

DEVELOPING TEACHERS DIGITAL LITERACY COMPETENCIES THROUGH HYBRID LEARNING

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ABSTRACT

Developments in the field of education are one of the factors in the progress of learning. The development of science and information technology in 21st century learning requires digital era competencies and skills for professional teachers. Digital competencies must be possessed by teachers including mastery of information, communication, educational content creation, security, and educational problem solving. Teacher creativity in supporting digital competencies is by developing more dynamic learning models and methods, one of which uses hybrid learning methods. Teachers' digital competence and pedagogical competence in utilizing innovative learning methods still have gaps. This research aims to examine the development of teachers' digital literacy competencies through hybrid learning. The method used in this research is descriptive with a qualitative approach. The data obtained is using secondary data which is study literature. Based on the research results, teachers' digital competencies have not been implemented optimally, but can be improved through the use of hybrid learning methods by maximizing learning strategies and learning success indicators.

Keywords: Teachers Development, Digital Literacy Competencies, Hybrid Learning.

INTRODUCTION

Developments in the field of education are one of the factors in the progress of learning, because it will not be separated from the development of advances in science and technology (IPTEK). Learning that continues to experience development and progress is a characteristic of 21st century learning with wide access to information technology, including an education system in Indonesia that is flexible to suit the needs of students (Edwina, 2023). It takes a paradigm in the education system that can provide a set of 21st century skills to deal with aspects of life globally, these changes are not only about curriculum content, but changes in pedagogy from simple action towards comprehensive action based on technology that will be useful for students to be more responsive to changes and developments of the times (Soh et al, 2010; Afandi, 2016).

The extensive development of science and information technology in 21st century learning requires digital era competencies and skills for professional teachers. Digital competencies must be possessed by teachers to support 21st century learning, including mastery of information, communication, educational content creation, security, and educational problem solving (Prayogi, 2019; Blyznyuk, 2018). So that the learning provided by teachers to students is integrated with 21st century learning content globally which contains 4 C skills, namely Communication, Collaboration, Critical Thinking and Problem Solving, and Creativity and Innovation, so that students can be capable of thinking, working, being skilled, and being responsible in their lives (Binkley, 2012).

Teacher creativity in supporting digital competence is by developing more dynamic learning models and methods. Improving the quality of learning and challenges for teachers to master technology and improve competence, especially pedagogical competence, because the higher the digital literacy, the higher the pedagogical competence (Putra, 2023). In line with this, one of them is the hybrid learning method which emerged from the development of information and communication technology, starting from the era of Computer Based Training (CBT), Learning Management System (LMS), to web-based applications, so that the hybrid learning method is used as an innovative learning technology that teachers can use to overcome the shortcomings of the teaching methods and models used previously (Edwina, 2023). Thus, teachers' digital and pedagogical competencies will be aligned by using hybrid learning methods.

Teachers' digital competence and pedagogical competence in utilizing innovative learning methods still have gaps. The gap between teachers and students in utilizing technology is a challenge that needs to be addressed immediately, with optimal mastery to keep up with digital students with their various characteristics so that the teaching and learning process can run more effectively and efficiently because teachers are able to teach more creatively using technology (Sitompul, 2022; Ahmadi, 2017). As supported by Edwina (2023) that teachers do not know the existence of Hybrid learning so that the application of the teacher cannot readily overcome the problem of obstacles in the implementation of Hybrid learning, then not a few students do not read books and are lazy to listen to the material taught due to the lack of learning media used, so that digital literacy is needed as well as teacher competence in developing learning media and the degree of teacher readiness in changing traditional teaching (textbooks) to technology-based media (Puspitarini, 2019; Alekseeva, 2019).

According from these problems, this study will examine the development of digital literacy competencies of teachers through hybrid learning so that the purpose of this study is to answer the following problem formulations: a) how is the digital literacy competence of teachers; b) how is the use of hybrid learning methods; c) how is the digital literacy competence of teachers through hybrid learning.

