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The Difference between Digital Technology Use and Teaching Experience in Kindergartens

Noor Walida Mohamad, Kamariah Abu Bakar, M. Khalid Bin M. Nasir

Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi, MALAYSIA
Corresponding Author's Email: noorwalida@gmail.com

Abstract

Since the Covid-19 pandemic hit the whole world in March 2020, digital technology was rapidly adopted in all sectors. The education sector faced no exception, including early childhood education institutions, especially private kindergartens. During the pandemic, the use of digital technology seemed to be crucial to enable private kindergartens to continuously provide educational services and operate during the movement control orders. Additionally, digital technology can enhance children's learning and teachers' professional development. This study looked at the differences in digital technology usage in teaching and learning based on teaching experience in kindergarten. This study could help the private kindergarten management, teachers, and the Private Education Division of the Ministry of Education Malaysia (MOE) to make private kindergartens the institution of choice and contribute to the development of education and the national economy. This is a quantitative study using a set of questionnaires involving 84 teachers working in private kindergartens in Selangor. The study was analyzed in terms of working experience as kindergarten teachers and the digital technology usage level by the teachers in teaching and learning. The results showed that there was a significant difference in the mean score of the digital technology usage level in the teaching and learning based on teachers' teaching experience. In conclusion, teaching experience influences the usage level of digital technology in teaching and learning. This study implied that the private kindergartens' management and the MOE should further enhance digital technology use in early childhood education.

Keywords: Digital Technology, Kindergarten, Kindergarten Teachers, Early Childhood Education, Teaching

Introduction

Technology is a necessity in education today. Early childhood education faced no exception. The use of digital technology in learning at the kindergarten level provokes differing reactions among early childhood education practitioners. However, the extent of the digital technology use by teachers in kindergarten teaching and learning, especially in private kindergartens, has not yet been identified. Some party criticizes the use of digital technology for being incompatible with children's nature, which requires physical and sensory learning exposure (Gjelaj et al., 2020). However, an appropriate context can provide an innovative and

interesting learning experience for children (Arnott & Gillen, 2018). Konca et al. (2016) stated that kindergarten teachers use technology a lot to prepare lesson plans. Digital technology is also used by teachers to document children's learning processes (Preradović et al., 2017).

Konca et al (2016) focused on the use of technology in children's activities. Preradovic et al (2017) examined the teachers' role in digital technology use in kindergartens. This study is related to the use of digital technology by teachers in teaching and learning. A teaching and learning session includes preparation before the class, during the learning process, and after the teaching is implemented. This study examines differences in the level of technology use in teaching and learning based on the working experience as a kindergarten teacher. The objective of this study was:

- to identify differences in the level of digital technology use in teaching and learning based on working experience as a kindergarten teacher.

This study was conducted on private kindergarten teachers in Selangor.

The study has four parts. First, the literature reviews related to digital technology and its use in kindergarten, teaching experience, and the level of digital technology use. Then the research methodology is presented and data analysis techniques are discussed. Next, the findings are discussed and summarized. The paper concludes with a discussion of the implications and direction of the use of technology in kindergarten teaching and learning and recommendations for further research.

Literature Review

The literature review discusses past studies related to the concept of digital technology, the use of digital technology in kindergarten, and the Early Childhood Teacher Management of Digital Technologies Framework to look at the components of teaching experience and the level of technology use in kindergarten.

Digital Technology

Nowadays, the education sector is increasingly integrating digital technology in the learning and teaching environment. At the early childhood stage, the use of digital technology is becoming more widespread. The concepts of digital technology include computers, printers, telephones, smartphones, electronic games, internet connections, tablet computers, interactive whiteboards, digital cameras, facsimile machines, voice recorders, and others (Konca & Erdien, 2021).

Digital technology is used in the pedagogical approaches to support child-centered digital learning environments. The equipment used is PCs, interactive whiteboards, laptops, iPads, smartphones, augmented reality (AR), robots, virtual reality (VR), and 3D printings (Luo et al., 2021). However, not all digital technological tools are used for teaching and learning purposes. Gjelaj et al (2020) found that television is only used to calm children. Meanwhile, the projector is difficult to use because of the large group of children which make it arduous for optimal arrangement. The concept of digital technology is shown in Table 1.

