is very important for a

healthy life, to stay safe, to learn, to communicate, and to live. There is an ongoing debate about how and how? digital technologies can be introduced into children's lives, especially after these technologies have spread and entered their lives (Verenikina and Kervin, 2011). (Mahmoud, 2018) asserts the negative use of mobile for children is pre-school and its bad effect on their social and emotional development. It affects their psychological interaction with their peers, as well as distracting the child's attention and leading to their addiction, isolation from the real and social world surrounding them, and their integration into a virtual fantasy world. (Mahmoud, 2018) confirms that parents' addiction to technology contributes to making their children addicted to technology. On the other hand, (Al-Jabari, 2011) also stressed that moderate e-gaming has positive effects on children's higher-order thinking skills as well as the development of kinesthetic skills between hands and eye. It also raises motivation, learns profit, and wins values, accepts loss and perseverance. There is an ongoing debate about how digital technologies can be introduced into children's lives, especially after these technologies have spread and entered their lives (Verenikina and Kervin, 2011). We should not forget and stress the teacher's role in making digital technology work in education, as (Reeves, Gunter, and Lacey, 2017) emphasize. However, mobile, internet and other digital technologies contribute to student learning and addressing educational inequality, provided that teachers spend more time planning how to integrate these technologies, emphasize children's content, and choose the right application for them. (Josh, Pan, Murakami, and Narayanan, 2010) assert the need for training of early childhood teachers in integrating and using computers in the classroom.

The importance of the study

Young children aged two years and over are now using computers, the Internet, and digital technologies. Since this age range is critical in terms of their social, emotional, cognitive, and physical development, it is essential to ensure that these techniques they use are appropriate for their development and positively affect their growth.

Young children are surrounded by technology in their homes, in their school, and the community around them. Computer and information technology is used in several special applications; it used in the field of discovery, modeling, and forms in the representation of abstract concepts, selection of the appropriate learning style, and the development of the needs, trends, and abilities of children. This study aims to reveal the reality of digital application in kindergartens and the primary stage in Jordan, as well as to reveal perceptions.

Literature review

Studies that research children's use of digital applications and how to use them

A study by (Sapsaglam, 2018) aims to examine awareness and use of social networks in kindergarten; A sample of 140 children, including 20 children aged 3 and 40 children aged 4 and 80 children aged 5, were selected, interviewed and used cards with images of social networking applications. The study results conclude that the majority of students confirmed their knowledge of networking applications and confirmed their attempt to use them. These apps are from parent phones, and results show YouTube was the most commonly used app, with kids using it to watch cartoon programs. (Kjallander, 2014) however, clarifies that our knowledge of pre-kindergarten children and how they share and interact with digital tablets is low, so his study aims to see how children construct meaning and how they play with different digital applications. The results showed different and varied situations showing how pre-school students are working with educational designs and how they transformed them into learning games.

Studies on the impact of digital technology on achievement and achievement

A study by (Reeves, Gunter, and Lacey, 2017**)** aims to identify how mobile devices are integrated into kindergartens and their impact on academic learning. The study employed two groups, one of them a non-iPad officer and the other using iPad in their learning – the study concluded that the

phonological warfare and mathematics achievement were better in the group that employed iPad in education. Hence, the study confirmed that integrating mobile devices into teaching certain subjects increases student learning. A study was conducted by (Papadakis, Kalogiannakis and Zaranis, 2016) to investigate and compare the impact of the use of computers and tablets on the development of the mathematical efficiency of early childhood children and used that experimental method and selected two groups, which employed computers in one study group. The study concluded that the use of the dashboard contributed significantly to the development of children's mathematical abilities. In a study by (Bassem and Abdul Rahman,2018) that examined mothers' awareness of the negative effects of using smartphones on children aged 2 to 9 years, the researchers measure the impacts and effects of a smartphone using different aspects such as social, health and behavioral. The results indicated that smartphones had negative effects on social, health, and behavioral issues. A study by (Abdel Al-Najjar, 2014) investigates the effectiveness of an e-learning program in developing computer skills for kindergarten children. The results of the study showed that electronic games are useful in developing computer skills for kindergarten children and that they stimulate and motivate children to learn. Research by (Rahimi & Yadollahi, 2017) looked at the impact of online digital stories on the development of literacy skills for English learners as a foreign language. Forty-two trainees participated in the study, distributed in two groups. The pilot group trained to write using an online platform. The control group trained from the offline content production program. The literacy skills of the two groups evaluated at the end of the experiment and the results of the study revealed that the literacy skills of the group that produced stories with an Internet platform improved compared to the control group that worked with an offline program. A study by (Ibrahim, 2011) aimed to reveal the effectiveness of e-learning games on the acquisition of primary fifth-grade students at the base schools in Khartoum. The researcher has followed the experimental approach. The study tools were an educational program based on games and a pre- and post-student test prepared. The most relevant results of the study showed: Significant differences between the average student scores for the control and experimental groups in the post-test for the experimental group. There are no statistically significant differences between the average student scores for the control and experimental groups in the understanding level.

