

Implementation of Digital Literacy in Indonesia Early Childhood Education

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Abstract

Digital literacy is a person's interests, attitudes, abilities, and skills in using digital technology-based devices. These skills are used to access, manage, integrate, analyze and evaluate the information needed and obtained, build new knowledge and create relationships or communication with others to participate effectively in society. This study aims to explore and explain the application of digital literacy in Early Childhood Education (ECE) institutions. The research method is descriptive and quantitative with a survey technique. The instrument used is a questionnaire in the form of a Google-Form (G-Form), which is distributed online via Instagram, WhatsApp, and email. The population is ECE teachers, and a sample of 318 ECE teachers from various provinces was collected randomly. The data collected were analyzed descriptively with simple quantification. The results of the study indicate that the application of digital literacy in ECE can be implemented in a limited way, and the implementation process must involve teachers and parents/guardians. The recommendation conveyed was the need for strict supervision for the implementation of digital literacy in early childhood.

Keywords: *Digital Literacy; Early Childhood Education; Teachers.*



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INTRODUCTION

At the beginning of 2021, the Covid-19 pandemic has not yet passed. The whole community is getting used to various health rules and protocols. Although some people are against various regulations made by the government, in reality, they still adhere to health protocols, such as wearing masks, maintaining distance, avoiding crowds, and not visiting public areas (malls and entertainment venues). One of the rules applied is that it is not permitted to organize learning in schools or educational institutions (Lampiran SKB Tiga Menteri, 2021), including in early childhood education.

In line with these regulations, the learning process at ECE is also carried out online or online using the Zoom Meeting application, Google classroom, or Microsoft Teams. Thus the learning process requires children to use internet-based devices, whether computers, laptops, tablets, or mobile phones (cell phones) (Astuti & Harun, 2020). This requirement is a bit contrary to the opinion so far, which states that children should not be allowed to use internet-based devices (Takamatsu & Takai, 2018).

Takamatsu's opinion is somewhat less relevant to the current conditions known as the millennial era or the digital era. The era when almost all things and information spread very quickly through social media. Everyone can find the information they want and need with just the tap of a finger on an internet-based device (Fadlurrohman et al., 2020). Internet users, including children who are still at an early age at this time, cannot be stopped. The phenomenon in the field that we often see today, many small children are engrossed in playing with their cellphones. They sat quietly, silent, and focused on staring at their cellphone screens. However, when referring to the definition of digital literacy in general, these early childhood children may not be able to absorb and use digital information appropriately. This is in line with the opinion of Jati (2021) dan Sumarlan (2020), which state that

early childhood thinking is still concrete while the information contained and spread on internet-based platforms is abstract, virtual, or virtual data.

LITERATURE REVIEW

Digital literacy is an individual's interest, attitude, and ability to use digital technology and communication tools to access, manage, integrate, analyze and evaluate information, build new knowledge, and create and communicate with others to participate effectively in society. (Macdonald et al., 2021). Efforts for digital-based community literacy are not limited to the introduction of digital media or internet-based digital devices but should strive to implement continuity between the daily activities carried out by individuals and the efforts of these individuals or communities in increasing their productivity. Digital literacy can also mean a person's efforts to find, use and disseminate information effectively and efficiently (Yumiarty et al., 2021). Digital literacy is also known as computer literacy which means expertise or ability to use computers, the internet, and other digital tools and is an effort to know, search, understand, analyze, and use digital technology (Tatminingsih, 2020).

In general, there are seven elements of digital literacy contained in the digital literacy development guide in Jisc, 2014 (Rahmadi & Hayati, 2020), which include: (1) Information literacy is the ability to find, evaluate and use the information needed effectively, (2) Digital scholarship is an element that includes the active participation of digital media users in academic activities, (3) Learning skills is effective learning of various technologies which has complete features for formal and informal learning activities, (4) ICT literacy (literacy of information and communication technology) including the ability to use computers or digital devices (e.g., LCD) to communicate, (5) Career and identity management related to management online identity. (6) Communication and collaboration is a form of active participation in learning and research through digital networks, and (7) Media literacy includes critical reading and creative skills of academic and professional communication in various media. It is related to the seven elements of digital literacy that this research was carried out, namely to analyze its application to early childhood, especially in the learning process at ECE institutions. The literature review represents the theoretical core of an article. The purpose of a literature review is to "look again" what other researchers have done regarding a specific topic. A literature review is a means to an end, namely to provide background to and serve as motivation for the objectives and hypotheses that guide one's research. A good literature review should not merely provide a summary of previous relevant research; the researcher is also expected to critically evaluate, re-organize and synthesize the work of others.