Table 1
The Concept of Digital Technology

Author	The Concept of Digital Technology
Konca & Erdien (2021)	Digital technology includes computers, printers, telephones, smartphones, electronic games, internet connections, tablet computers, interactive whiteboards, digital cameras, facsimile machines, voice recorders, and others.
Luo et al (2021)	PCs, interactive whiteboards, laptops, iPads, smartphones, augmented reality (AR), robots, virtual reality (VR), and 3D printing.
Gjelaj et al (2020); Olowe & Olaronke (2014)	Computers, digital cameras and digital video cameras, creativity and communication software and tools, internet, telephones, mobile phones, tape recorders, interactive stories, computer games, programmable toys, closed-circuit video conferencing and television technology, data projectors, microphones, headphones, electronic whiteboards and more.

The use of digital technology in kindergartens

Digital technology supports children's learning and the enrichment of the experimental game. It also enhances teacher professional development and facilitates communication between kindergartens and teachers. Digital technology attracts teachers because it enables children's learning and teachers' professional development (Konca & Erdien, 2021). The use of digital technology in the kindergarten environment is according to the suitability of the activity. TVs and computers tend to be used for passive activities such as watching a cartoon or documentaries. Computers are used primarily for listening to music and watching videos. Whereas smartphones, tablet computers, and digital cameras are rarely used in classroom activities (Konca & Erdien, 2021).

The use of interactive whiteboards, computers, and LearnPads is no longer unfamiliar in children's teaching. Teachers use digital technological tools as pedagogical tools during free play activities and support children's learning. Teachers need to make initial plans for the use of digital technology tools and their integration into the classroom teaching sessions. The integration of digital technology in learning is not constrained by a lack of knowledge alone but also by teachers' pedagogical beliefs and practices that interact with teachers' beliefs about digital technology (Vidal-Hall et al., 2020).

Teaching Experience

The Early Childhood Teacher's Management of Digital Technologies Framework is a substantive theory that describes how early childhood education teachers manage their changing roles with digital technology in kindergartens. It has three main components namely; 1) Professional Identity 2) Pedagogical Practice 3) Relationship with Family. These

components affected teachers' decisions in ICT-related matters. Experience is one of the factors in the professional identity component. Experience refers to the employement and age (Schriever, 2020). Refer to Figure 1.

