# PROFILING THE DIGITAL LITERACY OF SENIOR HIGH SCHOOL STUDENTS IN AN ISLAMIC BOARDING SCHOOL IN EAST JAVA

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**Abstract**

This study aimed to investigate the digital literacyof senior high school students in an Islamic boarding school in East Java, Indonesia. Fourquestions guided the inquiry in this study: 1) to what extent isthe students' digital literacy? 2) how is the students' view toward the use of digital technology in learning?;3) what factors affect the use of digital technology by the students?; and 4) from what sourcesdo the students learn digital technology?This study used a quantitative method which involved eighty-one students in senior high school, East Java. The data were collected through a closed-ended questionnaire.Further, the data was analyzedusing descriptive statistics aided with SPSS.This study revealed that students had a high level of digital information literacy but a moderate level for language learning. Even though they had a moderate level, they were willing to receive digital literacy instructions for their language learning. They also asserted that the lack of learning materials influenced how the use digital technologies for learning. In addition, they demonstrated that they found new digital literacies mostly from websites and social media. The findings recommended that language teachers adopt new digital literacy that uses digital tools to support teaching and learning to become more effective and creative.

**KataKunci:**digital literacy, Islamic boarding school, senior high school, digital technology

## 1. INTRODUCTION

Technology plays a pivotal role in human life in the current digital age. They use technology to communicate, complete their task, learn something new, do their business, and so on. Utilizing digital technology allows them to access information quickly and help complete their tasksmore accurately and effectively. Meanwhile, the development of technology in many aspects of life influences the environment and society. It improves communication, education, healthcare, business, and others aspect of life. Therefore, it is a fact that technology supports every part of people's lives.

In the 21st century especially during the Covid-19 pandemic, most learning environments use digital technologies to support the teaching-learning process. It is supported by Dona et al. (2016)that all learning environments nowadays involve and depend on digital technology. Teachers and students broadly use digital tools to find various learning sources and make direct connectionsat a distance (Hillier, 2018; Traxler, 2005). For instance, they use the internet, computer, online learning platforms, etc.In addition, Aslan and Zhu (2017) have shown that integrating technology into teaching practice enables teachers and students to teach and learn effectively. It implies that digital technology can be used to improve the quality ofthe educational system.

As a consequence of technology development in the learning environment, students' involvement with digital technology has increased, especially in accessing the internet. For instance, in Indonesia, Nurhayati-Wolff (2021) showed that the internet penetration rate among Indonesian students aged five to 24 grew continuously from 2016 to 2020. One of the reasons students access the internet is it offers many opportunities to find authentic learning sources that support their learning (Cheung, 2016). Since internet sources have a myriad of information, some students sometimes gain misleading information.Moreover, it is because students have low competence in using the internet sources effectively, they get confused in finding information, mostly they only copy and paste what they get from the Google sources without trying to understand deeply (Hanelahi&Atmaja, 2020, Latifah and J. Husna, 2016).For this reason, "they need to be competent and critical users of the information from the internet" (Shankar et al., 2005).

The term "digital literacy" has been defined in various meanings in the literature (Güneş & Bahçivan, 2018). Buckingham (2015) defined digital literacy as the ability to operate software tools effectively. List (2019) highlightsthat digital literacy is thecapability to obtain information from the computer or the internet with deep understanding. Likewise, Bawden(2008),as cited in Weerakanto(2019),asserted that the idea of digital literacy refers to "a list of skills and competencies including Internet searching, critical thinking, networking awareness, the abilities to understand dynamic texts, and to communicate and evaluate digital content" (p.20). From those definitions, students are expected to be digitally literate in this

digital age (García-martín & Garcia-Sanchez, 2017), meaning they need to understand, interpret, and have meaningful communication in digital technology (Chun et al., 2016).

