The Quality Of Digital Literation Early Childhood Education Teachers Based On Unesco Standards

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Abstract— The purpose of this study was to determine the quality of digital literacy for early childhood education teachers based on the mastery of Information Technology and Communication (ICT). This research is a quantitative study which uses survey methods with questionnaire as the instrument for data elicitation. The respondents of this research are teachers of early childhood in West Sumatera. The data is processed by conducting regression analysis using SPPS. The result of the analysis shows that the ability of teachers to manage information and develop new knowledge contributes to the mastery of digital literacy of early childhood education teachers. Furthermore, the ability to access information, manage, evaluate, and develop new information significantly contributes to the digital literacy with the F value (4.281) greater than the F table (2.472). Based on these results, it is suggested that teachers in early childhood education are need to be given more knowledge on how to find the right access to information and be able to evaluate the information to improve the teachers' digital literacy skills.

Index Terms—Digital Literacy, ICT, early chilhood, teacher.

1 INTRODUCTION

The term digital literacy was first put forward by Paul Gilster as the ability to understand and use information from various digital sources [1]. Bawden extends a new understanding of digital literacy that is rooted in computer literacy and information literacy [2]. Computer literacy developed in the 1980s when microcomputers were increasingly widely used, while information literacy became widespread in the 1990s as information became more easily compiled, accessed, and disseminated through networked information technology [3]. the concept of digital literacy is the awareness, attitudes and ability of individuals to use digital tools and facilities appropriately to identify digital resources, build new knowledge, make media expressions, and communicate with others for constructive social action [4]. Digital literacy is an important aspect for the teachers at all levels of education. The problems that is commonly found is that digital literacy of the teachers, especially at the level of early childhood education is still the low level. The use of Information Technology and Communication (ICT) in learning continues to experience rapid development [3], [5], [6]. ICT has now become an inseparable part of learning. The use of ICT becomes an important capability in the pedagogical aspects of teachers in order to provide qualified educations which eventually have an effective impact on increasing student competency [7]–[10]. In the context of developing the professional aspects of the teacher, Butcher and Neil have formulated six fundamental competencies in the integration of ICT in learning were understanding ICT in educational policies, integrating ICT in the curriculum and assessment, using ICT in learning, applying digital skills of the teacher, using ICT in management, learning administration, and school organizations, and using ICT in improving teacher professional abilities [11]. In order to support the use of ICT in learning, a number of studies have been conducted regarding on how to formulate the standards of ICT use in the professional abilities of teachers. UNESCO formulates three levels of ICT use for teachers, they are knowledge acquisition, which is the stage of acquiring knowledge about information technology in the early stages; the teacher obtains knowledge to use information technology at the initial level. In this point, the teachers are required to be aware of the potential use of information technology in the classroom and to determine priority policies nationally and locally in organizing and managing the investment of the use of information technology in school and classroom to optimize the use of information technology in the learning process. Several teachers at this stage are already able to articulate how their learning practices in the classroom support the use of information technology in learning, starting from analyzing curricula on the integration of information technology, identifying pedagogical use of ICT in the learning process in the classroom to achieve national standards on the use of information technology, and also being able to make decisions regarding identifying the function of hardware and software components that can be used in learning. Furthermore, at the international level, the ability of teachers to integrate this technology is called technological literacy; how teachers develop their learning methodologies that inclusively support their professional abilities, regulate both physical and non-physical learning environments about technology integration and ensure that the potential capabilities of information technology are used in optimizing teacher's professional ability in learning. Digital literacy is the ability to read and write in a complex way with deep interpretation. Digital literacy is not only a person's ability to read and write. The new meaning of literacy is more complex, where one's ability to understand information in the way of how it is presented [12]. The second stage about the integration of ICT in learning is ***knowledge deepening*****,** where the teacher acquires information technology competencies that enable them to facilitate student-centered learning environments by applying collaborative and cooperative learning. Teachers in this case can combine the direction of information technology policy with real action in the classroom and have the capacity to build the design of information technology needs in the classroom to develop information technology assets and estimate future ICT needs. The targets at the advanced level are that teachers can be interact and connect to national and international networks, teachers who already have the advanced knowledge about the use of information technology can design, modify, and implement learning practices in the classroom that support national policies on ICT integration in learning, starts from designing learning content, learning process, assessment, and mastery of ICT-based curriculum, designing project-based learning activities that implement information technology starting from designing, implementing, monitoring, and solving complex problems related to ICT, and teachers are already able to integrate various digital tools and resources to create an integrated learning environment and support students' high-level thinking and skills in solving learning problems. Stage fifth is using digital tools in flexible way to facilitate collaborative learning and managing learning partners based on information