RESEARCH METHOD

This study uses a quantitative descriptive method with a survey technique with the instrument in the form of a questionnaire. The research instrument includes indicators contained in digital literacy elements totaling 26 questions for application to early childhood and 24 statement items for application to teachers. Each indicator item in the instrument is measured by a Likert scale with a score of 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. The population is ECE teachers who were randomly selected using the Purposive Random Sampling Technique. The data collection process is carried out online via Google Form. Instrument links are distributed through social media such as WhatsApp (WA), Facebook, and Instagram, as well as via email. The distribution of the instruments was carried out from 28 May to 5 September 2021. The data collected was in the form of answers to the instruments obtained from 318 ECE teachers. After sorting the completeness of the contents of the answers, only 309

answers were eligible for further analysis. Nine answers could not be processed and analyzed further because they were incomplete or there were empty answers. The data was processed by simple quantification with the rounding up process and analyzed descriptively.

This study applies a research code of ethics, namely: all respondents are treated free from prejudice, meaning they are independent of culture, race and religious identity, politics, and gender discrimination. All respondents have the freedom to express opinions and have a fair and appropriate contribution to the research process, or their answers are processed without discrimination. Respondents also have the right to keep their identities confidential.

FINDINGS AND DISCUSSION

Finding

1. *Description of Respondents*

Respondents in this study totaled 309 people, all of whom were Kindergarten teachers. Respondents are predominantly female. This is very reasonable because, until now, ECE teachers are still identical to women, as stated by, who stated that the interest in entering the ECE Program was dominated by women (Siti Maulidan, 2021). In terms of age, the respondents in this study were ECE teachers, most of whom were aged 21-40 years, which was 77%. This may be because the instrument is distributed through online media, so those who have sufficient ICT skills. This is in line with data on internet users in Indonesia, namely the age group of 20-24 years with a penetration of 88.5% and the age group of 25-29 years with a penetration of 82.7%, the age group of 30-34 years with a penetration of 76.5%, and age group 35-39 years with a penetration of 68.5% (Haryanto, 2019). Regarding experience or length of teaching, respondents are quite evenly distributed in each range delivered, which is around 21-28%. Only about 4% of respondents have experienced or teaching length of less than one year. Data about the identity of the respondents are presented in table 1. Interesting data related to the last education of the respondents showed that there were still 23% who did not have undergraduate academic qualifications. Another interesting thing is that respondents who have undergraduate academic qualifications are only 92 out of 199 or 46% whose qualifications are linear with their work, namely ECE Bachelor.

Table 1 Data on respondent identity

Aspects/Indicators	N	%
Sex		
a. Male	15	5
b. Female	249	95
Age		
a. <20 years	39	13
b. 21-30 years	102	33
c. 31-40 years	136	44
d. > 41 years	32	10
Teaching experience		
a. <1 year	12	4
b. 1-5 years	78	25
c. 5-10 years	87	28
d. 10-15 years	67	22
e. >15 years	65	21
Education		

Aspects/Indicators	N	%
a. High School	67	22
b. Diploma	3	1
c. Bachelor	199	64
d. Magister	36	12
e. Doctoral	4	1
Region		
a. Jabodetabek*	145	47
b. Central Java	39	13
c. Bali	26	8
d. Mataram (West Nusa Tenggara)	50	16
e. Palembang -Lampung (Sumatra)	45	15
f. Other	4	1

*Jakarta, Bogor, Depok, Tangerang, Bekasi (Indonesia's capital buffer zone)

2. Data on the implementation of digital literacy

The results of respondents' answers to research questions that focus on elements of digital literacy in the implementation of children and teachers are presented in tables 2 and 3.

Table 2 Data on the implementation of digital literacy in children

Element	Indicator	Scale							
		1		2		3		4	
		N	%	N	%	N	%	N	%
Information literacy	a. Children are taught to open internet-based devices (computers or cellphones or others)	115	37	104	34	75	24	15	5
	b. Children are taught how to find information on internet-based devices	123	40	87	28	87	28	12	4
	c. Children are taught to sort out the information that is appropriate for him	45	15	34	11	124	40	106	34
	d. Children are taught to apply information obtained from the internet	64	21	34	11	178	58	33	11
	e. Children are allowed to use the computer as he pleases while he is at school	23	7	192	62	71	23	23	7
Digital scholar hip	a. Children are allowed to access internet-based devices at school	112	36	98	32	51	17	48	16
	b. Children are trained to find information according to the theme being taught	90	29	16	5	152	49	51	17
Learning skills	a. Most (more than 50%) children can use mobile phones	86	28	56	18	81	26	86	28