Al-Qallaf and Al-Mutairi(2016, p. 525) stated "several elements of digital literacy, such as critical thinking skills, creativity, constructing and evaluating information and using digital media effectively". Those elements related to students' cognitive abilities that useful for students learning. It supports Traxler and Lally (2016) and Mishra et al.'s (2017) argument that digital literacy correlates with cognitive abilities. Meanwhile, Bawden (2008) revealed that fourcore competencies of digital literacy refer tointernet searching, hypertext navigation, knowledge assembly, and content evaluation.

Furthermore, Josie et al. (2018) asserted that digital literacy has five areas: (1) information literacy (students' ability in searching, retrieving, manipulating, evaluating, synthesizing, and creating digital content), (2) computer literacy (students' ability in operating digital hardware and software,in using various forms of tools, in understandinghow to use technology, (3) media literacy (students' ability to interact with text, sound, images, videos, and social media), (4) communication literacy (studenst' ability in communication skills in traditional and innovative media)(5) technological literacy (students' ability to adopt various technologies for specific life situations). For this reason, it can be identified students' level of digital literacy by assessing them with those five areas.

Along with the previous explanation, students must improve their skill of digital literacy. Having high digital literacy enables students to gain many benefits to deal with online risk (Purnama, Ulfah, Machali, Wibowo, & Narmaditya, 2021). It is a prominent skill that students must have inthe digital age. Without having sufficient skill of digital literacy, students will gain an unreliable source of learning, and they will be difficult to control themselves(Higgins, Wolfe, & Marcum, 2008). Therefore, digital literacy skill is required for students which enables them to use digital technology appropriately.

Practitioners have conducted studies related to the correlation between digital literacy and student learning. For instance, Yustika and Iswati(2020) revealed that digital literacy influences students' academic achievement. They asserted that when students have better conditions to access information and communication with technology effectively, they will gain better academic performance. It is in line with Greene et al.'s (2014)study, which examined the correlation between critical aspects of digital literacy and students' learning outcomes. The results showed that digital literacy contributes to self-regulated learning. Leung et al. (2012) revealed that adolescents in Hongkong who have a higher level of digital literacy could improve their grades and academic competence.Those findings of previous research assert that the contribution of digital literacy to students learning outcomes should be considered as the essential aspect in teaching nowadays.

Similar to other educational fields, language learning environmentsalso widely use digital technology. The use of digital technology creates language learning more effectively and facilitates students in improving their digital literacy. According to Park (2017), improving students' digital literacy level in language learning would improve learning and help students become independent learners. As a result, they understand how to use tools and resources for language learning. Lie et al. (2020, p.807) stated that digital technology "support the English language learning in both developed and developing contexts". Moreover, using digital technology, such as computer-mediated communicative tools, gives students more opportunities to develop their foreign-language speaking identity (Kinginger, 2011). In other words, digital literacy takes a significant role to students achieving their target language.

Nevertheless, in Indonesia, studieson measuring students' level of digital literacy of students living in an Islamic boarding school, which is known for tight control of students' activities including the use of digital technologies, still remain scarce. For instance, Perdana (2019)investigated the digital literacy skills of science students in Senior High School in Yogyakarta. It involved 195 students physic, the results showed that students' digital literacy was deficient. Moreover,Purnamasari et al.(2021)examined the level of students' and collaboration skills of 105 students in Lampung. The results revealed that students' digital literacy was in the sufficient category and poor collaborative abilities category. A more recent study by Purnama et al. (2021) investigated how digital literacy influences online risk during the covid-19 pandemic. The findings suggested that digital literacy could affect children's online risk so that they need to have positive support and direction from their parents and teachers.

Based on the previous studies discussed above, it is still beneficial to research digital literacy in such a learning context. For this reason, this present study explored students' digital literacies in an Islamic boarding school in Easj Java, indonesia. The findings of this study are expected to provide insight of digital literacies of senior high school students living in an boarding school with its unique characterisics. The research questions of this study were : 1) to what extent isthe digital literacy of senior high school students in an Islamic boarding school? 2) how is the Islamic boarding school students' view and attitude toward the use of digital technology in learning; 3) what factors affect the use of digital technology by the Islamic boarding school students?;

and 4) from what sources do the Islamic boarding school students learn digital technology?

