MEASUREMENT OF DIGITAL LITERACY AMONG STUDENTS AT SMAN 1 KESESI, PEKALONGAN RESIDENCE

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ABSTRACT: Digital literacy is important for every student to have. Digital literacy needs to be trained and learned to form a young generation that is digitally literate so that they are ready to participate in the digital community with confidence in communicating, sharing and distributing knowledge in a useful and efficient way, provides readiness to adapt successfully to a changing work environment and increasing self-control as a solution to the spread of false information that continues to repeat itself and is increasing in number. This research aims to measure students' digital literacy at SMAN 1 Kesesi. The methods used were filling out questionnaires and conducting interviews. Seventy-six eleventh-grade students of SMAN 1 Kesesi, Pekalongan Residence, Central Java, Indonesia, and two biology teachers were selected as the research sample in this study. The research results showed the following aspects: Firstly, the student's digital literacy questionnaire is 71%, which is classified as moderate in digital literacy indicators including finding, using sources, selecting, evaluating, considering sources, message effects, and using data to produce work; secondly, some of the things that teachers do to train these two skills are by inviting students to search for information via Google/search engines and video searches to support the teacher's explanations and using Canva to make some presentation. Unfortunately, teachers do not train them on how to search using appropriate keywords and trusted sources. Finally, teachers must be more active and innovative in maximizing the wise use of digital media to improve students' digital literacy.

Keywords: biology learning, digital literacy, multimedia

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INTRODUCTION

Education in the 21st century has challenges in the form of VUCA (Volatility, Uncertainty, Complexity, and Ambiguity), a condition that indicates very dynamic and rapid changes, is difficult to predict, difficult to understand the causes and effects of something, and has a variety of results that cannot be explained clearly (Mohanta et al., 2020). These challenges mean that education in the 21st century needs to continuously survive and innovate in the current competitive era. Efforts that can be made are to equip and train students with appropriate skills, such as digital literacy.

Digital literacy can be interpreted as technical skill (use digital tools), and functional skill (use of digital tools for profesional and personal gain) (Akayoglu, 2020). Greenstains (2012) outlined six indicators of digital literacy; (1) Finds, (2)

uses multiple source, (3) selects, (4) evaluates, (5) considers source and message effect, and (6) uses to produce original work. The proliferation of digital communication technology, the internet, computers, and cellphones has transformed the way students share knowledge. In fact, it's clear that the rise of new reading habits on mobile devices "screen-based reading behavior" has caused interest in reading books to diminish. Screen reading is characterized by spending a lot of time on the internet, pausing to read (non-linear reading) only occasionally and for short periods of time, and carefully selecting what is trending at the moment.

Digital literacy can also be interpreted as a person's ability to apply functional skills to digital devices so that they can find and sort information, critical thinking skills, creativity, collaborate with others, communicate effectively, and still pay attention to electronic security and the developing socio-cultural context (Payton & Hague, 2010). Digital literacy needs to be trained and learned to form a young generation that is digitally literate so that they are ready to participate in the digital community with confidence in communicating, sharing, and distributing knowledge in a useful and efficient way (Wernholm, 2019) and readiness to adapt successfully to a changing work environment (Spurava & Kotilainen 2023). Digital Literacy is able to positively affect students' social skills (Mewangi et al., 2020), improve the academic performance (Banik & Kumar, 2019), strengthening student critical thinking (Filma et al., 2024), and also form self-control as a solution to prevent cases of the circulation of false information from recurring and increasing in number (Sabrina, 2019).

The results of a survey by the Indonesian Internet Service Providers Association of 8,720 respondents in 38 provinces in Indonesia in 2023 showed that 58.04% of respondents had found hoax information on the internet with the categories of politics 49.51%, infotainment 30.58%, health 13.54%, education 5.15% and the rest in other categories (APJII, 2023). Hoaxes usually contain inaccurate information and hate speech that can incite, corner, and even provoke religious, ideological, and other figures. Hoaxes occurs when non-face-to-face interactions between people on social media encourage courage to express opinions or statements that involve insults, hate speech, and bullying (Jusnita & Ali, 2022). Thus, digital literacy plays an important role in increasing self-control as a solution to the spread of false information.

In today's adolescent life such as students in SMAN 1 Kesesi, a lot of students use internet daily. Internet has become an integral part of adolescent social life, used to build friendships, escape, habits, support the learning process, spend free time, and relaxation (Amalia 2015). Challenges such as the spread of hoaxes and post-truth phenomena on social media require increased digital literacy and critical thinking among adolescents. Therefore, measuring students digital literacy is essential as it provides valuables insight for both students and teachers during biology learning.

METHOD

The research method is qualitative. In educational research, the term "qualitative research" carries multiple meanings. Borg and Gall (1989) suggest that it is often used interchangeably with terms such as post-positivist, naturalistic,