Studies on parents' and teachers' opinions and perceptions of digital technology employment

In a study by Nikolopoulon & Glaamas, (2015) to investigate the beliefs of child teachers about the employment of ICT in early childhood learning in Greece as a useful tool of education, the results have shown that the fewer years of experience, the more self-efficacy in using the computer. ICT was seen as more than a play tool. It could be used for learning as a model in education and could, therefore, be incorporated into the curriculum and employed in the teacher's teaching practices. A study conducted by (Aldhafeeri, Palaiologon & Folorunsho, 2016) examines the views of education teachers in Kuwait toward the use of digital technologies in their lives, and its employment in classroom applications. The sample number reaches (195) teachers. The study concluded that teachers are using digital technologies efficiently in their personal lives. Also, while digital technologies are available in all classes in Kuwait, teachers are still hesitant to incorporate these technologies into their teaching practices. Bentley et al., (2016) confirmed that parents have positive perceptions of digital use by their children. The majority of parents allow their children to use digital technologies for their work to discharge their responsibilities and perform household duties. The study found that most parents have rules and limitations on how their children use the phone. One question frequently asked is about the suitability of using digital technologies by the primary stage and kindergarten children in learning and teaching. Besides, how well teachers understand the role of these technologies in children's learning and education. Several studies have undertaken to answer this question. A study by Manessis, (2013) aimed to investigate student attitudes toward digital games in education. The study concluded that students showed a high degree of self-confidence in the use of digital games in learning. The year of Study factor, the level of day-to-day computer use, previous experience in computer games, and past qualifying courses were among the most important factors that affect the attitudes toward computer technology.

A study by Erdogan, Johnson, Dong & Qiu, (2019) determined parent's opinions, preferences, and beliefs in four countries, the United States, Turkey, China, and Korea, toward using digital technologies and electronic games to educate Kindergarten children between the ages of 4-6 years. The results showed that the parents realized that a great deal of learning attributed to digital games and technologies, provided that they adequately prepared. And the use of these techniques carried out under the supervision of parents and teachers. Van Scoter, J., Ellis, D., & Railsback, J. (2001) confirmed that most studies results show that information technology is not suitable for children up to 3 years of age. Because, this phase, based on life experiences that require family social interaction, as well as the capabilities needed to deal with digital technologies, are weak for children. In practice, computer introduction and generalization technology must begin after the age of three. A study by Blackwell, Lauricella & Wardella, (2014) based on path modeling aimed to investigate the relationship between internal and external factors that affect the application of early childhood digital technologies. The study showed that the children's teachers' attitudes toward the value of technology in helping students learn were significantly affected by the use of technology, followed by confidence and support in the use of these techniques. The results indicated that the more the teacher's experience, the more negative their attitudes are. Ihmeideh & Alkhawaldeh, (2017) study examined the perceptions of kindergarten teachers and parents about the contribution of digital technologies to the development of children's culture in Jordanian education. The results conclude that the use of digital technology had a positive impact on children's culture. Parents' perceptions of digital technologies have also been more positive than teachers' perceptions. A study by Ntuli & Kyei-Blankson, (2010) found that child-teacher is aware of appropriate techniques for children's development and education, but there is a lack and general weakness in integrating this technology and considering it as an integral part of the teaching and learning process. A study by Zaranis & Oikonomis, `2016) identifies factors influencing the educators' attitudes toward the digital technologies that can be used in the process of education. The findings have emphasized the importance of Kindergarten and primary teachers' attitudes toward digital technology as they affect how these technologies are used in the classroom and their impact on children's learning. Ntuli, (2017) emphasizes the importance of communicating with teachers to establish standards for assessing the effectiveness of digital technologies. Therefore, it becomes possible to reflect this on the preparation of early childhood teachers.

