The Influence Of Digital Literacy And The Utilization Of Online Learning Media On The Competence Of Elementary School Teachers

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ABSTRACT

This research is a quantitative study that aims to determine the effect of teacher digital literacy on the utilization of online learning media and the competence of elementary school teachers in Bongan District, West Kutai Regency. Sampling using random sampling technique. Data collection was done with a closed question questionnaire with a Likert scale. The collected data were analyzed by multiple linear regression. The study found that partially there is no significant effect of digital literacy on teacher competence and produced a regression equation $Y = 109.989 + 0.209X1 + 0.05$.. Meanwhile, the utilization of online learning media has a significant effect on teacher competence and produces a regression equation $Y = 95.005 + 0.281X2 + 0.05$. Multiple regression analysis found that digital literacy and utilization of online learning media simultaneously have a significant effect on teacher competence. the test results of the coefficient of determination (R Square) produced an R square number (0.218) has a meaning equal to 21.8%. This figure means that the variance of the teacher competency variable (Y) contributed a value of 21.8%. Then the remaining 78.2% (100% - 21.8% = 78.2%) is influenced by other variables not examined in this study.

INTRODUCTION

The development of information technology and digitalization has changed learning practices, especially in the use of learning media and learning resources. Learners can obtain subject matter information from various learning resources and other learning media and no longer place the teacher as the only source of learning (Rifai, 2021). Teachers play more of a role as facilitators and mediators in preparing appropriate learning through learning models that are in accordance with the needs and abilities of students by considering the environmental conditions of students so as to achieve the minimum competencies that have been determined and present reforms in the learning process to improve the quality of education.

The presence of technology and digitalization requires teachers to utilize technology and digitalization in learning (Aziz, 2019). Moreover, Purnasari & Sadewo (2021) stated that teachers must have the skills to operate and process technology in learning. Fredlina et. al (2021) stated that digitization improves the quality of education and teacher skills. Digitalization in learning practices a challenge for teachers to improve digital knowledge and skills and pedagogical competence (Sulistyarini & Fatonah (2022). Learning practices with the use of digital technology require digital

literacy, namely the ability to search, study, and utilize various media sources in various forms (Silvana and Darmawan, 2018). Nasrullah et al (2017) interpret digital literacy as knowledge and skills in the use of digital media, communication tools and network systems, in managing, using, evaluating, and utilizing in everyday life. In learning practices, digital literacy proficiency shows the teacher's ability to organize, implement and assess learning activities effectively (Darma, 2014). Savage & Barnett (2015) stated that digital literacy encourages quality learning innovation and easy learning practices by creating appropriate learning media.

The innovation of teachers' digital literacy skills is the utilization of online learning media in online and offline learning. Online learning according to Setyosari (2020) is a learning format presented through a computer via CD-ROM, internet, or intranet with relevant objectives, methods and features. Dewi (2020) defines online learning as learning that utilizes the internet network. The advantages of utilizing online learning media are is independent learning and high interactivity, able to increase memory levels, provide more learning experiences, with text, audio, video and animation all used to convey information, and also provide ease of delivery, update content, download, learners can send emails to teachers and other learners, send comments on discussion forums, use *chat* rooms, to video conference links to communicate directly (Arnesi and Hamid, 2015). Mastery of digital literacy and actualization of mastery of technology affect pedagogical competence (Sulistyarini & Fatonah, 2022) and (Suroya, 2021). Febriana (2019) states that teacher competence is a combination of personal, scientific, technical, social, and spiritual talents that form teachers as a teaching profession. These abilities include proficiency in subject matter, understanding students, educational pedagogy, and personal growth and professionalism. Meanwhile, Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers states that teachers have four important competencies: (1) Pedagogical Competence, (2) Personality Competence, (3) Professional Competence, and (4) Social Competence.