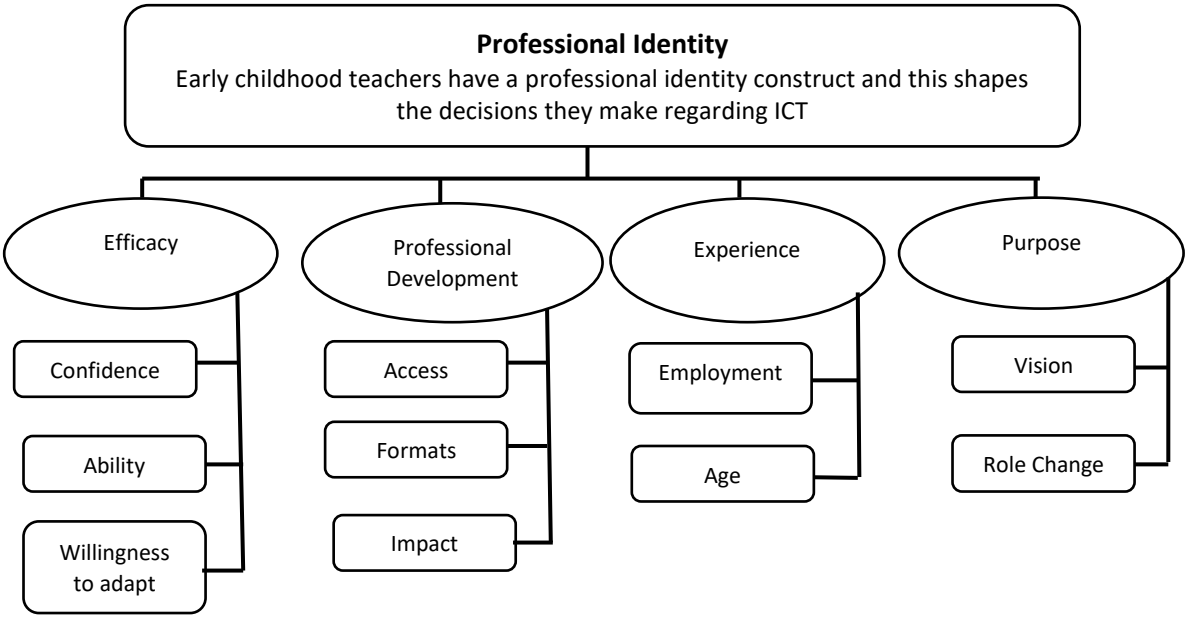

Figure 1: Properties and dimensions of professional identity

Note. Adapted from "Early Childhood Teachers ' Management Of Their Changing Roles Regarding Digital Technologies In Kindergarten : A Grounded Theory Study," by Schriever, V., 2020, *Australasian Journal of Early Childhood*, *46*(1), p.35. With permission

Teachers with little teaching experience are seen to be more receptive to digital technology in teaching (Lauricella et al., 2020). The results show that teaching experience has a significant impact on the knowledge needed by a teacher to teach effectively with the help of technology (Antony et al., 2019). Senior teachers are more comfortable utilizing the methods that are commonly used throughout their teaching experience. As the teachers' age, the seniority factor posed a challenge to the technological application. Teaching experience has an important role in self-development to master the competencies in line with the developmental demand (Antony et al., 2019).

Jiale (2021) found no significant relationship between teaching experience and teachers' beliefs on digital technology use in early childhood education. This means the experience is not a barrier to the use of digital technology among teachers. This result is likely because this study was conducted during the Movement Control Order (MCO) in which most kindergarten teachers had no choice but to use technological platforms to do home-based teaching and learning (Faye, 2022).

The Level of Digital Technology Use

According to Gjelaj et al (2020), only one in eight kindergarten teachers reported a positive attitude towards technology at the kindergarten level. Most of the kindergarten teachers interviewed preferred authentic games and activities that train children's psychomotor skills. Contrarily, Konca and Erdien (2021) found that teachers have a positive attitude toward digital

technology in early childhood education. However, they use it on a limited scale. Digital technology equipment is mostly used to watch cartoons and movies as well as listen to music.

In terms of tasks, teachers have integrated digital technology at different levels. The level of technology usage by teachers in administration is higher than that of children. The most widely used technological equipment for activities with children is tablets and projectors (Lindeman et al., 2021). Luo et al (2021) studied current trends in digital technology integration in early childhood across China and found that teachers are not ready to optimize the digital technological equipment integration in classroom activities. Teacher education is seen to play an important role in fostering efficiency and confidence in technology use among educators in early childhood education.

Methodology

This section discussed the research design, samples, validity and reliability, instruments and procedures, as well as data analysis.

Research Design

This study used a quantitative approach. It involved the collection of data at a particular time from a sample that was representative of a particular population. The survey design was the best method to measure or evaluate attitudes, perceptions, and opinions (John, 2014). Through a survey of kindergarten teachers, demographic characteristics, teaching experience, and teachers' background related to digital technology learning and training, as well as the use of digital technology in teaching and learning by teachers were described. In addition, the level of digital technology use was compared to their demographic characteristics and teaching experience.

Samples

The sample was selected through simple random sampling. Through this method, the sample would be representative of the intended populations (Fraenkel et al., 2012). The target population was teachers working in private kindergartens in Selangor. Questionnaires were sent through Google Forms to the operators, headmasters, and groups involving private kindergartens in Selangor through the Whatsapp application to be distributed to the teachers in their respective kindergartens. The questionnaire was distributed to 39 kindergartens with an estimated 390 teachers. Eighty-four (84) teachers answered, representing 21% of the response rate. All 84 questionnaires were analyzed. Table 2 showed the demographic profiles of the respondents. The sample was entirely female teachers (100%) and the majority were aged 19 to 30 (70.2%). 35.7% of teachers hold a Diploma and 26.2% hold a Degree. 76.2% of respondents had attended IT courses during their studies.

