

Digital Disturbance in Early Childhood Education in the Midst of and Post “COVID – 19” Pandemic Period: A Qualitative Study from Teachers’ Viewpoint

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Abstract In the digital age, teachers need to behave positively attitude toward the use of ICTs. This study investigated the perceptions of early childhood teachers regarding the use of ICTs in the distance learning process during and post the Covid-19 pandemic through a qualitative interview. For the data gathering, 55 early childhood teachers in Palestine were interviewed and analyzed using thematic coding techniques. The research obtained particular information on how the perception of the teachers to digital disruption during the Covid-19 pandemic within six main themes: ICTs' benefits, the importance of ICTs' competencies, promotion of the ICTs' training the uses of ICTs, barriers to using ICTs, and competencies and attitudes post-pandemic. The results indicated that ICTs training that supports ICTs use among early childhood teachers needs to be promoted more. This study contributes to the body of knowledge on the use of ICTs in the early childhood teaching process. In addition, this study also increases the empirical study findings that are useful for reporting the distance learning practice in early childhood education.

Keywords: Digital Disturbance, e-learning, covid-19, early childhood education, early childhood teachers

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1. Introduction

Nowadays, people encounter different knowledge and skills in a form like never before. Children are born in the digital age [1]. As per Michelle & Neuman [2] between 2-4 years old utilize smartphones and tablets at home for nearly 80 minutes per day. Ofcom [3] stated that children between 5-7 years old watch YouTube for nearly 6 hours per week. As per Pew Research Center [4] and Dong [5], the most common device children engages with are television (88%), a tablet computer (67%), and a smartphone (60%), and (44%) of children utilize or interact with a desktop or laptop computer or a gaming device. Accordingly, teachers are required to have more high awareness and experience in how to utilize and integrate the ICTs in the teaching process and enable them with unlimited access to newer [6,7,8] more creative, and innovative teaching methods that allow them to facilitate an active learning environment for their students in emergency as well as usual circumstances, etcparticularly in the context of early childhood education (ECE).

The Covid-19 Pandemic, whose influences were observed in Palestine in the first quarter of the year 2020, emerged in China in December 2019 [9]. Covid-19, which turned into a global epidemic in a short time, was defined

as a new kind of coronavirus by the World Health Organization [10]. The Covid - 19 epidemic has led to the suspension of face-to-face education dependent on time and place in pre-schools and at all education stages in Palestine and the transition to distance learning including ECE which continues to face several complicated political, economic, and educational challenges [11]. Despite the present Palestinian Education Sector Strategic Plan 2017-2022 has an emphasis on employing digital technologies in K–12 Palestinian classrooms, however, the available digital resources mainly still depend on traditional paper and print books and place great focus on teacher-centered instruction [12]. Before the Covid-19 pandemic, the learning process in all early childhood institutions in Palestine was carried out with face - to - face approach. The Covid-19 pandemic obliged all education stages in Palestine including ECE to implement distance learning. This is certainly very disturbing for ECTs in Palestine who are not familiar with the good utilization of ICTs in the teaching process [13].

Despite the large number of studies that addressed teachers’ attitudes toward technology usage during the pandemic, however, these studies focused on high school and university educational levels, and little of them dealt with early childhood education teachers' points of view, as well as most of these studies are either quantitative or theoretical studies. Also, studies in this field after the

Corona pandemic are yet scarce. In this regard, it is fruitful to understand the perceptions, views, and suggestions of the ECTs who practiced distance learning during the epidemic. Therefore, this study aims to investigate the perceptions of ECTs in Palestine regarding the utilization of ICTs in the learning process amid and post "COVID – 19" Pandemic period.

The results of this study provide a deep understanding of the ICTs usage to support the teaching and learning process in ECE, as well knowing how distance learning practices in ECE during the pandemic have contributed significantly to improving the competencies and skills of teachers after the pandemic. This study is structured as follows: Section 1 presents the research motivation based on the literature. Section 2, presents the literature review. Section 3, discusses the methods used including the research design, data gathering, and analysis of data. Section 4, presents the analysis results and discussion. Finally, section 5, presents the conclusion and future research.