Research on digital literacy and learning media utilization on competency improvement is relatively widely conducted. Sulistyarini & Fatonah, 2022 found that digital literacy and utilization of learning media have a significant effect on improving pedagogical competence. Supriyadi, Kusen, Anshori (2024) found that mastery of digital literacy and utilization of digital-based learning media affect pedagogical competence. Meanwhile, Sitompul (2022) found that increasing teacher competence requires sufficient mastery of digital literacy. Faisal, Kandedes and Aripin (2024) found that teachers' pedagogical and professional competencies influence teachers in mastering digital literacy. However, research on the influence of mastery of digital literacy and utilization of online learning media for elementary school teachers, to the best of the author's knowledge, is still very limited.

The West Kutai Regency Education Office noted that there are 2112 elementary school teachers in West Kutai Regency and only 15% are certified teachers and there are 77.13% teachers who are not fit to teach and only 22.86% or 483 teachers are fit to teach. In the Merdeka Curriculum implementation training, which requires a teacher's expertise in using technology and utilizing online learning media, only 20% of teachers successfully completed the training. Research by Rosmalah, et al (2021) shows that only 33.3% are able to utilize digital media. Meanwhile, in Bongan Sub-district, only 30% of teachers utilize digital media for learning. Nurdiansyah's research (2017) states that students who have felt bored with conventional learning models, such as the lecture method that is often carried out by teachers. Meanwhile, Permendiknas No 16 of 2007 concerning Teacher Competency Standards states that teachers must be able to utilize Information and Communication Technology (ICT) for learning purposes.

Based on the above background, with limited research on the influence of mastery of digital literacy and utilization of online learning media for elementary school teachers and teacher conditions in Bongan District, West Kutai Regency, the influence of digital literacy and utilization of online learning media on the competence of elementary school teachers in Bongan District, West Kutai Regency finds its relevance.

LITERATURE REVIEW

Teacher Competency

Competence according to Mulyasa (2012) is a collaboration between personal, scientific, technological, social, and spiritual abilities that together form the teaching profession. These competencies include mastery of material, understanding of students, educational learning, and personal development and professionalism. Meanwhile, Ayuning and Murni (2018) interpreted teacher competence as the ability to work in carrying out their work as a professional educator in disseminating knowledge according to their knowledge. Furthermore, Astuti et al (2022) state that competence is a characteristic that a person has that is related to the effectiveness of performance that can be seen from a person's behavior and way of thinking in all situations and will stand out in that person for a long time. Astuti et al (2022) also showed indicators of competence that teachers must show, namely being responsible for carrying out their roles and functions to realize educational goals through learning in the classroom. Therefore, Alim (2021) states that to realize their responsibilities, roles and duties and functions, teachers must master learning materials, have the ability to manage learning programs and classroom management, use appropriate learning media, be able to interact and provide guidance and counseling, as well as assess student achievement and be able to organize school administration.

Law No. 14/2005 on Teachers and Lecturers, Government Regulation No. 74/2008, and Permendiknas No. 16/2007 define teacher competence as a set of knowledge, skills, and behaviors that teachers must have, live, master, and actualize in carrying out professional duties. Specifically, Government Regulation No. 74/2008 explains that teacher competencies include pedagogical competence, personality competence, social competence, and professional competence. Teacher competencies are an interconnected whole and are acquired through professional education...

Pedagogical Competence

Zulqarnain (2021) states that pedagogical competence is the ability to plan teaching and learning programs, and the ability to conduct assessments. Meanwhile, Law Number 14 of 2005 concerning teachers and lecturers states that pedagogical competence is the ability to manage student learning. To translate pedagogical competence, the Ministry of National Education issued Permendiknas No 17 of 2007 which explains pedagogical competence that the formulation of pedagogical competence includes 1) Mastering the characteristics of learners; 2) Mastering learning theory and educational learning principles; 3) Curriculum development; 4) Educational learning activities; 5) Development of learners' potential; 6) Communication with learners; 7) Assessment and evaluation.

Personality Competence

Teacher personality characteristics greatly influence the success of human resource development. Zulqarnain et al (2021) state that teacher personality is the most important factor for the success of students' learning. Teacher personality is a role model for students and society.