A study by Josh, Pan, Murakami, and Narayanan, (2010) examins the beliefs and attitudes of kindergarten teachers toward the role computers play in educating young children. This study was applied in the United States of America and Japan. The study concluded that there is a difference in beliefs and attitudes between American teachers and Japanese teachers; where Americans teachers have more positive attitudes, Japanese teachers, on the other hand, have been more conservative. The teachers' competence with computers is not related to their attitudes and beliefs towards the computer and its role in educating children. There are ongoing discussions and debates about how and when digital technologies can be introduced into children's lives, especially after these technologies have spread and entered their lives (Verenikina and Kervin, 2011).

METHODOLOGY

Study Questions

1. What is the reality of using and employing digital technologies in schools and kindergartens in Jordan?

2. What are the perceptions and beliefs of kindergarten and the early primary stage teachers toward the role of digital technologies in teaching, learning, and developing children?

3. Do teachers' perceptions and beliefs about the role of digital technologies and their impact on child development vary with the teaching sector (governmental/private) and each of the teachers' years of experience and their knowledge level of digital applications?

Procedural definitions

Perceptions and beliefs of digital employment in education: Views or perceptions about the impact of digital technology on children's education are measured by teachers' response to the conceptual and belief scale paragraphs used for this study.

Study Tools

Perceptions and Beliefs of Digital Technology (PBDT)

To measure teachers' perceptions and beliefs regarding the role of digital technologies in the development and learning of children, the researcher designed a scale. The (PBDT) scale consists of (62) items. These items were graded on five-point Likert-scale that measures the role of digital technologies in the following aspects: Physical and health, mental and cognitive, personal and emotional, social, religious value, and esthetic. Besides, the teachers' attitudes toward applying digital technologies in the education process. The researcher designed the scale items after referring to the literature related to the subject, some paragraphs have a positive direction, and others have a negative trend. The reliability coefficient (Cronbach Alpha) has been calculated using a sample group of 30 teachers. The reliability value for (PBDT) scale was (0.92).

Notes and observations were used, in addition to interviews to reveal the use of digital technologies in kindergartens and primary schools.

Study Design

The study included two quantitative approaches, the first to identify teachers' perceptions and attitudes regarding the role of digital technologies in the development and learning of children, a perception scale was prepared for that. The second is a qualitative approach to determine the reality of using digital applications and technology in the learning process, observation of how digital technologies were employed. Besides, the researcher conducts interviews with children to reveal their perceptions and beliefs about the role of digital technologies in the education process.

Study procedures

Study members selected as an available sample from government and private schools in an area close to the university.

– A scale of teachers' perceptions and beliefs applied to government and private kindergarten teachers.

A scale of teachers' perceptions and beliefs applied to government and private primary stage teachers.

– Positive items of the (PBDT) scale are given the points (5, 4, 3, 2, 1) If the teachers' responses are (I agree strongly, agree, neutral, disagree, disagree strongly). Also, the points (1, 2, 3, 4, 5) were given to negative items of the scale if the teacher's response is opposite to what is described above. The test score range between (62- 310). Also it was converted to percentages. The percent above 73.3% set to represent high perception and positive attitudes. The score between 46.8-73.2 to express neutral or moderate perceptions and attitudes. Finaly, percentages below 46.6 represent negative or low perceptions and beliefs. Monitoring the Digital technologies applied in some classrooms and the teacher responses were noted. Interviews with children from Kindergarten and primary stage were conducted. Their answers are written, and the content of these interviews was analyzed.

The study took about two months from the start of the study tools design until the application finished.