## 2. RESEARCH METHODS

This current study employed quantitative method which involved 81 students of senior high school in Jombang, East Java, Indonesia. They were85 female, 15% male, and their age wasbetween 15 and 18 years old.The students lived in an Islamic boarding school which allows students to have access to non-religion education and access to the use of digital technology. The teaching activities in classroom also occationally use digital technologies.

The data were gathered through closed-ended questionnaire which intended to know the level of students' digital literacies. The questionnaire, using a five-point Likert scale, was adapted from previous study by Weerakanto (2019). The questionnaire coveredfour aspects of digital literacy:

1. digital literacy level, consisting of 47 items, namely:18 items identified the frequency of using computer and internet application in learning, 12 items determined the frequency of using computer and internet application for fun,8 items that identified self-ratings of skills for using computer and internet applications, 9 items identified self-ratings of digital information literacy
2. views and attitudes toward the use of digital technologies, consisting of 10 items.
3. factors affecting the use of digital technologies for language learning,consisting of 10 items.
4. sources of learning new digital literacy, consisting of 9 items.

Furthermore,after administering the close-ended questionnaire to the students, the researchers analyzed the data statistically using SPSS to calculate the mean, frequency, and standard deviationof all the questionnaire items. For the interpretation of the scoring, the scale was categorized into three cut-off points: 1-2.33 being low; 2.34-3.67 being moderate; and 3.67-5 being high. The data counted were presented in tables, percentages, graphics, and interpreted descriptively.

## 3. RESULTS

### A. The level of Islamic boarding school students' digital literacy

To know the extent to which the students' digital literacy level, the questionnaire was distributedto Islamic boarding school students in a senior high school in East Java. The degree of students' literacy was measured by questionnaire items of four subsections: 1) frequency of using computer and internet applicationfor learning; 2) frequency of using computer and internet application for fun; 3) self-ratings of skills for using computer and internet applications; 4) self-ratings of digital information literacy. As Table 1 illustrates, the frequency of using computer and internet application by the students to help them learn ranged from the means of 1.6 to 3.8, with most means of the items fall into low and lower end of moderate level. The overall mean (M=2.55) also suggest lower end of moderate level of frequency in the use of computer and internet application, meaning that the students was somewhat rare in the use of such technologies. Specifically, only the item "using file sharing sites (e.g.,dropbox)"gained the highest scores(M=3.80, SD=1.25), indicating that the students mostly used "file sharing sites"to learn.

Table 1 also showed that *Pinterest* became the next highest score (M=3.25, SD=1.04) used by the students, and the internet to access news and video in learn L2" gained the third-highest scores (M=3.1, SD=.94), indicating that students obtained resources mostly from *Pinterest* and Internet.Meanwhile, *Instagram*(M=1.6, SD=.8) and Line (M= 1.6, SD=.86) wereranked at the bottom of the list, indicating that students were rarely used those kinds of applications to learn.

**Table 1. Frequency of using computer and internet application for learning**

| Item | Mean | SD |
|---|---|---|
| using the internet to access news and video for learning | 3.1 | .94 |
| using applications on mobile phones for learning | 2.55 | 1.25 |
| using learning social networks | 2.1 | 1.02 |
| using Wikisfor learning | 2.2 | 1.0 |
| using blogs to improve academic skill | 1.95 | 1.02 |
| using emails to communicate with teachers | 2.7 | 1.19 |
| using Twitter for learning | 2.7 | .9 |
| using Instagram for learning | 1.6 | .8 |
| using Line chat for learning | 1.6 | 86 |
| using Facebook to learn and communicate with teachers | 1.95 | 1.12 |
| playing online games to improve academic skill, like foreign language | 2.45 | 1.12 |
| using Pinterest for learning | 3.25 | 1.04 |
| watching videos on YouTube for learning | 2.75 | 1.30 |
| using video conferencing for learning | 2.95 | 1.21 |
| using learning mobile applications | 2.90 | 1.38 |
| using Word processing application (MS Word) | 2.80 | 1.17 |
| using Spreadsheet application (e.g. MS Excel) | 2.70 | .95 |
| using presentation application (e.g. MS power point) | 2.65 | 1.36 |
| using Learning Management System (e.g Moodle) | 2.45 | 1.36 |
| using file sharing sites (e.g dropbox) | 3.80 | 1.25 |
| **Overall mean** | **2.55** | **1.11** |