Professional Competence

Law Number 14 of 2005 concerning Teachers and Lecturers defines professional competence as the ability to master learning material broadly and deeply which includes the ability to convey learning material, manage learning, and evaluate learning. Zulqarnain et al (2021) provide criteria for professional competence as follows:

1) Mastering the material, structure, concepts and scientific mindset that support the subjects taught
2) Mastering the competency standards and basic competencies of the subject or development field being taught
3) Creatively develop learning materials that are taught
4) Develop professionalism sustainably by taking reflective action
5) Utilize information and communication technology to communicate and develop oneself.

Social Competence

Law Number 14 of 2005 concerning Teachers and Lecturers states that social competence is the ability of teachers to communicate and interact effectively and efficiently with students, fellow teachers, parents/guardians of students, and the surrounding community.

Digital Literacy

Glister (1997) in Rizal (2022) defines digital literacy as the ability to use information from various sources presented on computers. Meanwhile, Hobbs (2017) in Rizal (2022) interprets digital literacy as a constellation of knowledge, skills, and competencies needed to thrive in a culture dominated by technology. Indicators of digital literacy according to Jones, Kavalier, Flannigan (2018) in Rizal (2022) are indicated by the ability to complete tasks effectively in a digital environment such as the ability to read, interpret media, reproduce data and images through digital manipulation, and evaluate and apply new knowledge obtained from the digital environment.

Harjono (2018) states that digital literacy is a means of significant influence on education. Learners must know and understand the basis of digital literacy which includes the basis of *culture, cognitive, constructin, communicative, responsibillity.* The *culture* base is that learners must be able to understand the various contexts and cultures of digital literacy users. On a *cognitive* basis, learners are able to assess and select digital literacy content. On a *constructive* basis, learners play an active role in carrying out information design based on facts. On a *communicative* basis, learners understand network performance and are able to communicate well through digital. On the *responsibillity* basis, learners are responsible for the information obtained and passed on to the public and must be able to provide accurate and useful information. On a *creative* basis, learners are able to do new things to innovate to increase knowledge. On the basis of *critics*, learners not only receive information from digital but must be able to select good, effective and efficient information to achieve learning objectives. On the basis of *social responsibility*, learners are proficient in social media in digital in digital.

Digital literacy drives educational innovation thinking for teachers. Teachers must be able to decide on interesting learning content and organize communication strategies. This requires teachers to have an adequate level of competence, willing to develop in improving their understanding of digital literacy skills. Digital literacy and technology can be an approach to creating an environment that encourages and stimulates learners (Savage and Barnett, 2015). Digital literacy is knowledge that can ensure the use of individual technologies can improve the quality of learning and not just as a complement to the teaching process (Kajin, 2018). Rizal (2022) stated that digital literacy is a skill (*Life skills*) that not only develops the ability to use technology, information and communication devices, but also the ability to socialize, the ability to learn and have an attitude of critical thinking, creative, and inspiring as digital competence. Meanwhile, for Aswita et al (2022), digital literacy is a bridge between educators and students in utilizing technology optimally in the learning process.

Online Learning Media

Learning media are learning components that contain instructional material that can stimulate students to learn in the form of graphic, photographic, or electronic tools to capture, process, and reassemble visual or verbal information. Learning media is a communication tool or intermediary that supports and helps convey messages or information from teachers to students so that the teaching and learning process is more efficient and effective. Miarso (2015) defines learning media as something that is used to channel messages that can stimulate thoughts, feelings, attention, and willingness of learners so as to encourage the learning process. While Rusman (2015) defines learning media as a form of stimulus used as a medium in human relations or interactions, reality, moving images or not, writing, and recorded sound.

Dabbagh and Ritland (2005) state that online learning is an open and distributed learning system using educational tools made possible through the internet and network-based technologies to facilitate the formation of learning and knowledge through action and interaction. Setyosari (2020) defines online learning as a learning format presented through computers via CD-ROM, internet, or intranet with relevant objectives, methods and features. Online learning media is media equipped with a controller that can be operated by users, so that users can control and access user needs in learning (Arnesi and Hamid, 2015). Romli (2018) states that *online* learning media are telecommunication and multimedia-based media, including portals, websites (websites, including media blogs and social media such as

Facebook and Twitter), online radio, online TV, and email. Thus it can be interpreted that online learning media is learning media that utilizes the internet network for learning activities.