Table 2
Demographic profile of respondents

Profile	Item	Frequency	Percentage
Gender	Female	84	100.0
Age	19-30 years old	59	70.2
	31-40 years old	13	15.5
	41-50 years old	11	13.1
	50 years old and above	1	1.2
Kindergarten location	Gombak	13	15.5
	Hulu Selangor	11	13.1
	Klang	25	29.8
	Kuala Langat	6	7.1
	Kuala Selangor	4	4.8
	Petaling Perdana	13	15.5
	Petaling Utama	7	8.3
	Sepang	5	6.0
Highest Level of Education	Secondry School (SPM)	19	22.6
	Form 6 (STPM, STAM)	4	4.8
	Certificate	2	2.4
	Diploma	30	35.7
	Bachelor's Degree	22	26.2
	Master's Degree	7	8.3
Attended IT courses during their studies	Yes	64	76.2
	No	20	23.8

Validity and Reliability

Before the pilot study was conducted, the researcher obtained the content validity of the instrument from three experts from the field of Technology, Malay Language, and Early Childhood Education. A pilot study was conducted on 30 private kindergarten teachers. In the pilot test, the Cronbach Alpha Reliability Coefficient was used to obtain the reliability coefficient on the scores achieved for the items in the questionnaire. Cronbach Alpha is used for multi-scale instruments such as Likert (Idris, 2013). The Digital Technology Utilization construct has 11 items, which showed an Alpha Cronbach value of 0.880. According to Pallant (2020), an alpha index value of 0.7 or above is good for an instrument that has ten or more items. Therefore this instrument had a good reliability index and was acceptable and could be used in real studies.

Instruments and Procedures

This Digital Technology Utilization Questionnaire was adapted from the ICT Utilization in the Classroom Instrument (Thuy & Qalati, 2020), Teacher Readiness Scale in T&L (Mansor et al., 2021) and Guide to the Use of Technological Equipment and Interactive Media (Fred Rogers Center, 2012). Part A of the questionnaire focused on teacher demographics including the IT-related background. Demographic information includes gender, age, kindergarten type, location of the kindergarten district, the highest level of education, and teaching experience. The teachers' IT-related background is associated with the possession of IT-related

professional certificates, learning IT courses during their studies and the number of IT training attended in the last two years.

The questionnaire was converted to Google Form and distributed to operators and headmasters of private kindergartens in Selangor to be forwarded to teachers in their respective kindergartens. Data were collected over one month from teachers working in private kindergartens in Selangor. 29.8 % of teachers were from kindergartens in the Klang district, 15.5 % from Gombak, 15.5 % from Petaling Perdana, 13.1 % from Hulu Selangor, 8.3 % from Petaling Utama, 7.1 % from Kuala Langat, and 4.8 % Kuala Selangor. 31.1 % of teachers had teaching experience of one year and less, 34.5 % had two to five years of experience and 27.4 % had six years and above.

Data Analysis

Descriptive analysis was used to present the teachers' IT-related background. The T-test was used to identify differences between the level of digital technology use in teaching and learning according to IT training attended in the last two years. Whereas, a one-way ANOVA test was used to investigate the differences between the level of digital technology use according to the teaching experience.

Findings

According to the teaching experience in kindergarten, 38.1% of respondents had a teaching experience of the less lone year. Two to five years of experience corresponded to 34.5% of respondents, while 27.4% of respondents had more than 6 years of teaching experience. This shows that most teachers who teach in private kindergartens had low teaching experience of less than 1 year. In terms of IT training attended by teachers in the past two years, 44% stated that they had never attended IT training while 56% had attended. This showed that the number of teachers who attended IT training and those who never attended was almost the same.

The analysis results of the digital technology use in teaching and learning are summarized in Table 3. Digital technology was most widely used by teachers when planning teaching and learning. Teachers used computers, laptops, and smartphones with the internet to find information when preparing lesson plans. This was followed by the use after the teaching session when the teacher took pictures of the children's work. Next, the teachers used computers, laptops, tablets, or phones for children to listen to songs. The digital technology was least used for the children during the learning sessions based on the teachers' permission.