2. Literature Review

The role and employ of technology in the ECE years was the subject of controversy between practitioners and authors for decades, while some believe that young children don't need technology due to its many disadvantages at this age, others see that technology actually plays a positive role in a child's learning and development and stimulating their higher-order thinking [8]. Accordingly, the need for further investigations on the perceptions of the ECTs related to ICTs seems to attract the attention of several researchers, leading to a study conducted by Dong [5] indicating that teachers have realized the significance of integrating ICTs in their teaching process. Similar research was also conducted by Nikolopoulou & Vasilis [14], revealing that a large number of ECTs feel confident when integrating ICTs into the teaching process.

In addition, Yurt et al. [15] reported that ECTs consider that the use of ICTs is suitable in ECE, especially in creating various activities to support children's cognitive development. A study conducted by Frances et al. [16] maintained that primary school teachers' attitudes toward using technology stimulate students' higher-order thinking. Study results of Konca et al. [17] reveal that preschool teachers showed a very positive attitude towards using technological tools. A qualitative study conducted in Palestine by Shraim, K. & Crompton, [9] reveals that participants specified that technologies like mobile devices, social media, and cloud computing would be beneficial for the design and delivery of educational materials as well as raising safety awareness, and communication and collaboration during the COVID-19 epidemic also results identify several challenges including the widening of the education's digital divide and an increasingly negative attitude towards distance education, the data also indicate that the first wave of the COVID-19 experience could be the roadmap for wave two and after the pandemic for the transition to sustainable online learning as a supplement to the traditional learning methods and not as a replacement.

A study conducted by Nafiz [13] reveals that ECE in Palestine faces a set of first-order difficulties (a lack of supporting infrastructure to integrate ICTs, lack of training courses on how to integrate ICTs in education, lack of teachers' support, and lack of time to employ ICTs in educational practices), and second-order obstacles (Lack of teacher's interest, lack of experience among kindergartens' teachers in using computers and new technology in education, and no clear benefits to using ICTs. As per Nafiz and Zabadi [18] preschool teachers in Palestine quickly adopted and accepted distance learning during the COVID-19 pandemic, also results show that the participants' behavioral intention to use ICTs ranges between medium to a high levels. According to Traxler et al. ([19], P. 4), Palestinian education encounters the additional challenge of addressing digital space and identity for a community and culture with severely constrained physical space and physical identity.

In this vein, many prior studies' results revealed that the beliefs and attitudes of ECTs have a positive influence on ICTs usage (e.g. [8,16,17,18,20,21,22,23,24]). A quantitative study conducted by Bayu Rima Aditya et al. [8] investigated the perception of ECTs regarding the use of ICTs in the distance learning process during the Covid-19 epidemic within five main themes: ICTs advantages, the significance of ICTs competencies, promotion of the ICTs training, the uses of ICTs, and challenges in using ICTs, the results indicated that ICTs training that supports ICTs use among ECTs needs to be promoted more. Masoumi [24] maintains that the use of ICTs in ECE has become a necessity to enhance children's experiences in learning. Chen et al. [25] stated that the use of ICTs in the teaching and learning process will also assist in enhancing administrative and communication and collaboration processes between partners. A study by Faith & Burhan [26] and Bashir et al. [27] and Al-Balas et al. [28] revealed that preschool teachers predicted that human dimensions like psychological and personality dimensions, self-care skills, and behavioral problems would come to the fore in relation to the pre-school curriculum in the post-pandemic period.

3. Methods

3.1. Research Design

The current study is a qualitative approach, involving semi – structured interviews. Interviews provide researchers with in-depth information pertaining to participants' experiences and viewpoints on a particular topic [29]. Also, oftentimes, interviews are coupled with other forms of data collection in order to provide the researcher with a well-rounded collection of information for analysis [30]. The researchers conducted semi-structured interviews for 15 - 30 minutes with the 55 participants. Interviews were held remotely due to the distances. The interview questions were divided into two sections, section 1, includes the respondents' demographic information (i.e., age, education level, years of teaching experience, and geographic location) while in section 2, Participants were asked six major research questions (RQs):

RQ1: what are the advantages of ICT in teaching and learning in ECE?

RQ2: What is the significance of ICT competencies for teachers in ECE?