Teachers have an important role in the online learning process. The benefits of online learning felt by teachers are that it does not take much time, is not focused on a place, can sometimes do double work at once and has more time (Yuliani et al, 2020).

In learning, teachers are required to have the ability in classroom management, learning methods, learning techniques and learning strategies so that they can improve achievement, develop creativity, and create a pleasant learning atmosphere (Rijal & Idris, 2020). To support students' digital literacy activities, innovative learning media is needed. In determining learning media, it is strongly influenced by teaching methods, because it is related to choosing the appropriate type of media. The main function of learning media is as a medium in assisting teaching and learning and giving positive results to the conditions and environment of learning created in the learning (Purbosari, et al 2021). The use of learning media is important as a means of delivering messages or material from educators to recipient participants (Rijal & Idris, 2020).

To choose the right learning media, Kustandi and Darmawan (2020) provide factors that are taken into consideration, including::

- a. Barriers to learning development, such as funding, school infrastructure, time and human resources and materials.
- b. The content requirements, tasks and types of learning (material and task-side) to be performed by students, and in each learning category, require different media behaviors or presentations and techniques.
- c. Pay attention to barriers that come from students with consideration of the skills possessed by students
- d. Considerations in choosing media in terms of effectiveness
- e. Pay attention to the proper presentation of stimulus and response, and feedback capabilities and so on.

    Furthermore, (Kustandi and Darmawan, 2020) state that the use of learning media needs to pay attention:

- a. In line with the learning objectives to be achieved, the media must of course refer to the development of students' cognitive domain skills.
- b. Can appropriately support learning content that is facts, concepts, principles or generalizations.
- c. Practical and flexible in choosing media and utilizing existing media by processing teacher creativity.
- d. Teachers are skilled in using them, because the value and benefits will be processed by teachers who process and use them.
- e. Determining the target. For example, learning media used in large-scale groups are not necessarily equally effective when used on a small scale.
- f. Technical quality, learning media must meet certain technical requirements such as visual development, pay attention to visual images, objects and so on.

METHOD

This research is a quantitative study that aims to examine the effect of teachers' digital literacy on the utilization of online learning media and the competence of elementary school teachers in Bongan District, West Kutai Regency.

The pupulation of this research is elementary school teachers in Bongan District, West Kutai Regency with a total of 188 teachers. Sampling using random sampling technique. Data collection was done with a closed question questionnaire with a Likert scale. The collected data were analyzed by multiple linear regression with the help of SPSS 22 software. The research equation can be seen clearly in the following figure

Figure
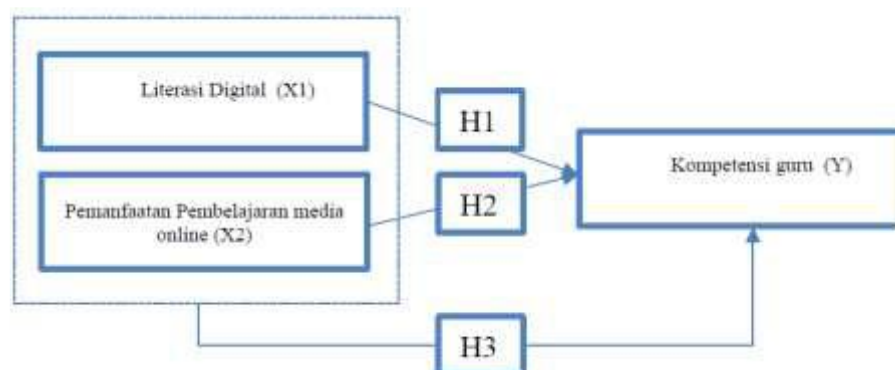
**1.1
Research
Equation**

Based on these equations, the hypotheses proposed in this study are:

H1:   Teacher digital literacy has a significant effect on teacher competence
H2: Utilization of online learning media has a significant effect on teacher competence
H3: Teachers' digital literacy on the utilization of online learning media has a significant effect
       on teacher competence.