Table 3
The use of digital technology in teaching and learning

Item	Never	Rarely	Seldomly	Frequently	Very Often	Mean	Std. Deviation
1. I use a computer/ laptop/ smartphone with internet to search for information when preparing lesson plans.	2.4%	3.6%	15.5%	33.3%	45.2%	4.15	0.976
2. I create a variety of learning resources using online applications (e.g. gamification, videos, clips, e-books, quizzes etc).	11.9%	16.7%	41.7%	10.7%	19.0%	3.08	1.234
3. I use a laptop/ tablet/ phone while teaching in class.	10.7%	16.7%	31.0%	22.6%	19.0%	3.23	1.245
4. I use a computer/ laptop/ tablet/ phone for kids to listen to songs	3.6%	2.4%	32.1%	29.8%	32.1%	3.85	1.024
5. I use computer/ laptop/ tablet/ phone/ TV for children to watch cartoons.	9.5%	7.1%	36.9%	22.6%	23.8%	3.44	1.206
6. I allow children to use computers/ laptops/ tablets/ phones during the learning sessions	58.3%	15.5%	16.7%	2.4%	7.1%	1.85	1.217
7. During the pandemic, I conducted lessons using 'Live Streaming' (Microsoft Team, Skype, Webex, Google Meet etc).	17.9%	3.6%	20.2%	25.0%	33.3%	3.52	1.444
8. I took pictures of the children's work	3.6%	4.8%	13.1%	41.7%	36.9%	4.04	1.011
9. I printed pictures of children's activities to document the children's progress.	16.7%	13.1%	29.8%	22.6%	17.9%	3.12	1.321
10. I included pictures/videos of children's activities into class groups (Whatsapp, telegrams etc).	2.4%%	10.7%	25.0%	34.5%	27.4%	3.74	1.054
11. I post pictures/videos of children's activities to the kindergarten social media (FB, Insta, Tiktok, Website etc).	28.6%	10.7%	29.8%	19.0%	11.9%	2.75	1.370

The descriptive findings of the level of digital technology use in teaching and learning are shown in Table 4. The lowest score was 1.55, while the highest score was 5.0, which was the highest on the scale. The mean score was 3.34 and the standard deviation was 0.68. This indicated that the level of digital technology use among private kindergarten teachers in teaching and learning was moderate.

Table 4
The level of digital technology usage in teaching and learning

	Minimum	Maximum	Mean	Std. Deviation
The level of digital technology usage in teaching and learning	1.55	5.00	3.34	0.68

Based on the t-test conducted on the groups of respondents who had attended and had not attended IT training in the past two years, there was no significant mean difference between teachers who had attended IT training and teachers who had never attended IT training in terms of digital technology usage in the teaching and learning.

To analyze the differences between the level of digital technology use in teaching and learning based on the teaching experience, one-way ANOVA was conducted to test the following hypotheses:

Ho: There is no significant mean difference between teachers' teaching experience in terms of digital technology use in teaching and learning.

Ha: There is a significant mean difference between teachers' teaching experience in terms of digital technology use in teaching and learning.

The data collected met the prerequisites for the One-Way ANOVA test. Data were in ration scale and the samples were taken independently. The skewness test, Kolmogorov-Smirnov, and Q-Q Plot showed that the assumption of normality was supported for all three groups. Levene's statistic was insignificant F (2,81) = .229, p = .796, and this indicated the assumption of homogeneity was met.

Based on Table 5, there was a significant mean score difference in the digital technology use in teaching and learning based on teaching experience, F (2, 81) = 3.4, p = 0.38, n2 = 0.08.

Table 5
Difference in Level of Digital Technology Use in Teaching and Learning Based on The Teaching Experience

Teaching Experience	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.002	2	1.501	3.404	.038
Within Groups	35.719	81	.441		
Total	38.721	83			

Post Hoc analysis using Scheffe (α = 0.05) showed the level of digital technology use of teachers with less than 1-year teaching experience (M = 3.125, S.D = .660) and teachers with 6 years of teaching experience and above (M = 3.593, S.D = .725) had a significant difference. However, there was no significant difference in the level of digital technology use between teachers with teaching experience less than 1 year and teachers with teaching experience of 2 to 5 years (M = 3.382, S.D = .617), as well as teachers with teaching experience 2 to 5 years and teachers with teaching experience 6 years and above. The effect size of the level of digital technology use of experienced teachers of 1 year and below and 6 years and above was moderate (d = 0.571).

