¹ Ayun Fitroh Lutfiana

² Sujarwo

³ Marvinan Anan Dita

Implementation of Teachers' Digital Literacy to Improve Learning Skills in Era 4.0 (Systematic Literature Review)

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Abstract: - Digitalization is shaping the overall structure of education around the world, with attention received from governments, practitioners, researchers, and policymakers for educational development. Digital technologies are bringing major changes to education, skills and employment. These changes reflect how technology is increasingly at the center of education 4.0. Digital technologies evolve through capabilities and skills in resources. This research is an SLR by identifying various appropriate and relevant literature. Data searches were conducted using criteria determined by researchers from various search engines such as Google Scholar, Scopus, Researchgate, and which resulted in several articles for further analysis Furthermore, the data were analyzed using a qualitative approach to describing the research findings. The results showed that digital technology in education in the era of reformers 4.0 greatly affects the digital literacy skills of educators if digital technology training programs are carried out continuously. In addition, attention from the government and policymakers is needed for rural educators who are still not ready for the presence of digital literacy

Keywords: digital technology, digital literacy, learning skills

I. INTRODUCTION

Digital literacy technology is currently experiencing an imbalance where academics or certain groups of people do not have the skills or ability to gain efficient access to digital information. This is reflected in the education system, where teachers must have a set of digital skills that must be developed in students [1]. Many community activities and even education use technology as the most comfortable foundation for their daily existence [2]. The utilization of technology in the field of communication and information is one of them. Technology greatly facilitates and entertains human life [3]. Given how quickly technology is developing, digital literacy is now essential to educators' professional development [4]. However, the fact is that there are still many academics who still have difficulty in finding accurate and correct information and are still very minimal in digital literacy competencies. There has been no effort to examine these tools in improving the evaluation of the ability of educators. With this, it is very interesting to do a more in-depth study of digital literacy.

The results of research conducted by [1], [5] in the era of digitalization teachers are required to be able to think innovatively and creatively. The post-pandemic era's need for efficient professional development for teachers.This demonstrates the potential of mobile learning to support educational change and offers insightful information about how mobile technology is used in the education sector, even in the most trying circumstances. Another research result was also conducted [4] Teachers' digital competences in professional development, teaching and learning, using educational technology, and providing assistance for students. This highlights the capacity of instructors to use technology in evaluating student learning outcomes or to enable students to use technology to enhance their education. Preschoolers must be taught digital literacy in order for them to engage in digital life in a secure and healthy manner [6]. However, there are currently few digital literacy teaching initiatives in kindergartens.

Mastery of literacy skills in all aspects of life is very important, but quantity and quality must be balanced. This shows that Indonesia's technological capabilities are still low and even declining. One of the causes is Indonesia's uneven education system in various regions. Students of the current digital generation rely heavily on information found on the internet. The low level of digital literacy leads to plagiarism of one's original work. Young people who are accustomed to the digital world today are exposed to media, but they lack the capacity and awareness to filter information selectively. Receiving information will be difficult because of this. They can only access digital content if their information literacy is unbalanced, which hinders them from developing as human beings. Most people struggle to distinguish between accurate information and misinformation after being exposed to various digital information. To be able to use useful information content according to their needs, one must have digital literacy skills.

The purpose of the current study is to assess the overall state of research on digital technologies in education 4.0. The primary goal of the agenda is to identify future directions and advancements in the field of

1,2,3 Yogyakarta State University

1Ayunfitroh.2022@Student.uny.ac.id 2Sujarwo@uny.ac.id, 3marvinaanan.2022@uny.ac.id

study concerning the design of education and the digital literacy of teachers. Researchers are drawn to use these tools to enhance digital literacy abilities because of the recent advancements in digital technologies across a range of sectors. High-speed internet, high-performance digital devices. In order to assess the significance of the literature on education, the current study will analyze the literature and identify categories, contexts, methods, and approaches. 4.0 Digital literacy abilities and technologies.

Information Technology

Technology is the evolution of objects (hardware) and programs (software) based on science over time and in response to demands. Information technology is a development in the field of information that is used to obtain and disseminate information in carrying out daily tasks [7]. Data processing technology is referred to as information technology. To provide quality information, especially information that is timely, relevant, and accurate and used for personal, professional, and government purposes, information technology involves collecting, compiling, storing, converting, and processing data in various ways [8] The science of organizing information in such a way that it is accurate, fast, and useful can also be concluded as technology (Husaini, 2014). From some of the above definitions, information systems are software that functions to make it easier for someone to process information effectively and efficiently.