METHODOLOGY

This research uses a descriptive method, which is used to find knowledge of the research subject at a certain time (Mukhtar, 2013). Descriptive research methods are used because they can describe phenomena and problems that exist in the field (Edwina, 2019. Page 38). So that with the use of descriptive methods, it is easier to describe and explain

phenomena or problems in detail and clearly based on what is obtained during research and data search.

Research data obtained using literature studies by searching, researching, examining, and understanding data sourced from books, documents, or other written sources that are relevant and supportive in the process of finding data sources. As Sukardi (2004) states that the kinds of documents or literature studies include journals, research reports, scientific magazines, newspapers, relevant books, seminar results, unpublished scientific articles, sources, decision letters and so on.

The type of data for this paper is textual data containing concepts and theories regarding the development of digital literacy competencies of teachers through hybrid learning contained in the literature relevant to the discussion. The data used are: a) Primary Data (the concept of teacher digital literacy competence, and hybrid learning); b) Secondary Data (supporting books, journals, articles, and related agency data).

FINDINGS AND DISCUSSIONS

Teacher's Digital Literacy Competency

Digital literacy skills are an ability to respond to all changes and developments in rapidly adaptive technology related to one's profession and life every day, one of which is the digital literacy skills of teachers who can take advantage of technological developments in planning various learning materials and methods to be taught to students in class, the effective use of technology can strengthen learners' learning experiences that emphasize high-quality instruction and provide access to challenging and interesting content, feedback through formative assessment, opportunities to learn anytime and anywhere, and individualized instruction to ensure all learners reach their full potential (Darmawan, 2019; Lamma, 2023; Sitompul, 2022).

Digital pedagogical competence not only presents digital learning, but teachers are required to have ethics when using technology or internet sources as learning media (Rahayuningsih, 2022). As competence itself is a knowledge, skills, and abilities possessed by a person to be able to do various things related to cognitive, affective, and psychomotor abilities as well as possible. The core competencies of digital literacy that a person needs to have as stated by Ummah (2020), namely: 1) Internet Searching; 2) Hypertextual Navigation; 3) Content Evaluation; 4) Knowledge Assembly. In line with Blyznyuk (2018), the digital literacy competencies that teachers must have are: 1) Information; 2) Communication; 3) Educational Content Creation; 4) Security; and 5) Educational Problem Solving.

As NCREL & Metiri Group (2003) in enGauge 21st Century Skills, states that literacy in the digital era includes several components, including:

1. *Basic Literacy, in the form of language skills, especially English and mathematical skills*
2. *Science Literacy, in the form of knowledge and understanding of science concepts and processes*
3. *Technological Literacy, in the form of knowledge about technology and being able to use it effectively and efficiently*
4. *Economic Literacy, in the form of knowledge about economic issues and developments*
5. *Visual Literacy, in the form of knowledge in interpreting conventional or modern image*

or video media

6. *Information Literacy, the ability to obtain, use and evaluate information effectively and efficiently from a variety of sources*
7. *Multicultural Literacy, the ability to appreciate differences in values, beliefs and cultures of others*
8. *Global Awareness, the ability to understand global issues.*

Hybrid Learning

Hybrid learning emerged from the development of information and communication technology that started from the era of Computer Based Training (CBT), Learning Management System (LMS), to web-based applications. As stated by Kaur (2013) that hybrid learning is an effective combination that combines online (distance) learning model with face-to-face learning in class to achieve goals during the learning process that trains the learning environment to be useful and interactive. Hybrid learning or blended learning is very easy to implement because it is a combination of conventional learning (synchronous) by combining internet-based learning (asynchronous), as well as opening up learning opportunities in increasing the effectiveness of time (saving time), cost efficiency, and interest whether it is learning together directly or separately online at the same or different times (Fauzan, 2017; Verawati et al, 2019).