Discussion

This study looks at the differences in the level of digital technology use in teaching and learning based on teaching experience in kindergarten. This study helps private kindergarten administrators to improve the quality of educational services to become the institution of choice and contribute to the development of education and the national economy.

Summary of Findings

The findings show that the level of digital technology use in teaching and learning among kindergarten teachers in Selangor is moderate. This is in line with Konca & Erdien (2021) that teachers have a positive attitude toward digital technology use in early childhood education. Compared to Luo et al (2021), current trends in digital technology integration in early childhood across China found that teachers are still not ready to optimize the digital

technology equipment integration in classroom activities. Most kindergarten teachers interviewed preferred authentic games and activities that train children's psychomotor over digital technology in teaching and learning (Gjelaj et al., 2020).

Antony et al (2019) stated that teaching experience has a significant impact on the knowledge required by a teacher to teach effectively with the help of technology. This is in line with this study, which shows differences in the level of digital technology use in teaching and learning based on teaching experience in kindergarten. This difference is observed between teachers with less than 1-year teaching experience and more than 6 years group. However, Jiale (2021) found no significant relationship between teaching experience and teachers' beliefs about digital technology use in early childhood education. This result is likely because this study was conducted during the Movement Control Order (MCO), in which most kindergarten teachers had no choice but to use technological platforms to do home-based teaching and learning (Faye, 2022).

The level of digital technology use of teachers with 2 to 5 years of experience (M = 3.382, S.D = .617) and teachers with more than 6 years of experience (M = 3.593, S.D = .725) was higher than that of teachers with less than 1 year of experience (M = 3.125, S.D = .660). These findings are in contrast to Lauricella et al (2020) who found that teachers with little teaching experience were seen to be more receptive to digital technology in teaching.

Implication

This study implied that relevant parties should further improve the level of digital technology use in early childhood teaching and learning. Private kindergartens are advised to provide adequate digital facilities to encourage their use. Gjelaj et al (2020) stated adequate digital facilities in kindergartens enhance teachers' positive attitude toward technology in the classroom. The integration of digital technology in teaching enables private kindergartens to provide more efficient and relevant educational services. This study also implied the Private Education Division (BPS) and the Ministry of Education Malaysia (MOE) to observe the level of digital technology use among private kindergarten teachers and make specific plans to increase teachers' awareness and knowledge of digital technology use in teaching and learning.

Limitation

The findings depend on the respondent's honesty with the statements presented in the questionnaire. There is a possibility that respondents do not answer transparently and honestly due to time constraints, are not interested in reading carefully, or do not want to state the actual level of digital technology use. The sample selection for this study is limited and cannot represent the entire population of private kindergarten teachers in Selangor. This study only focuses on teachers in private kindergartens in Selangor.

This study is limited to the aspects of IT training and teaching experience. Future studies could examine other potential factors that influence the level of digital technology use. For example, digital technology equipment is provided by the administrators for teachers' use in the kindergartens.

References

Antony, M. K., Paidi, Subali, B., Pradana, S. P., Hapsari, N., & Astuti, F. E. C. (2019). Teacher ' s TPACK Profile : The Affect of Teacher Qualification and Teaching Experience Teacher ' s TPACK Profile : The Affect of Teacher Qualification and Teaching Experience. *Journal of Physics: Conference Series*, *1397*. https://doi.org/10.1088/1742-6596/1397/1/012054

Arnott, L., & Gillen, J. (2018). *Digital Literacy and Young Children: Towards Better Understandings of the Benefits and Challenges of Digital Technologies in Homes and Early Years Settings*.