Information technology can be utilized in the field of education such as;

a. Management Information System

A management information system (SIM) is a system that contains various information to support management procedures. Information systems can be operated more quickly and accurately thanks to the use of information technology. Students, parents and the community can easily access information thanks to academic information systems with online databases. Educational institutions' interactive websites serve as a means of communication between them and the institutional community. Students, teachers, staff, parents, and the community can utilize the features in the Academic WEB, which include student administration and academic progress. Management information system (SIM) is a method for organizing and processing data and information that helps organizations carry out their tasks [9]. A management information system is a tool for decision making that conveys past, current, and anticipated future information both orally and in writing [10]Management information systems are indispensable in various fields. With the existence of SIM, it can help all human work to be effective and efficient.

b. Elearning

E-learning is the virtual use of information technology in education. Learning is no longer constrained by time and place thanks to e-learning. E-learning that encourages independent learning based on student creativity allows students to research, create their own writing, information, and knowledge, people process and utilize sources anywhere and anytime, you can learn. E-learning is done through the internet network, so everyone in the world can be a learning resource besides the teacher. To learn through e-learning, students can use e-books, electronic libraries, interaction with professionals, email, mailing lists, newsgroups, the World Wide Web (www), and other resources. E-learning can be done by everyone. Universities should have the ability to manage their own online education. Simply put, lecturers can utilize elearning by developing their own website or the college website and linking it to websites relevant to their classes [11] By going through elearning can help teachers in the learning process and provide convenience.

c. Learning Media

Using computers as interactive media or the internet for e-learning are two ways information technology can be used as a learning tool. It is expected that using this media will be able to attract students' interests, thoughts, and feelings in a way that can facilitate learning. The use of learning media makes it possible to eliminate communication barriers between teachers and students, such as those caused by physical, psychological, cultural, and environmental barriers, which will also increase the success of the educational process. One of the instruments used by educators to ensure that learning activities are successful is learning media. The word "media" refers to anything that can be used to communicate messages from one person to another in a way that can engage students' interests, emotions, and cognitive processes (Sukmawati, 2021). With the aim of facilitating the learning communication process, learning media refers to a method or intermediary, such as a tool, that allows communicators (teachers) to channel knowledge to communicants in the form of learning materials (students) [13] Thus, the process in which a teacher uses learning aids to deliver learning content to students to facilitate their understanding is what is meant by "learning media".

Digital Literacy

Literacy is the mastery of easy and useful skills that profoundly enhance and improve human cognitive powers [14]. When using digital technologies, communication tools or networks, one's abilities and skills are required to acquire, organize, integrate, assess and produce information in order to perform in a knowledge-based society [15]. A more inclusive word is required to characterize the growing use of digital technologies. Since digital media became a major part of the generation due to the development of Web technologies and easy access

to them, the best word to characterize the technological progress of digital literacy is [16] . The ability to find, evaluate, use, share, and produce material using information technologies and the Internet. It is the confident and deliberate use of information and technology to further one's personal, professional, and academic goals[17]. Digital literacy brings technological changes in the environment in this 4.0 revolution era. All information can be obtained through this digital literacy.

The notion of digital literacy include the ability to plan, manage, and evaluate life situations in addition to the acquisition and application of knowledge, skills, attitudes, and personal qualities [18] . Digital literacy also includes the ability to understand how society's communication tools work and learn how to use them effectively for interpersonal contact [15]. Digital literacy is the capacity to locate, arrange, comprehend, evaluate, and analyze information using digital tools. not just proficient with computers but also adept in communicating information via digital platforms [19]. The capacity to find, assess, utilize, and produce information, recognize and utilize data in a variety of computer forms from a variety of sources, and efficiently complete activities in digital contexts.

Digital Technology

Digital technology is an information technology that places a higher priority on computer or digital work than manual work. However, the possibility that it is a fully automated and sophisticated operating system with a computerized and machine-readable format is higher. computerization and computer-readable form. Basically, digital technology is just a very fast calculation system that converts all kinds of information into numerical numbers. As a result of these technological advancements, the quality and efficiency of data creation and transmission has changed. For example, photos are now sharper due to better quality, and the capacity and transmission time have become faster [20] . The development of digital technology will not stop.

Three factors - digital transition, network convergence, and digital infrastructure - will influence how technology develops in the future. digital framework. Network technology is the efficiency and effectiveness of communication networks, including telephony, video, and communications, which can be used for personal and professional purposes. More technologies will adapt to meet demand as network convergence becomes increasingly important. The period of technological transformation, or the shift from analog technology to digital technology, has evolved to support easier technology, particularly digital technology. for digital technology in particular. Network convergence will be linked to lifestyle trends in particular, such as spending more time at home with family and traveling, which combines work and pleasure. Time spent at home focused on family and busy travel will also be included. In addition, there are office activities due to work and leisure demands. Digital product manufacturers will focus their commercial opportunities there given these trends. Products and technological advancements will follow the changing lifestyle of people in the digital era [20].