RESULT AND DISCUSSION
The Effect of Digital Literacy on Teacher Competence
The test results show the *constant* value of the X1 variable is 109.989 with a t_{count} value of 0.762. The data also shows a significance value of 0.452 which means> 0.05. With these results, the regression equation is obtained $Y = 109.989 + 0.209X_1 + 0.05$.

Based on the test results, it can be concluded that digital literacy (X1) has no significant effect on teacher competence (Y), meaning that the proposed hypothesis is rejected.   Detailed test results can be seen in the following table:

Table 1.1 The Effect of Digital Literacy (X1) on Teacher Competence (Y)

Variables	*Constant* Value	Coefficient Value	t Count	Sig Value.	Description
Digital Literacy→ Teacher Competencies	109.989	0.209	0.762	0.452	No effect

Source; Analysis Result, 2025

Digital literacy skills have not been fully owned by teachers so that teachers have not been able to improve competencies based on digital. This is also based on several factors, which are also weaknesses including teachers being less able to find information in the digital space; teachers are less able to participate in the digital space; teachers are less able to use information, communication and technology in the internet field; teachers are less able to think imaginatively; and teachers are less able to communicate through digital technology media.

The results of this study are supported by Hidayat (2023) who stated that teachers do not have optimal competence in using digital or technology even though the teachers have understood digital literacy. This is found in teacher activities that have not been able to maximally integrate digital media in the learning process. Therefore, training is needed in an effort to improve and develop digital literacy skills so that they can be used in the learning process in accordance with applicable regulations.

This research contradicts research conducted by Putra, et al (2022) that digital literacy skills can have an influence on teacher competence, which is indicated by the better the teacher's digital literacy

skills, the better the competence possessed by the teacher. The intended competence is that teachers are able to integrate the use of digital or technology in the learning process so that it can help students solve the problems they face during the teaching and learning process.

The technological advances that occur today must be involved in the teaching and learning process. Thus, teachers must be able to improve various competencies related to the application of digital media and technology. As stated by Marnita, et al (2023) teachers with digital literacy skills can make learning more interactive and learning management can take place well. Therefore, it is expected that teachers can use digital media or technology in the learning process in order to provide many benefits to students, especially in achieving learning objectives and solving problems (Ramadhan, et al, 2019).

This study also found several advantages of digital literacy by teachers as an effort to improve teacher competence including teachers have the ability to use information, communication and technology, especially in using computers; teachers have understood the audience in the digital space; teachers are able to select information in the digital space; teachers are able to consider safety when exploring with technology; and teachers are able to consider safety when collaborating with technology. These advantages have been possessed, but many teachers still do not have these advantages so that elementary school teachers in Bongan Sub-district still lack digital literacy skills.

The Effect of Online Learning Media Utilization on Teacher Competence

The results of the regression calculation of online learning media utilization (X2) on teacher competence (Y) obtained a *constant* value of 95.005, a coefficient value of 0.281, with a t value of 0.003. The significance value on the online media learning utilization variable is 0.003. Thus, it can be said that the sig. value <0.05 (0.003 <0.05). Based on these results, it can be said that the utilization of online media (X2) has a significant effect on teacher competence (Y) and produces a regression equation $Y = 95.005 + 0.281X_2 + 0.05$.

Based on the test results, it can be concluded that the utilization of online media learning (X2) has a significant effect on teacher competence (Y), meaning that the proposed hypothesis is proven and accepted. Detailed test results can be seen in the following table:

Table 1.2 The Effect of utilization of online media learning (X2) on Teacher Competence (Y)

Variables	*Constant* Value	Coefficient Value	t Count	Sig Value.	Description
Online Media Utilization→ Teacher Competencies	95.005	0.281	3.205	0.003	Influential

Source; Analysis Result, 2025

The existence of this influence is also influenced by the advantages possessed by teachers in utilizing *online* media, including *online* media as a means of communication and fast information; teachers have used several types of *online* media*;* the emergence of the perception that the use of *online* media must be given early to students; teachers have used *online* media by involving text, photos, videos, and music; teachers utilize *online* media to increase student interest, motivation, creativity, and make learning more meaningful.