Mansor, A. N., Zabarani, N. H., Jamaludin, K. A., Nor, M. Y. M., Alias, B. S., & Mansor, A. Z.. (2021). Home-based learning (Hbl) teacher readiness scale: Instrument development and demographic analysis. *Sustainability (Switzerland)*, *13*(4), 1–15. https://doi.org/10.3390/su13042228

John, C. W. (2014). *Research Design* (4th ed.). SAGE Publications, Inc.

Faye, T. (2022). Surviving the MCO & Beyond: Changes in Education after COVID-19. *Parenthood*, 1–8. https://parenthood.my/parenting/surviving-the-mco-beyond-changes-in-education-after-covid-19/

Fraenkel, J. R., Wallen, N. E., & H.Hyun, H. (2012). *How to Design and Evaluate Research in Education*.

Fred Rogers Center. (2012). Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8. *Children*, *January*, 1–15. http://www.naeyc.org/positionstatements

Gjelaj, M., Buza, K., Shatri, K., & Zabeli, N. (2020). Digital technologies in early childhood: Attitudes and practices of parents and teachers in Kosovo. *International Journal of Instruction*, *13*(1), 165–184. https://doi.org/10.29333/iji.2020.13111a

Idris, N. (2013). *Penyelidikan dalam pendidikan*. McGraw-Hill Education. https://books.google.com.my/books?id=v6T3nQAACAAJ

Jiale, L. (2021). The relationship between preschool teacher's teaching experience and belief and their usage of ICT and the Internet in early childhood ecucatation. *Conference on Management, Business, Innovation, Education and Social Science*, *1*(1), 35–49.

Konca, A. S., Ozel, E., & Zelyurt, H. (2016). Attitudes of preschool teachers towards using information and communication technologies (ICT). *International Journal of Research in Education and Science*, *2*(1), 10–15. https://doi.org/10.21890/ijres.21816

Konca, A. S., & Tantekin Erdien, F. (2021). Digital Technology (DT) Usage of Preschool Teachers in Early Childhood Classrooms. *Journal of Education and Future*, *January*. https://doi.org/10.30786/jef.627809

Lauricella, A. R., Ph, D., Herdzina, J., S, M., Robb, M., & Ph, D. (2020). Computers & Education Early childhood educators ' teaching of digital citizenship competencies. *Computers & Education*, *158*(August), 103989. https://doi.org/10.1016/j.compedu.2020.103989

Lindeman, S., Svensson, M., & Enochsson, A. B. (2021). Digitalisation in early childhood education: a domestication theoretical perspective on teachers' experiences. *Education and Information Technologies*, *26*(4), 4879–4903. https://doi.org/10.1007/s10639-021-10501-7

Luo, W., Berson, I. R., Berson, M. J., & Li, H. (2021). Are early childhood teachers ready for digital transformation of instruction in Mainland China? A systematic literature review. *Children and Youth Services Review*, *120*, 105718. https://doi.org/10.1016/j.childyouth.2020.105718

Olowe, P., & Olaronke, K. (2014). *Perceived Importance of ICT in Preparing Early Childhood*

Education Teachers for the New Generation Children. *3*, 119–124. https://doi.org/10.11591/ijere.v3i2.5405

Pallant, J. (2020). *SPSS Survival Manual 6th Edition* (6th ed.). Routledge.

Preradovis, N. M., Lesin, G., & Boras, D. (2017). The role and attitudes of kindergarten educators in ICT-supported early childhood education. *TEM Journal*, *6*(1), 162–172. https://doi.org/10.18421/TEM61-24

Schriever, V. (2020). Early childhood teachers ' management of their changing roles regarding digital technologies in kindergarten : A grounded theory study. *Australasian Journal of Early Childhood*, *46*(1), 32–49. https://doi.org/10.1177/1836939120979065

Thuy, T. T. H., & Qalati, A. S. (2020). Preschool Teacher's Attitude Towards The Integration Of Information Technology Into English Teaching For Young Children In Vietnam. *International Journal of Economics, Commerce and Management*, *8*(2), 279–294. http://ijecm.co.uk/

Vidal-Hall, C., Flewitt, R., & Wyse, D. (2020). *Early childhood practitioner beliefs about digital media : integrating technology into a child-centred classroom environment . 28*, 167–181.