Study sample

(99) teachers from kindergartens, primary schools enrolled in this study, those teachers are from the government and private sectors. The number of teachers from government schools is (20) with percent (20.2%). The number of teachers from private schools and kindergartens is (79) with percent (79%). The percentage of teachers with less than three years of teaching experience is (13.1%), (3-5) years of teaching experience (20.2%), 6-10 with percent (32.3%), and more than ten years of experience (34.3%).

However, the level of digital application use is determined by the number of hours the teacher spends in employing digital technologies. If the number of hours is more than (20) hours a week, the average use is high.It is moderate if the average usage is between (10-20) hours a week, but if the number of hours is (less than 10) hours a week, it is considered a low usage level. According to that, the number of teachers using digital technologies and consider their usage as high are (25) teachers with the percent (25.3%). The number of teachers using digital technologies and consider their usage as moderate is (65) with the percent (65.7%). Finally, the number of teachers with a low level of usage or week level is (9) with the percent (9.1%). The number of children participating in the study was (64) from kindergarten and primary schools. The number of children from government kindergartens is (11) reached a percentage of (17.2%). The number of children from the kindergarten stage in the private sector is (12) at a percent of (18.8%). The number of children from the primary stage of the government sector is (7) by (10.9%). The number of children from the primary stage of the private sector is (34) students (53.1%).

RESULTS

Results related to answer the first question- What is the reality of using digital technologies by students at the primary stage and kindergartens, whether governmental or private. (64) Students were interviewed, and student responses were classified into several aspects.

The following observations were recorded in the student interviews:

To answer the question: Do you use digital technologies? When and how often?

Most students answered that parents determine the number of hours their children spend using digital technologies. This determination further increased as the student progresses in the school stage, where parents agree to allow children in kindergarten to use the digital techniques more than children in the primary stage. This is to focus on children fulfilling their duties, achievement, and progress in the study and these basic stage requirements. Also, the primary stage is more important and formal than kindergarten. Besides, the use of digital technologies by children is carried out under the supervision of parents, as most children have pointed out. Parents are the only ones who determine the applications used and time; this is the opinion of children, whether from the government sector or the private sector.

To answer the question: Do you prefer traditional or e-games?

Children have responded that they prefer traditional, peer-based gameplay more than electronic games. They prefer to spend their free time in traditional play, and if parents don't allow them to leave home to play with peers, and do not have new games at home, they resort to electronic games. The percentage of children who prefer traditional games (53.1%) versus (46.9%) prefer electronic games. Do you prefer learning using books or electronic applications?

Children prefer learning from books and do not prefer learning through digital applications

Would you prefer to listen to stories that are told by electronic applications, by teachers or by mothers?

Children prefer storytelling by teachers and mothers, not by applications available on digital technologies. It is also noted that male students from government schools, if they were directed to digital technology, preferred the digital game. In contrast, female students preferred digital applications to use in language and education.

To answer the question, do you spend your free time playing games?

(29.9%) of the children answered “Yes”. As for the children who answered “sometimes” they reached (29.7%), while the percentage of those who answered “No” was (48.4%)

Children responded to the question, "Do you think it is necessary to learn and employ digital technologies in your learning process"? (78.1%) replied “Yes," whereas (21.9%) answered “No”.

When asked about the most important digital roles in the education process, students replied that the most important of these roles are searching for information, storing and organizing data, and the ease of communication. As for the existence of regular computer class, the percentage of schools whose programs include a computer class reached (17.2%), compared to (82.8%) of the schools whose schedule does not include a course for computer material.

For quantitative information, students were asked about digital applications that were restricted by interviews, and students responded to these applications. Table 1 showing digital applications and student percentages that answered “yes” or “no” or “sometimes” to the use and employment of these technologies as well as the number of times they used weekly:

Table 1. Children respond to digital applications used by them.