Referring to the opinion of Hendrayanti (2015) which states that hybrid learning develops from the merging of one or more dimensions, thus containing several programs contained in hybrid learning. The programs in question are as follows:

1. *Face to Face Learning.* Face-to-face learning is organized conventionally with learning conducted directly face-to-face between teachers and students in the classroom
2. *Synchronous Virtual Collaboration.* This learning is collaborative in nature involving interaction between teachers and students delivered at the same time by utilizing learning support application platforms such as Instant Messaging or Chat, zoom, and others during class hours
3. *Asynchronous Virtual Collaboration.* Learning involves interaction between teachers and learners delivered at different times, not during the lesson. This asynchronous activity can utilize online learning activity facilities, be it discussion forums, learning resources from the internet or the use of e-mail media.
4. *Self-Pace Asynchronous.* Students can learn the material provided by the teacher in the form of teaching material modules or work on assignments and exercises that are carried out online at different times, not during class hours. So that students can collect the information needed as much as possible to learn the subject matter with the help of other sources.

The hybrid learning program above is in line with what Kaur (2013) stated that there are three components in the hybrid learning model, namely:

1. *Learning Environment Component.* There are synchronous and asynchronous learning environments with different advantages and disadvantages, but they have the same goal which is to achieve instructional goals and learning objectives to be achieved

from learning activities by utilizing optimal resources, both synchronous and asynchronous learning.

2. *Media Component.* The use of appropriate learning media will support both synchronous and asynchronous learning. The selection of specific media will affect the way teachers design content and deliver learning.
3. *Instructional Component.* The instructional component is used to select the right learning strategy to support the learning objectives.

The components of the learning program that have been stated above can form a hybrid learning approach, can be seen in table 1 below :

Table 1.
Hybrid learning Approach
 (Source : Rossett. et.al, 2003)

Live Face-to-Face (Formal) Instructor-led classroom Workshops Coaching/mentoring On-the-job (OTJ) training	Live Face-to-Face (Informal) Collegial connections Work teams Role modelling
Virtual collaboration (Synchronous) Live e-learning classes E-mentoring	Virtual collaboration (Aynchronous) E-mail Online bulletin boards Listservs Online communities
Self-paced learning Web learning modules Online resource links Simulations Scenarios Video and audio CDs/DVDs Online self-assessment Workbooks	Performance Support Help systems Print job aids Knowledge databases Documentation Performance/decision support tools

Hybrid learning has advantages as a support during the learning process as Lin (2014) suggests that 3 points of advantages of implementing hybrid learning, namely: 1) Multiple Modes of Delivery; 2) Connectivity and Interactivity; Clear Structure and Focus. In line with Raes (2019) that the driving factor of hybrid learning makes flexible learning between face-to-face and distance learning from synchronous hybrid teaching. So it can be concluded that the advantages of hybrid learning will provide effectiveness in learning that requires a combination of two learning methods.

Hybrid learning has its weaknesses, as Khotimah (2020) points out the weaknesses of this learning as follows:

1. *It takes more time, especially in preparing learning tools that are adapted to online facilities.*
2. *There is still a lack of teacher skills in implementing hybrid learning models*

3. *Lack of equitable facilities and infrastructure that support and lack of mastery of technology*
4. *Teachers must prepare teaching materials both digitally and directly*
5. *Learning strategies need to be implemented so that the hybrid learning model can run optimally.*

As there are weaknesses and challenges of hybrid learning stated above, it requires careful preparation from teachers regarding the use of learning tools for both distance learning and face-to-face learning, so that the right strategy is needed in applying hybrid learning to students so that learning can be effective (Edwina, 2023). In line with Sobry (2008) that teacher strategies in improving learning effectiveness can be seen in Table 2 below :

Table 2.
Teacher Strategies in Improving Learning Effectiveness
 (Source : Sobry, 2008)

Preparation	<ol style="list-style-type: none"> 1. Checking and making syllabus 2. Determine general instructional objectives 3. Determining specific instructional objectives 4. Selecting relevant learning models and tools 5. Determining the evaluation method 6. Determining when education begins 7. Determining compulsory and optional reading 8. Learning and mastering the subject matter to be delivered 9. Making a summary/outline that will be delivered
Implementation	<ol style="list-style-type: none"> 1. Arrive on time 2. Motivate students 3. Create good communication (interaction) 4. Using good and varied learning media and models 5. Providing material summaries or handouts
Evaluation	It should be based on the instructional learning objectives that have been set.

