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Digital Literacy Global Framework Competence of Islamic Senior High School Students

Novia Ayu Sekar Pertiwi[1*], Siti Sukowati Wanafaktu Miruki[2], Ibrahim Yusuf Al Farros[3], Suci Prihatiningtyas[4]
[1,2,3,4] Physics Education, Education, Universitas KH. A. Wahab Hasbullah
*Email: novia.as.pertiwi@unwaha.ac.id

ABSTRACT
This study aims to evaluate the level of digital literacy among students in Islamic Senior High School (MA) in Tembelang District, Jombang Regency, using the UNESCO Digital Literacy Global Framework (DLGF). The method employed is quantitative research with a cross-sectional survey design. The research sample consists of 40 students selected purposively. The analysis results indicate that overall, the students' digital literacy competencies fall into the good category, with an average of 69.75%. However, there is variation in competencies across the seven DLGF competency frameworks, with some aspects, such as the ability to assess information credibility and collaboration, requiring further attention. Recommended interventions include practical training and workshops to enhance students' digital competencies. This research is expected to provide a foundation for developing more effective interventions to improve digital literacy among Islamic Senior High School students.

Keywords: *Digital Literacy; UNESCO Framework; Digital Competencies; Educational Interventions*

INTRODUCTION
In the era of Industry 4.0, digital information technology has developed rapidly and become part of everyday life. This development has resulted in a huge flow of information received by users, including students. This information explosion must be balanced with the ability to analyze the accuracy of information, making it crucial for students to possess strong digital literacy skills. Digital literacy refers to an individual's ability to use computer devices to access various types of information in the digital space (Gilster & Watson, in Dinata, 2021).

The importance of digital literacy is evidenced by the numerous national and regional efforts to develop and implement digital literacy frameworks and strategic plans to enhance the digital literacy of the public (Law, Woo, Tore, & Wong, 2018). Digital literacy can serve as an effective means to strengthen character development in the Society 5.0 era. Through digital literacy, students can develop values such as honesty, responsibility, empathy, cooperation, and problem-solving. Digital literacy can also help students understand the social, economic, and cultural impacts of technology and promote responsible attitudes toward its use (Sugiarto & Farid, 2023).

Students today are part of the native technology generation, a generation born and raised alongside the rapid development of technology. However, their proficiency in using technology does not necessarily correlate with their level of digital literacy. This aligns with the results of interviews conducted with teachers at Islamic Senior High School in Jombang. Students have social media accounts, and some of them actively create content to upload on their respective social media platforms. Despite their active use of social media, the utilization of digital platforms to support learning has not been optimized. Students rely more on learning materials provided by teachers and have not yet become independent in processing information, especially from digital sources. The interview results indicate the need for intervention to optimize students' digital literacy at Islamic Senior High School. Islamic Senior High School was chosen as the research location because this educational institution integrates general and religious curricula, particularly Islamic values. This presents a unique challenge in efforts to strengthen digital literacy in line with digital ethics.

Although some studies have discussed digital literacy among adolescents, studies that specifically measure the level of digital literacy of students in Madrasah Aliyah using the UNESCO Digital Literacy Global Framework (DLGF) approach are still limited. However, the characteristics of Islamic Senior High School, which combine general and religious curricula, provide a unique dynamic in shaping the digital culture of students. Before implementing interventions, it is necessary to understand the level of digital literacy among students so that interventions can be tailored to their needs. Understanding the level of digital literacy among students can be obtained through the administration of tests designed to measure various aspects of digital competence. UNESCO developed the DLGF as part of its global efforts to strengthen digital literacy. The DLGF comprises seven competency frameworks, including 0) Fundamentals of Hardware and Software, 1) Information and Data Literacy, 2) Communication and Collaboration, 3) Digital Content Creation, 4) Safety, 5) Problem Solving, 6) Career-related Competences (Law, Woo, Tore, & Wong, 2018). These competency frameworks have been developed into specific competencies. These competencies have been adapted from those developed by Ariani et al. (Ariani, Kusumarani, Parlina, & Wardiyono, 2023)

This study aims to obtain an overview of the digital literacy level of Islamic Senior High School students in Jombang using the UNESCO DLGF framework as a basis. This approach is undertaken as an effort to obtain a more comprehensive overview of the strengths and weaknesses of students' digital literacy and can subsequently serve as a basis for developing optimal digital literacy enhancement interventions in schools.