The evolution of education and learning is a view of the digitally connected modern world in revolution 4.0, when digital technology use is everyday [21]. Nowadays, from young children to college students, everyone is familiar with digital devices including computers, tablets, and smartphones. Typically, They converse and pass their leisure time on these gadgets. It can be difficult for trainers and educators to understand these devices because they work long hours.

II. METHODOLOGY

This research was written using a systematic literature review research methodology. The researcher used data through ebooks, journals found online through Mendeley, Google Scholar, and scopus journals. The research field conditions are defined and categorized more thoroughly in qualitative research. In qualitative research, literature review must be used consistently with methodological assumptions.

The criteria for selecting and rejecting articles, namely the first search is information technology criteria Years from 2010 to 2022 so that the results of the studies used are still relevant for further use. Then digital literacy is narrowed down with digital technology in education 4.0 affecting the digital literacy skills of educators.

III. RESULT

Literature findings featured in a study are included in the current review. Digital technology helps to improve educators' digital literacy skills. The research findings recommended using an advanced model of education in the form of a resource-centered 4.0 revolution. Some researchers believe that the crucial factor is skilled human resources who can use digital technologies and adapt quickly, using innovative technologies. Without talented human resources, it cannot advance and improve digital literacy Education 4.0 is an important element to develop skilled human capital. Digital transformation relies heavily on education 4.0 because of the skills needed in the industry. Digital transformation data was analyzed from many researchers using qualitative, quantitative, mixed methods and literature review research methodologies

IV. DISCUSSION

based on an analysis of multiple papers about how digital technology in education 4.0 influences teachers' ability to become more digitally literate. Based on the findings of research by [22]. That to improve digital literacy skills it is necessary to hold ICT training in teacher education. The same thing was also said by [23] . The usage of digital technology in the classroom should be regularly trained upon for teachers in order to increase their comfort level with the tool. The digital literacy skills that teachers will have can have an impact on the future at school and the learning process in the classroom. The improvement of educators' digital literacy skills must be supported by the desire of educators to use information technology in their professional activities [24] . In the proposed study, "digital literacy" refers to the digital abilities and knowledge required to use computers and the internet, engage in digital communication and interaction with others, produce information in a variety of digital formats, and perform in knowledge [25]. To improve digital literacy skills, it is necessary to provide training on digital technology in the use of computers to increase their confidence level.

Reports of digital literacy and the (re)use of open resources in the context of schools are lacking or only partially achieved when it comes to digital technological skills. Digital technology is not the only thing that drives activity in classrooms; it is constantly present. Higher levels of digital literacy have a favorable impact on high learning outcomes determined by students' academic achievement. The components of academic ability, reading, and writing are the best predictors of academic achievement evaluated through final grades [26], The high level of output of learning outcomes on student academic achievement is positively correlated with the amount of digital literacy. [27] the use of technological devices such as computers, cell phones, tablets, the internet, and social networks by prospective teachers with activities inside or outside the classroom can be beneficial in terms of digital literacy levels. These technological instruments can be very effective in their understanding of subjects that they find difficult to master or their observation of some experiments that they do.

Teachers now have to learn how to use technology and keep up with its rapid development in order to keep up with their students. This degree of proficiency must be attained gradually and consistently through self-study as well as instruction from ICT professionals[28]. Therefore, In addition to their abilities to instruct, teachers also need to incorporate ICT into the classroom in an efficient manner. [29] The enjoyment of learning activities will increase when teachers use technology into their lessons. Better comprehension of the course materials by the students eventually results in higher-quality learning outcomes [30] . The idea of literacy was developed to support educators working with kids to help them become digital natives and ready for the use of new and emerging technologies in the classroom [31].

V. CONCLUSION

The 4.0 Revolution era brings rapid changes in various sectors, one of which is education. This study evaluates the research progress in the field of literature on digital education technology 4.0 data selection following a very comprehensive and detailed process for relevant data. In the current study, it is assessed that the education of the 4.0 revolution era is drastically changing the world of education. the researchers pointed out that skills and capabilities are needed to meet the needs of the education sector. the importance of digital technology capabilities and skills, one of which is educators, will have an impact on the learning process of students. With continuous digital technology training, it will have an impact on the digital literacy skills of teachers. The government and policy makers also need to pay attention to rural educators who do not have a clear plan to deal with digital literacy. They are in a state of "wait and see" especially in the field of education. the increase in the level of digital literacy of teachers in all indicators, the increase in the number of people who want to use information technology in their professional activities, and the positive attitude of prospective teachers towards the program organized. An attitude of commitment from educators in participating in digital literacy training programs.

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