	No	Sometimes	Yes	1-time	2-3	>3
Facebook	70.3%	15.6%	14.1%	54.7%	21.9%	**23.4%**
Snapchat	75%	4.7%	20.3%	48.4%	34.4%	**17.2%**
Instagram	76.6%	10.9%	12.5%	50%	39.1%	**10.9%**
What’s up	46.9%	14.1%	39.1%	39.1%	26.6%	**34.4%**
Twitters	82.8%	4.7%	12.5%	56.3%	37.5%	**6.3%**
Courseware	42.2%	9.4%	48.4%	39.1%	23.4%	**37.5%**
Careem program.	71.9%	4.7%	23.4%	53.1%	29.7%	**17.2%**
Digital Camera	32.8%	14.1%	53.1%	25%	40.6%	**34.4%**
Digital toys	28.1%	6.3%	65.6%	21.9%	20.3%	**57.8%**
IPads	35.9%	3.1%	60.9%	31.3%	9.4%	**59.4%**
Mobiles	43.8%	21.9%	34.4%	39.1%	14.1%	**46.9%**
Smart boards	28.1%	35.9%	35.9%	29.7%	9.4%	**60.9%**

Results on the most widely used digital applications by children show that YouTube is the most commonly used by all students, followed by Digital Camera, Smart Board, followed by iPad, and then Courseware and Mobiles.

The order by frequency of use of digital applications shows that YouTube gets the first, then Smart Board followed by iPad.

To answer the question: "what are the topics students employ digital technologies on?" the percentage of students' usage was calculated. Table 2 shows these results.

Table 2. Percentage of students and their use of digital technologies.

	Languages	Mathematics	Science	Music	Religions	Playing
No	46.9%	50%	51.6%	48.4%	46.9%	**31.3%**
sometimes	37.5%	7.8%	6.3%	6.3%	6.3%	**7.8%**
Yes	15.6%	42.2%	42.2%	45.3%	46.9%	**60.9%**

The subjects in which digital applications applied were mostly higher are electronic games with the percent (68.7%), followed by learning religion by (53.2%) and then languages by (53.1%). Then comes music learning (51.6%), mathematics, and finally science. These percentages were calculated by adding the percent of the responses, “Yes”, and “sometimes”.

To answer question 2: What are the perceptions and beliefs of kindergarten and first primary teachers toward the role of digital technologies in the education and development of children?

The scale of teachers' perceptions of employing digital techniques in children's education (PBDT) has been applied. The percentages and means have been calculated on the scale as a whole and its various aspects. Perceptions are classified as low if the average performance percentage on the scale is less than 46.7, and the perception is medium if the percentage is between 46.8-73.2, and classified as high if it is between 73.2-100. Based on this classification, the results indicated that the number of teachers who have low perceptions towards employing digital technologies in teaching children was six teachers with the percentage (6.1%), while the number of those who are classified as moderate reached 75 at (76.8%). The number of teachers whose perceptions were high was 17, with a percentage of (17.2%). Given these findings, we can say that the majority of the teachers were moderate in their perceptions about the use of digital technology.

To find out the teachers perceptions' in the different aspects of the scale, the means and the standard deviations are calculated. Also, the value of (F) for the response of the teachers to the seven aspects of the questionnaires is calculated. Table 3 shows these findings.

Table 3. means and standard deviations for teachers' responses to the PBDT scale.

	Healthy body	**Mental & cognitive**	**Personal &emotional**	**Social**	**Religions& value**	**Aesthetic**	**General Attitudes**	**Total**
Mean	662	67	96	9. 26	9926	9926	9. 26	**98.26**
S.D	992	962	962	9.	.7	9. 26	62	**6.89**
F		. 2696		Sig		**0.000**		

It is noted from Table3 that there are statistically significant differences between the different aspects of teachers' perception toward the use of digital technologies in children's education. To determine these differences, the "Scheffe’s method" for after-effects comparisons is used. Results have shown differences between the physical and social aspects of health and physical aspects. In other words, the use of digital technologies increases children's health culture and awareness and physical growth more than its social aspect.

The results also showed a difference between the health and physical aspect when compared to the general attitudes of employing digital technologies for the benefit of the health and physical aspect. This reflects the perceptions of teachers towards the use of digital technologies in learning and education, and it is reflected positively in the field of health, health culture and matters related to growth and health.

To answer question 3: Do teachers' perceptions and beliefs about the role of digital technologies and their impact on child development vary with the teaching sector (governmental/private) and each of the teachers’ years of experience and their knowledge level of digital technologies?

Statistical (T) was used to determine whether the perceptions of government sector teachers differ from those of the private sector, and the results showed that the average performance of teachers on the scale in the government sector was 63, with a standard deviation (8.54), and the average performance of private sector teachers on the perception scale was 64.9. The calculated value (T) showed that these differences were not statistically significant.