METHOD

This study is a quantitative study with a cross-sectional survey design. Cross-sectional is a research design that studies risks and effects through observation, and its purpose is to collect data simultaneously or at one time (Abduh, Alawiyah, Apriyansah, Sirodj, & Afgani, 2023). The population of this study was Islamic Senior High School students in Tembelang sub-district, Jombang district. The research sample was selected using the Purposive Sampling technique, considering that Islamic Senior High School students have access to digital devices and some actively use social media, but the utilization for learning purposes is not yet optimal. Based on these considerations and interviews with teachers from Islamic Senior High School schools in Tembelang sub-district, the sample was selected from two Islamic Senior High School schools deemed relevant and representative of the research objectives, comprising 40 students.

The research data consists of the validity of the digital literacy questionnaire items based on UNESCO DLGF, obtained using a digital literacy questionnaire validity sheet by three experts in the field of education, and the scores from the students' digital literacy questionnaire responses using a Likert scale-based questionnaire sheet. The data required in this study is described as follows:

1. Questionnaire Validity

Questionnaire validity data is used to ensure that the digital literacy questionnaire used is valid. Questionnaire validity testing uses the content validity index (CVI) approach. Lynn (in) recommends using at least three experts but indicates that more than 10 may not be necessary. The recommended measurement scale is a 4-point ordinal scale to avoid neutral and ambivalent midpoints. Some commonly used labels: 1 = not relevant, 2 = somewhat relevant, 3 = fairly relevant, 4 = very relevant. Then, for each item, the I-CVI is calculated as the number of experts who gave a rating of 3 or 4 (thus dichotomizing the ordinal scale into relevant = 1 and not relevant = 0), divided by the total number of experts. Polit et al. distinguish between two quantitative techniques for evaluating content validity: I-CVI and S-CVI. I-CVI is more focused on measuring expert agreement at the item level, while S-CVI is used to measure expert agreement at the overall questionnaire level. (Hendryadi, 2017). Based on this description, the CVI calculation can be written mathematically as follows:

$$I - CVI = \frac{Number\ of\ experts\ who\ scored\ 3\ or\ 4}{Total\ number\ of\ experts}$$

I-CVI: CVI for each statement

$$S - CVI = \frac{\sum I\ CVI}{n_{number\ of\ statements}}$$

S-CVI: Average I CVI

The questionnaire validity criteria are adapted from the multi-rater Kappa coefficient (Hendryadi, 2017):

Table 1. Multi-rater Kappa Coefficient

Kappa	Interpretation
<0	Poor validity
0.00 – 0.40	Low validity
0.41 – 0.60	Moderate validity
0.61 – 0.80	Good validity
0.81 – 1.00	Very good validity

2. Competency Percentage

The competency percentage is a representation of the respondents' competency level, calculated using the average formula.

The average is converted into a percentage using the following criteria:

Table 2. Criteria of Percentage

Percentage	Category
0% < percentage ≤ 20%	Not good
20% < percentage ≤ 40%	Not very good
40% < percentage ≤ 60%	Fairly good
60% < percentage ≤ 80%	Good
80% < percentage ≤ 100%	Very good

3. Standard Deviation

In this study, standard deviation is used to measure the spread or variation of digital literacy competency scores among respondents.

RESULT AND DISCUSSION

Result

The results of the I-CVI and S-CVI calculations indicate that the validators agree that all items in the digital literacy competency questionnaire are highly valid, making the questionnaire as a whole highly valid for use as a digital literacy competency test instrument. After the questionnaire was administered to the respondents, the response scores were analyzed to obtain an overview of the digital literacy competencies of the students at Islamic Senior High School Tembelang District, Jombang Regency. Overall, the data processing results indicate that respondents have good digital literacy competencies with an average score of 69.75%. However, upon further analysis of the competency framework and competency levels, it was found that some competencies require further attention.

The Fundamentals of Hardware & Software Competency Framework achieved an average score of 70%, a median of 4, and a standard deviation of 0.83. This data processing result indicates that most respondents feel they have good abilities in using basic digital technology. However, when examined more closely in terms of device and software usage competencies. Most respondents felt they had good competencies in operating devices, with an average score of 73%, a median of 4, and a standard deviation of 0.83. On the other hand, most respondents were quite confident in operating software, with an average score of 67%, a median of 3.5, and a standard deviation of 0.83.