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Element	Indicator	Scale							
		1		2		3		4	
		N	%	N	%	N	%	N	%
	b. Most children have at least one internet-based device	10	3	35	11	53	17	21	68
	c. Most children have their cellphones	11	37	99	32	74	24	21	7
	d. Most children use cell phones belonging to family members for learning	10	34	115	37	74	24	16	5
ICT literacy	a. Children can use learning applications used by schools (For example, Zoom Meeting, Google Classroom, and others)	30	10	108	35	10	32	71	23
	b. Children can operate learning applications used in schools	18	61	98	32	9	3	15	5
	c. Children don't need help when learning online	18	60	100	32	8	3	15	5
	d. Children can use digital devices (with or without internet)	17	57	109	35	8	3	15	5
Career and identity	a. Each child uses their accounts in learning applications (Example: Zoom Meeting, Google Classroom, and others)	18	59	95	31	13	4	19	6
	b. Each child has an email addresses	14	46	142	46	15	5	9	3
	c. Each child knows their email address	18	61	98	32	20	6	4	1
	d. Each child has at least one social media account	20	65	99	32	4	1	6	2
	e. Each child creates their password	20	67	100	32	1	0,4	2	0,6
Communication and collaboration	a. Children are active on at least one social media	11	37	115	37	65	21	15	5
	b. Children are active in conversation in class groups	12	40	100	32	72	23	14	5
Media literacy	a. Children access social media applications (e.g., tik tok, YouTube)	15	50	98	32	44	14	11	4
	b. Children can mention at least one program for children on social media (Example: YouTube)	12	41	101	32	68	22	16	5
	c. Children can program on Tik Tok	14	47	104	34	24	8	36	12

Element	Indicator	Scale							
		1		2		3		4	
		N	%	N	%	N	%	N	%
	d. Children choose the program they want to access on social media	136	44	112	36	44	14	17	6

Table 3 Data on the implementation of digital literacy among teacher

Element	Indicator	Scale							
		1		2		3		4	
		N	%	N	%	N	%	N	%
Information literacy	a. You are looking for materials for online learning yourself	74	24	19	6	104	34	112	36
	b. You choose material from social media (e.g., YouTube) according to your learning needs	27	9	53	17	120	39	109	35
	c. You take advantage of learning materials from various sources through search	23	7	19	6	101	33	166	54
Digital scholarship	a. You are an active social media user	154	50	111	36	26	8	18	6
	b. You often upload status on social media	177	57	90	29	26	8	16	5
	c. You upload various content on your social media, including the learning process	178	58	78	25	16	5	37	12
Learning skills	a. You can take advantage of all the features on your digital device (e.g., mobile phone or computer)	141	46	143	46	13	4	12	4
	b. You learn the features of digital devices on your own without the help of others	187	61	98	32	20	6	4	1
	c. You try every feature in a digital device without fear of being wrong.	201	65	98	32	3	1	7	2
ICT literacy	a. You can use digital media to search for learning materials	132	43	67	22	10	3	100	32
	b. You can operate the learning application used for teaching yourself	21	7	65	21	123	40	100	32
	c. You need an IT officer at school when carrying out online learning	14	5	23	7	174	56	98	32

Element	Indicator	Scale							
		1		2		3		4	
		N	%	N	%	N	%	N	%
Career and identity management	d. You can operate the features in the digital device you use	115	37	104	34	75	24	15	5
	a. You have an account on every learning app you use	123	40	88	28	86	28	12	4
	b. You use your school account for learning	42	14	29	9	132	43	106	34
	c. You use one email address for all social media accounts	64	21	34	11	178	58	33	11
Communication and collaboration	a. You take the initiative to form a student conversation group in your class	23	7	192	62	71	23	23	7
	b. You took the initiative to form a parent-student conversation group in your class	112	36	98	32	51	17	48	16
	c. You always respond to questions/feedback in Group conversations	90	29	16	5	152	49	51	17
	d. You always convey information related to learning in class group conversations (e.g., WA Group)	56	18	56	18	102	33	95	31
	e. You invite every parent to a class conversation group	9	3	37	12	52	17	211	68
	f. You always try to activate students who are not active in group conversations	89	29	17	6	152	49	51	17
Media literacy	a. a. You often use social media for learning (e.g., tik tok, youtube)	83	27	56	18	87	28	83	27
	b. b. You can create content to upload on social media	12	4	33	11	200	65	64	21