To see the impact of both the teachers' service years, and the application level on perceptions toward the application of digital technologies, the means, standard deviations, and value of (F) were calculated. Table 4 shows these results.

Table 4. The means, standard deviations, and value of (F) of teachers' service years, and the application level on perceptions toward the application of digital technologies test.

Mean/ S.D & F values	No of years				Using Level		
	1-3	3-5	97-9	>10	Low	Moderate	**High**
Mean	962[illegible]	9. [illegible]	992[illegible]	9. [illegible]	9. [illegible]	9. [illegible]	**9. .6**
S.D	99	9. [illegible]	62[illegible]	972[illegible]	62[illegible]	99	**6.9**
F			92[illegible]96			**0.96**	
Sig			72[illegible]66			**0.. 6**	

We note from Table 4 that the differences between the mean perceptions of teachers on the variables, the number of service years, and the level of using digital technologies are not significant.

DISCUSSION

Formal education in Jordan begins at the age of 6 years. The kindergarten stage is considered an optional stage. In 2019, the Ministry of Education decided to consider the kindergarten stage as a mandatory stage. According to that, the ministry began opening government kindergartens after it was limited to the private sector.

Kindergartens in Jordan aim to prepare children for the primary stage by providing children with skills and expertise and to prepare them for entry to the primary stage.

The facilities of the public primary schools differ from the private ones, as these schools include various digital technologies and are employed effectively. We find a smart board in every kindergarten in the private school, but this is rare in government schools and kindergartens, and if any, its employment is modest, so children rely heavily on their families to employ digital technologies. The results of this study concluded that the majority of students use digital techniques. This use is determined by the parents. This identification is higher in the primary stage because this stage is important in preparing the child for formal education, academic achievement, and the completion of homework. This is inline with what was stated in the studies of (Erdogan, Johnson, Dong and Qiu, 2019) and (Bentley, Tuner, and Jago, 2016). They emphasized that the majority of parents allow their children to use digital technologies, and at the same time, parents set rules for their children and determine their optimal use for them. The results also showed that children prefer traditional games compared to electronic games in addition to that they prefer that mothers and teachers tell them stories instead of using digital applications for that.

The result was different from the study results of (Heider and Jalongo, 2014), which confirmed the growing demand for children for electronic games and the use of digital technologies in telling stories. This difference can be explained by the desire of children and their preference for traditional games compared to those digital, as well as their preferring traditional story telling through the mother or teacher instead of digital applications. This may due to the widespread use to digital technologies that led to children feeling bored. This stage characterized by movement and activity, children want to integrate into real play with peers outside the home, which is common and supported by Jordanian culture. Children innate in nature, tend to communicate with real physical individuals, which are important development needs, as mentioned (Wardle, 2008).

The study also showed that male children prefer to use electronic games; in return, females prefer to employ digital technologies in language and learning, and this is also due to gender, whose roles support the prevailing community culture.

The results also showed that children prefer learning with books and do not prefer learning through digital applications and that if they are to choose between the traditional method of learning that is based on books and the process based on digital techniques, they prefer the traditional way.

The results also showed that the most used application by children is YouTube, where all children use it, followed by the Digital Camera and then the SmartBoard, which is mostly employed in the classroom.

As for the topics most used for digital applications and more used by children these are electronic games, since many educational materials are prepared and based on play. The study of religion and music are among the topics that mainly employ digital technologies.