technology. In the next stage the teachers are expected to be able to use technology to interact with professional networks and support the teacher's professional abilities. The third stage is *knowledge creation*, where teachers have gained competencies that encourage them to be creative in establish learning models and arrange a harmonious learning environment to create new knowledge in society related to the use of information technology. The indicators of teachers who master the level of information technology at this stage are; 1) criticizing institutions or policies related to changes in information technology, 2) determining the best way to incorporate collaborative and open learning towards students to ensure management mastery and standard curriculum, 4) designing broader learning community by using digital tools to support learning, 5) playing a leadership role in developing technology-based strategies that is advantageous in transforming school systems into learning organizations, 6) developing and experimenting, practicing and innovating in a broader way so that the schools can serve community technologically. In Indonesia, the level of digital literacy of teachers at PAUD (early childhood education) is still in the first stage, namely acquisition of information technology in learning [13]. This capability is still in the initial stages in the use of information technology. This phenomenon is based on observations of teachers at PAUD who have a tendency to use information technology merely to find data or information on the internet. This is also supported by a number of studies on the mastery of information technology for teachers in early childhood education, stating that the ability of the teachers revolves on the use of computer technology as a medium of learning in front of the class [14]. This phenomenon is certainly weak, considering numerous benefits that can be obtained by teachers in integrating technology in learning activities in front of the class. Digital literacy refers to the ability of teachers to get all sources of information that is useful in supporting their activities in guiding their students. As for early childhood education teachers, the use of information technology needs to be optimized, because the student in early childhood education is a native generation where technology has been inseparable since they were born. Technology integration can be included in all learning activities for early childhood education, such as games, learning, stories, and information. This study tries to find the contribution of PAUD teacher's ability to access digital information, information management, information evaluation, and information development toward improving digital literacy skills for PAUD teachers in West Sumatra

2 RESEARCH METHOD

This research is quantitative study which uses a survey method to find out the analysis of mastery of information technology on PAUD. The teachers were observed from 2018 to 2019 in Padang City. The participants of this research are 51 teachers who have attended information and communication technology training from 19 districts or cities in West Sumatra. The data are processed and analyzed by using regression analysis using SPPS.

3 RESULT AND DISCUSSION

This research was conducted by distributing questionnaires to respondents who attended the training on the development of digital-based teaching materials. The training was conducted by the Ministry of Education for Early Childhood Education in the West Sumatera. The questionnaire generally indicates: Accessing information through searching methods with appropriate indicators, the ability to organize, manage, and store information, the ability to evaluate information in an integrated, relevant, and efficient manner, the ability to develop and create new knowledge based on existing information, Digital literacy capabilities; the mastery of information technology by the teacher,.The result of the survey shows that the ability of PAUD teachers to access diverse information on the internet suits their needs. The development of new information that is obtained on the internet, the ability to access and govern new informations have contributed 20.8 percent to the mastery of information technology for the teacher. The result of analysis related to this information can be seen in the table 1.

Table 1. Results of analysis teacher's ability to access information

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,521(a)	,271	,208	1,54878

a Predictors: (Constant), Develop, Access, Manage, Evaluate

The calculated F value (4.281) is greater than the F table (2.472) with a significance of 0.005 smaller or equal to 0.05. This means that the ability of access, information governance, evaluation, and information development simultaneously influence the ability of digital literacy of early childhood education teachers. The results information can be seen in the table 2.

Table 2. Analysis Access, manage and evaluate digital literacy

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41,071	4	10,268	4,281	,005(a)
	Residual	110,341	46	2,399		
	Total	151,412	50			

a Predictors: (Constant), Develop, Access, Manage, Evaluate
b Dependent Variable: ICT

In the other hand, if the variables are described one by one, the ability govern and develop information for PAUD teachers

significantly influence the mastery of teacher information technology, while the ability to access and evaluate information do not have a significant effect. The data is presented in the table 3.

Table 3. Analysis of managing and developing information digitally
Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Value
	B	Std. Error	Beta	B	Std. Error	
(Constant)	9,104	2,250		4,047	,000	Significant
Accessing Informaton	,026	,080	,044	,318	,752	-
Information Governance	,218	,087	,354	2,514	,015	Significant
Evaluating Information	-,156	,103	-,227	-1,515	,137	-
Developing Information	,227	,089	,351	2,555	,014	Significant

a .Dependent Variable: ICT

The results of this study indicate that the contribution of PAUD teacher's ability to access information technology, especially the internet is not optimal. Their ability in accessing the right information and learning needs is inadequate. Informations related to learning patterns in PAUD are in the form of articles, pictures and writings. The ability to access information does not significantly contribute to the mastery of digital literacy competencies for PAUD teachers since the t table value (0.752) is higher than the calculated value (0.318). The researcher then interviewed the PAUD teacher, where most of the teachers explained that they did not yet have the right information regarding on where to access the relevant information. They stated that they mostly search the information merely through the Google search engine since it is a very common site, whereas the more relevant informations that is related to informations at the PAUD education level are excessively disseminated in the education department or the government's website. PAUD teachers need a lot of information and learning materials to optimize the transfer of information to their students. The digital literacy mastery for the teachers can be supported by designing learning environments that facilitate them to master the information technology. The teacher's learning environment should be optimized in order to motivate them to find information by using technology. For the sake of the next stage of information development, today's society must be prepared for the transition from consuming to producing, which requires sharp complexity. At the level of early childhood education, technology integration in learning can be conducted in several activities, such as 1) increasing children's literacy skills, 2) integration of ICT in mathematical understanding, 3) integration of ICT in the development of science learning, 4) integration of ICT in creativity and use of technology in entertaining way, 5) visual literacy and painting, 6) media education and digital animation. Although the integration of information technology in PAUD level is needed, the teachers are still expected to pay attention to their effective ways of learning with deep involvement, and help them to become great thinkers, effective, and confident in learning.

4 CONCLUSSION

Based on the description above, it can be concluded that the quality of digital literacy based on UNESCO standards is at the information acquisition stage and still at the beginning level. The level of teachers' ability to access and evaluate information do not significantly influence the ability of their digital literacy meanwhile the teacher's ability to manage and develop information does have the significant effect on mastering the digital literacy skills, which simultaneously contributed in significant way with the F value (4.281) is greater than the F table (2.472). Based on the results, schools are suggested to give more knowledges on how to access the relevant informations with facilities such as adequate internet networks at schools.

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