RQ3: How does the educational institution enhance training for upgrading the ECTs' ICT competencies?

RQ4: How does ICT utilize in teaching and learning in ECE?

RQ5: What are the challenges encountered while utilizing ICT in the teaching and learning process in ECE?

RQ6: Do distance learning during the pandemic enhanced the ECTs' competencies and attitudes post-pandemic?

3.2. Data Collection

From May 2022 - June 2022. The researchers invited ECTs from six governorates (Nablus, Salfet, Tulkarm, Jenin, Ramallah, and Hebron) in Palestine / west bank to participate in the current research thru social media (Facebook, Messenger, and WhatsApp). A total of 55 ECTs were accepted to be interviewed. The interview process was carried out online with a duration of about 15 - 30 minutes using Google Forms to record the answers. Table 1, presents the respondents' demographic information.

Table1. Participants demographic information

Personal information	Category	frequency	%
Age	20 - less than 30 yrs. old	11	20.00
	30 - less than 40 yrs. old	29	52.73
	40 – less than 50 yrs. old	12	21.82
	More than 50 yrs. old	3	5.45
Total		55	100
Education level	Diploma	12	21.82
	Bachelor degree	37	67.28
	Higher education degree	6	10.90
Total		55	100
Years of teaching experience	Less than 5 years	8	14.55
	5 – less than 10 years	24	43.64
	More than 10 years	23	41.81
Total		55	100
Geographic location	Nablus	10	18.18
	Jenin	5	9.09
	Tulkarm	4	7.27
	Salfet	19	34.55
	Ramallah	9	16.36
	Hebron	8	14.55
Total		55	100

3.3. Data Analysis

The data were analyzed utilizing thematic coding techniques [31]. Thematic analysis is a good approach to research where the researcher tries to find out something concerning people's views, opinions, knowledge, experiences, or values from a set of qualitative data – for instance, interview transcripts, social media profiles, or surveys responses [32]. Thus, this analysis process in this study concentrates on specifying the core themes from all respondents' answers. First, all interview transcripts were grouped based on the six main themes. Second, the results of the answers that have been grouped were then read

several times to specify the theme category (each respondent may provide one response, more than one response, or no response at all). Third, the relation between each respondent's answers was further verified. To reduce subjectivity, these three processes were done by hand by the authors.

4. Results

4.1. Results of RQ1: what are the Advantages of ICTs in Teaching and Learning in ECE?

The thematic analysis of the interview results reveals 10 sub-themes of the ICTs' advantages for ECTs, according to these findings, the positive impacts of the ECTs used the ICTs in this study include the following: ICT: (1) made it easier for ECTs to deliver the teaching material effectively, (2) promote the ECTs' personal and professional educational competencies, (3) assist the ECTs in simplifying the distance learning process, (4) raise the effectiveness of explaining learning material, (5) provide experiences for students to have interaction utilizing technology, since one of the characteristics of early childhood is having a high nosiness, so they are very enthusiastic and interested when learning to use ICTs, (6) facilitate ECTs' preparing the teaching materials, it provides wider opportunities for teachers to get various reference materials, methods, and media that are following the learning and development needs of children, this will lead to the development of learning innovations that will ultimately enhance the quality of teaching and learning processes, (7) assist students to understand the teaching material more quickly, since early childhood in this digital age belongs to the Alpha generation group, this generation is very visual depending on the display screen and has been familiar with touch screens since birth, (8) enhance the method of communication and collaboration with parents regarding the student's task during distance learning, effective communication and collaboration are essential to support positive interactions between student-teacher and parent-teacher, many social media platforms can be used to build communication and collaboration between teachers and parents, such as WhatsApp, Facebook, Messenger, etc, (9) encouraged ECTs to be more innovative, and finally (10) enhance creative teaching process.