As for the results that dealt with the perceptions and beliefs of the kindergarten and the primary stage teachers towards employing digital applications in education, the results indicated that the perceptions of teachers were moderate. This result is consistent with what was mentioned in the study by (Aldhafeeri, Palaiologou, and Folorunsho, 2016) and the study (Ihmeideh and Alkhawaideh, 2017), which showed that teachers' perceptions and beliefs are moderate towards employing digital technologies in education. Meanwhile, these results are due to teachers having some fear and distrust at the employment level required for techniques in teaching. It was considering what stated in the results that most teachers' beliefs and perceptions that digital technologies are more beneficial to students in the health, physical and social aspects, as well as in the cognitive aspects. This result is consistent with the results of a study by (Manessis, 2013) which showed that teachers have self-confidence and conviction in their ability to employ digital games in education. Teachers understand the importance of employing digital technologies acceptably, but these perceptions need to be changed to become more positive about using digital technologies in education in the best and most effective way. Simultaneously, the qualification of teachers and preparing them technologically to support the educational process. Besides that, these results in line with what was reported by (Blackwell, Lauricella and Wartella, 2014) and with what was stated in (Erdogan, Johnson, Dong and Qiu, 2019) is study which assert that to succeed in process of employing digital technologies the teachers must be trained and prepared appropriately. Besides that, these technologies should be employed under the supervision of teachers and parents. Also, this is confirmed by what was stated in the study (Zaranis and Okonomidis, 2016) of the importance of children's teachers having positive attitudes towards employing digital technologies in the education process to reflect positively on children's learning.

Ntuli, (2017), Mercer, (2014), Manessis, (2013), Blackwell, Lauricella and Wartella, (2014) as and Niederhauser, Stoddart, (2001) emphasize the importance of communicating with teachers and integrating them into the process of setting evaluation criteria for the effectiveness of digital technologies, so that teachers can adequately employ these technologies. The results emphasized the importance of teacher preparation and highlighted the positive direction adopted by the teacher and how this reflects and affects students, and this is in line with the results of the study by Reeves, Gunter and Lacey, (2017) in emphasizing the teacher's role in working towards the success of employing digital technologies in education. Meanwhile, this shoud be done with proper planning of how to integrate these technologies and to choose the appropriate content.

The results showed that there is no statistically significant effect for the number of years of experience, as well as the stage of study (kindergarten and primary), the level of knowledge, and familiarity with digital applications as variables on teachers' perceptions towards employing digital technologies in children's education. This result is not consistent with what is stated in the study by (Nikolopoulou and Gialamas, 2015), which emphasized that increasing years of experience and self-efficacy affect changing teachers' perceptions towards digital technologies and considering them more than just a tool for playing. Furthermore, it emphasizes the role of these technologies in learning and considering them a basic model in Learning.

Likewise, this result does not fit with what was mentioned in a (Manessis, 2013) study. It showed that the degree of confidence, the number of experience years, the level of daily computer use,

experience in computer games, and previous qualifying courses are all influencing factors in raising the attitudes towards computer technologies. Meanwhile, the results of this study, along with the study of (Blackwell, Lauricella, and Wartella, 2014) confirmed that when the teacher's experience increases, his attitudes become more negative. These results can be explained by the fact that less experienced teachers are more flexible and more used to digital technologies than teachers who are accustomed to traditional methods of teaching. Besides, the perceptions of teachers in this study were moderate. Perhaps the reason is the presence of caution and fear of employing these techniques in education because of the prevailing culture that restricts the employment of these technologies and linking them to play only and not as a useful tool in education.

CONCLUSION AND RECOMMENDATION

The employment of digital technologies by primary kindergarten children is mainly based on the direction and consent of parents and home policy, and parents are developing laws that regulate how children use digital technologies, both in terms of setting time or in choosing appropriate applications. Also, children tend to play traditionally and learn by traditionally using books and storytelling despite employing these techniques. Therefore, this reflects the urgent need for more effective methods in applying these techniques in the process of teaching this generation and designing educational materials in an attractive way that raises children's motivation to employ these technologies and enjoy learning through them.

Also, the employment of digital technologies in kindergarten and the primary stage was modest. The teachers' perceptions and beliefs towards employing these technologies in children's education were average, which confirms the importance of preparing the teacher properly and acquiring the necessary technical competencies to become a teacher capable of preparing teaching tasks in an era that requires Significant employment of digital technologies.

This study recommends the development of a comprehensive plan to change teachers 'attitudes to become more positive so that this will be reflected in children's learning in different subjects and areas. Also, Working to draw the attention of parents, teachers, concerned parties, and institutions interested in child-rearing to put essential plans and programs to integrate these technologies in the curricula and children's lives in a proper way.

Also, to establish interpersonal skills with digital technologies to match the capabilities of the digital generation. Besides that, to direct more attention towards producing electronic games and programs that suit children's learning stages and emphasizing learning based on digital games.

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