The same opinion was also conveyed by Ramadani, et al (2021) through their research explaining that teachers experienced an increase in competence as indicated by the ability to utilize information and communication technology, especially the internet, in finding digital learning media that suits student needs. In addition, teachers are able to use *online* learning applications as a form of utilizing online media.

Rahmadhon, et al (2021) stated that teacher competence has increased which is categorized as quite good due to the involvement of *online* media. In their activities, teachers become more understanding of the use of technology-based learning media so that they can connect devices related

to the learning process. Lutfiana (2021) asserts that teachers' competence in utilizing *online* media can be measured by their ability to manage information technology-based learning. In addition, teachers are also able to design learning media that can be used in the learning process.

In short, it can be said that teacher competence can be improved with the involvement of online media in it. This is shown by the teacher's ability to involve technology in the learning process which makes students more interested in the learning process.

The Effect of Digital Literacy and Online Media Utilization on Teacher Competency

The multiple regression test results produce an $F_{count} > F_{table}$ value of $3.762 > 3.35$ with a significance value of $0.036 < 0.05$. These results can be said that digital literacy and *online* media utilization simultaneously have a significant effect on teacher competence. Thus the hypothesis proposed in this study is proven and accepted. The resulting multiple regression equation is $Y = 82.057 + 0.254X_1 + 0.260X_2 + 0.05$. The following table presents the simultaneous test results

Table 1.3 The effect of Digital Literacy Test Results (X1) and online media learning utilization (X2) on Teacher Competence (Y)

Variables	*Constant* Value	Coefficient Value	F	Sig.	Description
Digital Literacy & *Online* Media Utilization→ Teacher Competencies	82.057	0.254 (X1) 0.260 (X2)	3.762	0.036	Simultaneously influenced

Source; Analysis Result, 2025

Meanwhile, for the test results of the coefficient of determination (R Square) produce an R square number (0.218) which is equal to 21.8%. This figure means that the variance of the teacher competency variable (Y) contributed a value of 21.8%. Then the remaining 78.2% (100% - 21.8% = 78.2%) is influenced by other variables not examined in this study .

This research is supported by Hidayat (2023); Lutfiana (2021) who explained that digital literacy and *online* media utilization have an influence on teacher competence. Teachers become more capable of using various digital and technological tools that can support the teaching and learning process so that it creates interest for students to take part in the learning process.

The same thing was also stated by Sulistyarini and Fatonah (2022) that digital literacy and *online* media utilization have a simultaneous influence on teacher competence. Both variables can help improve the quality of the learning and teaching process of educators, which is a skill that is needed in the development of technological and information advances as it is happening today.

Digital literacy and *online* media utilization for teachers can improve teacher competence. This is shown by teachers' actions in understanding the ethics of using *online* media in learning, and digital literacy skills help teachers gain knowledge in utilizing digital media to write various constructive ideas about learning (Listiaji & Subhan, 2021).

Improving teacher competence is driven by several supporting factors, including teachers upholding the code of ethics; teachers have shown work ethic, high responsibility, pride in the profession, and self-confidence; teachers have shown themselves to be honest, noble, and role models for students and society; teachers have carried out responsibilities in accordance with norms, laws, and culture; teachers are willing to accept input and suggestions to develop professionalism work. Based on the results of this study, it can be concluded that teacher competence can be improved through digital literacy and *online* media utilization, which adjusts the use of technology in the learning process. This condition also adjusts the development of education that occurs, which requires teachers to be able to use digital tools or technology in teaching and learning needs.

CONCLUSION

The study found that partially there is no significant effect of digital literacy on teacher competence and produced a regression equation $Y = 109.989 + 0.209X_1 + 0.05$.. Meanwhile, the utilization of online learning media has a significant effect on teacher competence and produces a regression equation $Y = 95.005 + 0.281X_2 + 0.05$.

Multiple regression analysis found that digital literacy and online learning media utilization simultaneously have a significant effect on teacher competence. the test results of the coefficient of determination (R Square) produced an R square number (0.218) which has the same meaning as 21.8%. This figure means that the variance of the teacher competency variable (Y) contributed a value of 21.8%. Then the remaining 78.2% (100% - 21.8% = 78.2%) is influenced by other variables not examined in this study.

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