Table 2. Benefits of ICTs' usage

No.	Sub – items	Freq.	%
1	Easy way to share materials	7	12.72
2	Help teachers to keep up with new technology.	9	16.37
3	Effective in explaining learning materials.	3	5.46
4	Facilitate student's play and interaction.	8	14.55
5	Provide learning experience to the students.	7	12.72
6	Easy way to prepare materials.	5	9.09
7	Help students to acquire new technological skills.	4	7.27
8	Improve parent-teacher communication and collaboration	7	12.72
9	ICT has encouraged teachers to be innovative	2	3.64
10	Promote teachers to creative teaching	3	5.46
Total		55	100

Based on the above table, interview results with ECTs in Palestine indicated that 16.37 % see that using ICTs plays a significant role in keeping up with new technology, 14.55 % see that using ICTs facilitates student play and interaction, 12.72 % of participants see that using ICTs is an easy way to share materials, provide a learning experience to the students, and improve parent-teacher communication and collaboration. Based on the above table, interview results with ECTs in Palestine indicated that 16.37 % see that using ICTs plays a significant role in keeping up with new technology. 9.09 % reported that using ICTs is an easy way to prepare teaching materials. 7.27 % reported that using ICTs helps students in acquiring new technological skills. 5.46 % reported that using ICTs is an effective in explaining learning materials, and promote teachers to creative teaching, final 3.46 % reported that using ICTs encourage them to be innovative. Distance education during the Corona pandemic to a large extent created knowledge and experience in the field of ICTs. However, effectively embedding ICTs requires student-centered attitudes and values, and the successful integration of ICTs into the learning environment will depend on the capability of educators to structure learning in novel methods, integrate technology in a proper manner with a pedagogy, evolve socially active classrooms, and encourage co-operative interaction and collaborative learning and group work. All this requires a different set of skills from those they currently possess, also, ICTs can influence student learning when educators are digitally literate and understand how to merge it into the curriculum.

ECE employs a different group of ICTs tools to communicate, collaborate, create, disseminate, store, and manage information, also, in some contexts, ICTs have become the main part of the teaching-learning interaction, thru such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises.

When teachers are digitally literate and trained to use ICTs, these approaches can lead to higher-order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with ongoing technological change in society and the workplace. Moreover, ICTs can assist the teachers in enhancing the delivery method in the teaching process. The quality of learning materials' supports effectively students to learn and makes them enthusiastic [33].

The use of ICTs thru distance learning provides effective communication and collaboration between education institutions and parents which ultimately could enhance the education quality and students' progress [34,35]. Also, the advantages of using ICTs reflected in the individual self of teachers and their continuous professional development. Thus, the teachers are required to keep up with the rapidly changing environment and assist to improve the quality of the teaching process in a digital age [36]. Accordingly, ICTs issues planners should behold the following considering the total cost-benefit equation, providing and maintaining the requisite infrastructure, and ensuring investments are matched with teacher support and other policies aimed at effective ICTs

use. Undoubtedly, the emergence of various ICTs tools in the early childhood environment has impacted growing ECTs' creativity and innovation [37].

4.2. Results of RQ2: What is the Significance of ICT Competencies for Teachers in ECE?

The thematic analysis of the interview results indicates 2 sub-themes of the significance of mastery of ICTs competencies for ECTs as presented in Table 3. As per these results, all responses have a positive perspective on the significance of mastery of ICTs competencies for ECTs. This was certainly a good start for the continuity of ECE education in today's digital era.

Table 3. Significance of ICTs competencies

No.	Sub – items	Freq.	%
1	Very significant	23	41.82
2	Significant	32	58.18
Total		55	100

In Table 3, the findings indicated that (41.82%) of participants maintained that ICTs very significant regardless they are getting more complicated, and they need to know more about how to use them and incorporate them into the learning process. While, 58.18% of participants maintained that ICTs deemed an effective tool to find knowledge, so, developing ICTs' skills can participate to a large extent in developing the learning processes. This means that all participants have a positive perspective on the need to improve their ICTs' competencies. This was an evidently positive matter to foster the increase of ICTs' competence for ECTs [36].

4.3. Results of RQ3: How does the Educational Institution Enhance Training for Upgrading the ECTs' ICT Competencies?

The thematic analysis of the interview results found 4 sub-themes on how the institutions promote training for upgrading the ECT's ICT competencies as shown in Table 4.