ethnographic, and subjective. The data has taken on 9-10 Oktober 2023 in SMA Negeri 1 Kesesi, Pekalongan, Central Java, Indonesia. The population is eleventh grade students of SMAN 1 Kesesi and the sample is 76 eleventh grade student, choosed by purposive sampling. A questionnaire used to measure student's perception of digital literacy was used in this research. The initial item bank contained 18 items based on digital literacy indicator (Greenstain, 2012). Every item was graded using a 5-point Likert scale. The measurement objectives of question designed, categorized by the six digital literacy can be summarized as Table 1. The data analysis technique of this study used descriptive analysis.
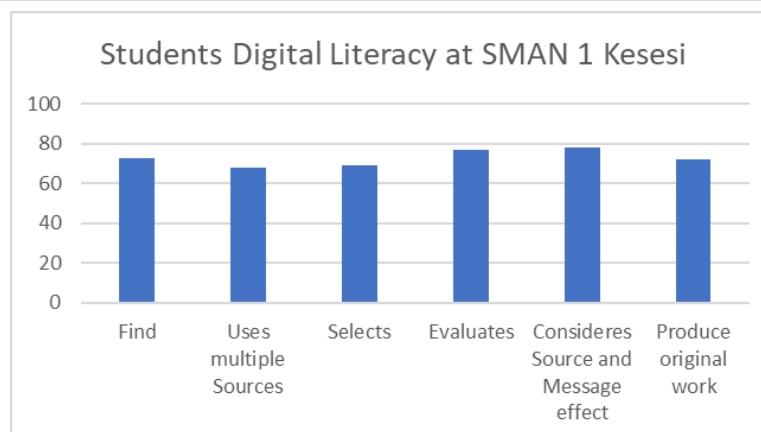
Table 1. Measurement objectives by six-skill of digital literacy.

Skill	Descriptor
Finds	Able to sort trough options and independently find information that is relevant to the problem
Uses multiple source	Skilled at just about all forms of text, video, music, simulation, and more
Selects	Exceptional ability to understand partiality of sources and troughtfully makes relevant choices from a wide range of option
Evaluates	Accomplished at verifying author and source and recognizing bias in information
Consider source and message effect	Sensitive to persuasive nature of electronic sources and can explain each one's methodology
Uses to produce original work	Uses strong analysis and evaluative skills to use digital information to create an original product

RESULTS AND DISCUSSION

Student questionnaire results show that the digital literacy of class XI students at SMA Negeri 1 Kesesi is classified as medium with an average yield of 71%, with details of the average for each indicator as follows: The first indicator of digital literacy is skills found that getting a score of 73% was moderate. These results show that students are able to sort through choices and independently find information related to or relevant to the problem.

The second indicator Digital literacy, namely the skill of using sources, gets a score of 68% relatively low, so students are able to access some information, but usually miss the problem keyword. The third indicator of digital literacy, namely chose to get a score of 69%, which is low, indicating that students are not yet able to select and make exceptions to the source of information and not being able to make the right choice from a wide range of options. Low levels of digital literacy among students can result from a variety of factors, including the use of inappropriate models in the classroom (Perdana et al., 2020), educators' poor use of multimedia and information technology in the classroom, students' improper development and implementation of digital literacy outside of the classroom (Oktavia et al., 2021), teachers' lack of experience with information and communication technology (Rahma et al., 2023), and students' limited exposure to technology (Nurhidayat et al., 2022).

Picture 1. Students Digital Literacy at SMAN 1 Kesesi

The fourth indicator for digital literacy, namely evaluating, getting a score of 77%, which is classified as moderate, shows that students are able to complete source and author verification but are not yet aware of the bias in the information. The fifth indicator of literacy digital, namely considering the source and effect of the message, gets a score of 78%, classified as moderate, indicating that students are aware that there is a persuasive or invitation to the information obtained but unable to explain the method used. The sixth indicator of digital literacy is using data to produce work that gets a score of 72%, which is classified as medium, showing that students are skilled at creating new works from the information obtained, however have not used strong analysis and evaluation. Those results are in line with the results of teacher interviews stated that there were still many students who did not consider the message effect of the information they obtained or used the information validation process is still minimal, so there are tendencies. Students are easily exposed to biased information and hoaxes.

However, the impact on a person's level of digital literacy varies depending on a number of factors. According to Belshaw (2012), there are eight crucial components that affect how digital literacy develops: (1) Cultural, meaning that users of the digital world must understand the various contexts in which they operate (Badri, 2022; Fahmi et al., 2023); (2) Cognitive or thinking power (Azzahro et al., 2023; Caton et al., 2022; Güngören et al., 2022); (3) Constructive or creative (Rahmawan et al., 2019; Apriliana, 2022); (4) Communicative (Badri, 2022); (5) Self-confidence (Alpian et al., 2023); (6) Creative (Hamidah and Mubarak, 2020; Mariane et al., 2023); (7) Thinking skills in responding to content (Indah et al., 2022); and (8) Socially responsible (Zhang & Bao, 2023; Prachagool, Nuangchalerm et al., 2022).

Teachers have used digital media in biology learning to fostering student's digital literacy and critical thinking skill. Sometimes the biology teacher use the same digital media for several material and sometime are different. In example, both teachers give an instruction to using Google Lens and web service such as Plantnet.org to help the students finds out about the name of biology laboratory tools and the name of plants around the school. By using Google Lens, teacher can fostering student's motivation and fostering digital literacy. Teachers also fostering

studentsdigital literacy and critical thinking by getting students used to searching for and creating information related to biology material and creating presentations using designs assisted by Canva Instagram and also TikTok. Research has shown that digital multimedia instruction can improve student learning outcomes and motivation (Nofitasari, 2012; Leow, 2014). It can also improve students' digital literacy and critical thinking skills when learning science (Syawaludin, 2019).

Although teachers have tried to use digital media to improve students' digital literacy and critical thinking skills, this process still lacks teacher supervision, especially in determining reliable sources of information and applying keywords when searching, giving rise to bias and the possibility of misinformation. Thus, further research on this matter is highly recommended.

CONCLUSION

This study shows that while the digital literacy of students at SMAN 1 Kesesi are fairly good but still require further development. Digital literacy indicator such as Finds, evaluates, considering the source and effect of the message, and using data to produce original work are moderate, at the same time indicator using sources, chose, are low.

RECOMMENDATION

Further effort are needed to strengthen students digital literacy in preparing students for the VUCA era in 21st century. Teacher needs to innovate and try some learning model and also multimedia learning to boost sudents digital literacy.

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