The effectiveness of learning is said to be successful if it meets the indicators as stated by Saadi (2013), namely: 1) Learning completeness; 2) Student learning activities; 3) Teacher's ability to process learning. In line with Slavin in Triwibowo (2015) that there are four indicators to measure learning success, namely: 1) Teaching Quality; 2) Appropriate Teaching Level; 3) Incentives, meaning teacher activities in ensuring and motivating students; 4) Time, learning is said to be effective if students can complete all learning activities in accordance with the predetermined time allocation.

Teacher Digital Literacy Competency through Hybrid Learning

The application of teacher digital literacy skills to improve the quality of learning is very important for digital learning needs, but there are still many institutions and teachers who do not have the basic competencies of digital literacy skills (Techataweewan et al, 2018; Murray et al, 2017). As a result of Kholid's research (2020), the digital literacy skills of teachers in educational institutions are still very low which has implications for the inability

of teachers to carry out online-based learning activities, the fact that the use of online learning resources has a significant good effect on student grades (Dowell, 2011).

Digital literacy skills have a significant relationship to the quality of e-resources, so it is very important in determining the high quality of the use of online resources and technological devices (Adiarsi et al, 2015). Teachers began to utilize technological devices as learning tools when the Covid 19 pandemic emerged, and only began to develop learning materials through visual, audio and audiovisual methods through the help of digital tools and applications in learning such as Powerpoint, Canva, Kinemaster, Zoom, Google Meets, Google Classroom, and Whatsapp Group as teaching platforms (Sulasmi, 2022). Teachers are expected to have digital literacy competencies to think critically and select good information for learning by utilizing e-learning so that teacher skills can have a positive impact on students (Konig et al, 2020).

Teachers' digital literacy competencies can be supported by the use of appropriate learning methods through hybrid learning, because hybrid learning methods combine two learning methods both directly in the classroom and online by utilizing technology. So that teachers still have the ability of contextual teaching in the classroom and digital-based teaching. However, teachers' digital literacy skills through hybrid learning methods must have the right strategy to be effective during learning. Departing from various literature reviews, researchers formulated a framework for teacher digital literacy competencies through hybrid learning as shown in table 3 below:

Table 3.
Teachers' Digital Literacy Competencies through Hybrid Learning
 (Source: Author Interpretation, 2023)

Digital Literacy Competency	Teachers Ability	Indicator of Success	Learning Strategies
Information	Have data literacy to search, select, evaluate, manage information for learning	1. Learning completeness, in the form of; KKM scores 2. Student learning activities, in the form of; cognitive, affective and psychomotor aspects 3. Teacher's ability to process learning, in the form of; learning tools	1. Preparation 2. Implementation 3. Evaluation
Communication	Have the skills of interaction, direct involvement, information sharing, and cooperation in utilizing digital technology		
Educational Content Creation	Have skills in creating digital learning content in the form of learning application programs, interactive presentations, learning animations, etc.		
Security	Have the skills to limit the use of technology outside the learning context		
Educational Problem Solving	Have the skills to solve problems and overcome the technical use of learning technology, identify		

	the weaknesses of digital technology in learning, and be creative in utilizing digital technology-based learning positively.		
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As the interpretation of digital literacy competencies that teachers must have through hybrid learning, of course teachers must have skills in utilizing technology. Equipping teachers to support digital literacy competencies can be in the form of administrative support, providing a forum for teachers to learn and explore the use of technology that is integrated with the curriculum used, providing access to update teaching materials, and developing technology-based teaching for teachers, besides that not only updating the ability to use digital technology but updating the potential utilization from a pedagogical point of view must continue to be deepened (Pianfetti, 2001; Hamutoglu, 2019).

CONCLUSION

As a paradigm in the education system, which can provide a set of 21st century skills to face aspects of life globally based on technology. Teacher creativity in supporting digital competencies is by developing more dynamic learning models and methods, one of which is the hybrid learning method that can be supported by combining conventional learning methods with technology-based online learning. The findings from the results of the literature review raised are about the digital literacy competencies that teachers must have, along with the use of learning methods, learning strategies and indicators of success. However, this literature study research has writing limitations that can be used as a reference for other researchers to design an appropriate model, so that it can be applied in the real field.

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