Table 4. Promotion of the ICTs' teachers' training

No.	Sub – items	Freq.	%
1	Never supported	25	45.46
2	Rarely supported	16	29.09
3	Often supported	9	16.36
4	Always supported	5	9.09
Total		55	100

According to these findings, the participants' perceptions regarding their institutions' support of ICTs' training to upgrade their personal and educational competencies were very diverse. 45.46 % of the participants reported that they had not received any training, 29.09 % reported that they suffer from a lack of training, 16.36 % reported that they only received initial training, and finally, 9.09 % reported that they received continual and regular training on the educational digital

competencies. The results illustrated that the support for ICTs' training for ECTs' early childhood teachers in Palestine was yet low. 74.55 % reported that they were never supported by institutions or they have a lack of training on ICTs.

ICTs have transformed educational practice, therefore, current future teachers must be trained in skills needed to keep up with the advances of the digital age, which have become essential for the school and which should lead to improved teaching strategies and learning teaching processes [38]. This training is of vital significance as it will prepare teachers to take on this new pedagogical model by creating spaces for motivation, innovation, collaboration, and student participation; by taking on new methods' active trends, selecting and developing digital teaching materials according to the needs and interests of their students [39,40]. Many research results have emphasized the need for professional development of ECTs in the use of ICTs [33,37]. Training in this age of digital learning also has implications for ECTs in how they integrate technology tools and interactive media in the school and online material they teach, and how well they prepare them to use technology and media intentionally and appropriately in the classroom with students. Further training, consultations, and workshops are required to smoothen the enhancements of ICTs' competencies for e-learning success [41,42]. The ICTs training assists educators in integrating ICTs into the teaching and learning process in ECE [21,36,43]. Accordingly, greater support from institutions is required to develop the ICTs competencies of ECTs [20,39,44].

4.4. Results of RQ4: How does ICTs Utilize in Teaching and Learning in ECE?

The thematic analysis of the interview results indicated 7 sub-themes on the application of ICTs in an ECE as illustrated in Table 5. As per these findings, the activities for educators that are supported by ICTs during the Covid-19 pandemic in this case study include the following: Broadcasting live lessons via YouTube, radio, and TV to deliver a schedule of daily online classes to provide support to students; different applications (e.g., Zoom and Google Hangouts) to link teachers and students; Al - Ta'mmol (reflection) is an interactive online platform to enrich extracurricular activities to keep students learning; Facebook page "Ta2ammal" to bridge the distance gap with the students and receive feedback on their progress as well as their challenges during this epidemic; e-learning portal to reach all grade students in Palestine; producing YouTube channel videos; using social media platforms; the "Rawafid" website; voice of education radio; and broadcasting of videos for education materials.

Table 5 shows that during the implementation of distance learning, 7 activities have been identified from interview results with ECTs in Palestine. 32.73 % of respondents used social media such as (WhatsApp, Google Meet, and Zoom), while 21.82 %, 18.18 %, and 5.45 % of respondents reported that they use ICTs in the teaching process thru showing videos, classroom video calls, and creating educational videos respectively. In addition, 7.27 % use ICTs in the education process thru accessible digital picture books, and 3.64 % use ICTs thru

drawing and coloring activities. With the characteristics of ECE that emphasize playing and interacting, this can certainly result in ineffectiveness in achieving learning objectives [45]. Further innovation and development are needed relating to the uses of ICTs in the early childhood environment.

Table 5. ICTs' usage in the teaching Process

No.	Sub – items	Freq.	%
1	Showing videos	12	21.82
2	Sharing teaching resources	6	10.91
3	Classroom video calls	10	18.18
4	Creating educational videos	3	5.45
5	Accessible digital picture books	4	7.27
6	Drawing and coloring activities, enjoyable thru PowerPoint, animated, songs, worksheets, games, and YouTube videos.	2	3.64
7	Social media platform	18	32.73
Total		55	100

4.4. Results of RQ5: What are the Challenges Encountered while Utilizing ICT in the Teaching and Learning Process in ECE?