The Information and data literacy competency framework obtained an average score of 66.33%, a median of 3.5, and a standard deviation of 0.83. The results of this data processing show that most respondents have fairly good competence in searching for and evaluating information. However, when examined more closely at the competency level, there are disparities in the supporting competencies of this competency framework. Most respondents demonstrated good ability in searching for information using digital technology with an average score of 75.5%, a median of 4, and a standard deviation of 0.83. However, most respondents appeared unsure when assessing the credibility of the information, as the score obtained was 59%, with a median of 3 and a standard deviation of 1.03.

The Communication and Collaboration competency framework achieved an average score of 63.875%, a median of 3.5, and a standard deviation of 0.83. This data analysis indicates that most respondents possess adequate competencies, but some respondents lack confidence in their abilities. When analyzed further at the competency level, respondents demonstrated good communication skills with an average score of 65.5%, a median of 3.5, and a standard deviation of 0.83. However, these communication skills were not matched by sufficient collaboration skills among most respondents, with an average collaboration score of 59%, a median of 3, and a standard deviation of 0.93. Most respondents

also gave an average score of 59%, a median of 3, and a standard deviation of 0.83 for their ability to identify digital identity. These three competencies are balanced by the fact that most respondents have a good understanding of digital norms and ethics, with an average score of 72%, a median of 4, and a standard deviation of 0.83.

The Digital Content Creation competency framework obtained an average score of 71.5%, a median of 4, and a standard deviation of 0.83. The results of this data analysis indicate that respondents have good skills in creating digital content and that most respondents have high confidence in their competence in this area. Based on the analysis of competency levels, most respondents demonstrated good ability in developing and integrating digital content, with an average score of 69.5%, a median of 4, and a standard deviation of 0.83. This competency is further reinforced by the fact that most respondents have the competency to provide accurate instructions in operating digital devices, with an average score of 75.5%, a median of 4, and a standard deviation of 0.83.

The safety competency framework shows an average of 69.5%, a median of 4, and a standard deviation of 0.83. The results of this data processing indicate that respondents have a good understanding of digital security, both in terms of protecting devices and protecting personal data.

The problem-solving competency framework shows the highest average of 77.5%, a median of 4, and a standard deviation of 0.83. The results of this data processing show that respondents have good abilities in overcoming problems related to digital technology. Upon further analysis, most respondents have very good competencies in solving technical problems in the use of digital devices and the ability to use digital technology creatively. This is indicated by an average score of 81.5%, a median of 4, and a standard deviation of 0.83. However, there is a disparity in identifying digital needs, where most respondents, as indicated by a median of 4, are confident in identifying technology needs, but the average competency score for this is 69.5%, with a standard deviation of 0.83.

The Career-related Competencies framework shows an average of 69.5%, a median of 4, and a standard deviation of 0.83. The results of the data analysis indicate that respondents have a good awareness of the importance of digital skills. Most respondents feel confident in understanding these competencies. Most respondents understand the gap between their digital competencies and career needs and have the willingness to develop digital skills. This is indicated by the average score given for both competencies, which is 69.5%, with a median of 4 and a standard deviation of 0.83.

Discussion

Based on the analysis of data conducted on the seven digital literacy competency frameworks, the level of competency varies. In general, the digital literacy competencies of the respondents are in a good category, especially in the competencies of being able to solve technical problems and use technology creatively, which are in the very good category.

Recommendations for interventions that can be carried out to improve digital literacy competencies include:

- Practical training on how to use various types of hardware devices, commonly used software according to needs, and effective information search techniques
- Workshops on how to evaluate the credibility of information sourced from digital media and organize the data obtained
- Encouraging group activities that can enhance collaboration skills
- Content creation training
- Awareness-raising and training on device security and personal data protection
- Training on technical problem-solving related to digital technology and the skills needed to analyze technology
- Conducting self-assessment sessions to develop sensitivity in identifying competencies that need to be improved.

CONCLUSIONS

Islamic Senior High School students in Tembelang Subdistrict have varying levels of digital literacy competence. Most students have good competence, especially in terms of their ability to solve technical problems and use technology creatively. However, competencies related to detecting the credibility of information, collaboration, and understanding digital identity require further attention and improvement. Some recommended interventions to enhance the digital literacy competencies of Islamic Senior High School students in Tembelang Subdistrict include conducting practical training sessions or workshops related to digital competencies. Self-assessment should also be conducted to enhance sensitivity in identifying competencies that require improvement. These interventions are expected to enhance the digital literacy competencies of these students, enabling them to adapt more easily to technological advancements, both in educational contexts and in the demands of the workforce.

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