Discussion

The implementation of digital literacy in children in early childhood education, which is presented in table 2, shows that in the elements: 1) *information literacy*, it appears that in ECE. Children are not taught to open digital devices and how to find information through digital devices. But children are taught to sort and apply information from digital devices. Regarding the use of computers in schools, 69% said they did not agree. This is probably based on the availability of computers in institutions and the characteristics of children, including children who tend to like to move and tend to be careless; therefore, children are more directed to socialize and do physical activities. (Sheridan, 2011), (Yulindrasari et al. (eds), 2020); 2) *digital scholarship*, the results of the study show something somewhat contradictory, namely children are not allowed to access internet-based devices at school, but children are trained to find information according to

the theme being taught. This is done by the principle of learning in early childhood, which is holistic, integrative, and simultaneously strengthens all aspects of child development (Hadiansah et al., 2021); 3) *learning skills*, the results showed that respondents stated that they did not agree that their students had and used cellphones belonging to their family members, although respondents stated that their students on average had at least one device and could use cellphones.; (4) *ICT literacy*, 5) *Career and identity management*, 6) *Communication and collaboration* as well as 7) *media literacy*; the results of the study showed that all of the respondents stated that they disagreed and strongly disagreed with the indicators of these two elements, namely related to social media identity and the use of applications on internet-based devices. This is by various concepts which state that early childhood is not enough in terms of age, ability, maturity, thinking, and knowledge of children related to literacy and personal identity management. (Asmawati, 2021; Endarta, 2016; Hadiansah et al., 2021);(Chairilisyah, 2021; Darihastining et al., 2020; Fadlurrohimi et al., 2020; Heri Budianto., Leila Mona Ganiem., n.d.; Ridlo et al., 2021; Sumarlan, 2020; Takamatsu & Takai, 2018).

The implementation of literacy in early childhood education teachers presented in table 3 shows that in the elements: 1) *information literacy*, it appears that ECE teachers can search for, choose, and utilize various materials from various learning sources through online searches. (Tatminingsih, 2020); 2) *digital scholarship*, the results of the study show that most PAUD teachers are not people who are active in social media. Even during this pandemic, many teachers suddenly become influencers who upload learning materials and processes on social media platforms such as YouTube and others (Eka Fajar Rahmani, 2021; Sum & Taran, 2020; Wiyono, 2000); 3) *learning skills*, the results showed that respondents stated that they did not agree that their students had and used cellphones belonging to their family members, although respondents stated that their students on average had at least one device and could use cellphones.; the data shows that the ability of early childhood teachers to learn and take advantage of features on their digital devices (e.g., mobile phones or computers) is very limited. Most of the teachers stated that they did not try to learn or use it either in their daily life or in their learning process. The reason given was because they were technologically savvy, and no one could help them learn it. These results contradict (Keller & Hrastinski, 2009), which states that teachers and students of higher education have a desire to learn digital literacy in their learning and learning. These results contradict which states that teachers and students of higher education have a desire to learn digital literacy in their learning and learning. However, this result is supported by research that states that teachers have busy jobs, so they do not have the opportunity to develop themselves (Mohamed Taher, 2022).; 4) *ICT literacy*; in this element, respondents stated that they needed other people who were more skilled in operating the applications used for teaching. They can only operate the basic features of each application, but if they experience the slightest problem. They will look to someone else to help. This makes a lot of sense considering they are busy preparing for learning, so they don't have time to learn the features in the applications they use (Mohamed Taher, 2022); 5) *Career and identity management*, 6) *Communication and collaboration*, and 7) *media literacy*, each teacher has a personal account for each social media they have. Some teachers use these accounts in learning, but others prefer to use accounts provided by the school. This helps make teaching easier and makes them more confident in developing learning content. Each teacher has a personal account for each social media they have. Some teachers use these accounts in learning, but others prefer to use accounts provided by the school. This helps make teaching easier and makes them more confident in developing learning content. They are also

more confident in communicating and collaborating with fellow teachers and parents (Karimov, 2022; Keller & Hrastinski, 2009; Walsh, 2009; Wordu et al., 2021).

CONCLUSION

The application of digital literacy in early childhood, especially in kindergarten children, has not been implemented effectively because early childhood is still concrete. The application carried out in the learning process is limited to the knowledge that is appropriate to the child's developmental age. The application is very limited, considering the ability of children to use internet-based devices is still very minimal. Children also cannot sort the appropriate material for themselves. The role of teachers and parents is needed in controlling the use and utilization of digital communication and information tools. The recommendation that can be conveyed is that in implementing digital literacy, parents and teachers must play an active role in controlling the use of devices used by children, and children must be given intensive direction regarding the content that can be selected and when to use internet-based media devices both for learning and as a source of information. Entertainment tool.

LIMITATIONS & FURTHER RESEARCH

The limitations of this study lie in the limited number of samples that can be collected through the online platform and the use of online instruments, so it is difficult to detect whether the respondents answered according to the actual conditions or provided they were filled in. Therefore, further research can collect data with a larger sample and is equipped with direct observation instruments so that the data obtained is more in-depth and detailed.

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