Despite the many benefits that participants identified for the use of ICT in the education process, there are also many challenges. The thematic analysis of the interview results found 7 sub-themes of the challenges of using ICTs as shown in Table 6. According to these findings, the main challenges faced by the teachers during the Covid-19 pandemic in this study include the following: Most participants mentioned that the barrier to the implementation of distance learning was a poor internet connection; the lack of ECTs' experience in ICTs was still a barrier to conducting distance learning; the limited availability of ICTs tools at education institution seems to have an impact on the lack of technical experiences of ECTs; the number of ICTs tools at education institution was still insufficient to support the distance learning process; lack of proper competencies for using ICTs in education; inability to access some of the programs necessary for the educational process; lack of awareness of the importance of ICTs in education and the belief that it can occupy the mind of the student towards matters other than education, lack of integrated government plan to adopt the idea of ICT in educational practices.

Table 6. Challenges faced by teachers in using ICTs

Sub – items	Freq.	%	
1	Poor internet connection	4	7.27
2	Lack of teachers' experience in technology	13	23.64
3	Inadequate number of ICTs tools in the educational institution.	11	20.00
4	Lack of suitable competencies for employing ICTs in education	9	16.36
5	Inability to access some of the necessary programs for the educational process.	8	14.55
6	Lack of awareness of the significance of ICTs in education	7	12.73
7	lack of integrated government plan to adopt the idea of ICTs in educational practices	3	5.45
Total		55	100

Table 6 show that 7.27 % suffers from internet connection, 23.64 % reported a lack of experience in ICTs, 20 % reported that the educational technology is insufficient, 16.36 % reported that they don't have experience to use ICTs in education, 14.55 % reported that they can't access necessary programs and platforms, 12.73 % don't have realize the importance of ICTs for teaching and learning process, 5.45 %, stated that there no clear government plan to adopt ICTs in educational practices. Moreover, there are many challenges such as geographic location, type of network, frequent power outages, geographical areas isolated due to occupation, in addition to the economic and social factors [13].

4.5. RQ6: Do Distance Learning during the Pandemic Enhanced the ECTs' Competencies and Attitudes Post-Pandemic?

There remains an important question on the minds of many, which is: will the momentum of e-learning continue after Corona, or will it fade and things return to their previous track? There are many opinions here, between those who think - or perhaps wish - that things will return to the way they were, and those who believe that there is no turning back from e-learning, which is long overdue to switch to more. The thematic analysis of the interview results found 5 sub-themes on how distance learning during the pandemic enhanced the ECTs' competencies and attitudes post-pandemic as shown in Table 7. From the respondents' point of view, despite the challenges of distance learning during the pandemic, however, this crisis constitutes a valuable opportunity for individuals, societies, and governments post - Covid; adaptability during emergency circumstances; enhancing ICTs skills and gaining experience in the field of e-learning; changing the attitudes and perspectives towards online learning; distance education has greatly contributed to the professional development of ECTs and students.

Table 7. ECTs' competencies and attitudes post-pandemic

Sub – items	Freq.	%
1 Challenge and opportunity	14	25.45
2 Adaptability	15	27.27
3 Enhancing ICTs skills and gaining experience in the field of e-learning	8	14.55
4 Changing the attitudes and perspectives towards online learning	7	12.73
5 Contributed to the professional development of ECTs and students.	11	20
Total	55	100

5. Conclusion

This study addresses the digital disruption in ECE from the ECTs' perspective during and post - Covid -19. In answering the six research questions, the results revealed that ECTs have a positive attitude toward employing the ICTs. To be more specific, this study maintained that ICTs have some benefits by making disruption in online teaching and learning during the Covid-19 pandemic. Also, this study found that ECTs still have difficulties in

integrating ICTs into their online learning practices. Moreover, even though ECTs' have an understanding of ICTs usage, however, they are thwarted from successful use as a consequence of a lack of technical support and ICTs training. The results showed that the majority of participants see distance learning during the Corona pandemic as a challenge and an opportunity at the same time, as well as enabling them to adapt during emergencies, in addition to contributing to their professional development and acquisition of knowledge and experience in the field of distance education.

As the study is based on a real-world approach, it contributes to increasing the empirical study findings that are useful for reporting the distance learning practice in ECE. Since this study was carried out in Palestine, its results are not necessarily generalizable to other countries. Therefore, future studies should have to conduct a similar study by targeting different samples in other contexts with the possibility of a comparative study including other contexts or countries. However, this study has investigated an emerging phenomenon to construct more understanding into the digital disruption for ECE.

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