**Table 2. Frequency of using computer and internet application for fun**

| Item | M | SD |
|---|---|---|
| I surf the web for fun to find interesting things to read and watch videos and listen to music. | 4.15 | .73 |
| I use mobile apps for living and fun | 2.55 | 1.12 |
| I use emails to communicate with family and friends | 2.00 | 1.38 |
| I read and write on the Wikis for fun | 2.45 | 1.21 |
| I use blogs for fun | 3.35 | 1.47 |
| I use Twitter for fun | 4.25 | 1.00 |
| I use Instagram for fun with family and friends | 2.10 | 1.26 |
| I use Line for fun and communication with family and friends | 2.65 | 1.72 |
| I use Facebook for fun | 2.30 | 1.31 |
| I play virtual game seperti WoddofWarcraft untukhiburan | 3.50 | .98 |
| I use Pinterest for fun | 4.40 | .80 |
| I watch Youtube videos for fun | 2.55 | .59 |
| **Overall mean** | **3.02** | **1.13** |

The second subsection calculated the frequency of using computers and internet

applications for fun. As shown in Table 2, the students reported moderate use of computer and internet application for fun (M=3.02). Specifically, the table revealed that the item"I use Pinterest for fun" obtained the highest score (M=4.40, SD=.80). The next item "I use Twitter for fun" become the second-highest score (M=4.25, SD=1.00). The item " I surf the web for fun to find interesting things to read and watch videos and listen to music" gained the third-highest score (M=4.15, SD=.73). The scores indicated that the technology used by students for fun, such as *Pinterest*, *Twitter*, and web to read and watch and listen to music. Meanwhile, the item "I use emails to communicate with family and friends" obtained the lowest score (M=2.00, SD=1.38), indicating that the students did not interest to use email for fun. They preferred to use other applications.

Further, the third subsection examined the self-ratings of skills for using computer and internet applications, reported in Table 3. The overall means scores were M=3.4, indicating that students hada moderate level of skill in using technologies. As shown in Table 3,the highest score (M=4.10, SD=.77) referred to the item "use the main features of Line", indicating that most students believed that they had high competencein using*Line*'s main features. The second-highest score (M=3.85, SD=.96) referred to the item "upload a video to *YouTube*", it was evident that students also believe that their skill in uploading a video to *YouTube* is high rather than using other applications. However, the lowest score (M=2.65, SD=1.24) referred to the item "use the main features of *Twitter*". It means that students revealed that they had low ability in using *Twitter*.

**Table 3. Self-ratings of skills for using computer and internet applications**

| | | |
|---|---|---|
| Type English text | 3.25 | 1.04 |
| Create a multimedia PowerPoint presentation | 3.60 | 1.16 |
| Upload a video to Youtube | 3.85 | .96 |
| Use the main features of Facebook | 3.35 | 1.11 |
| Use the main features of Twitter | 2.65 | 1.24 |
| Use the main features of Line | 4.10 | .77 |
| Use the main features of Instagram | 3.29 | 1.29 |
| Use a search engine (e.g. Google) | 3.10 | 1.26 |
| **Overall Mean** | **3.4** | **1.10** |

**Table 4. Self-ratings of digital information literacy**

| | | |
|---|---|---|
| Use computer programming to create software | 3.80 | .81 |
| Decide if online information is accurate | 3.65 | .96 |
| Identify the original source of online information | 3.60 | .92 |
| Determine the viewpoint/bias of online information | 3.25 | .70 |
| Know how to validate the online information | 3.75 | .77 |
| Determine the reasons of the useful and relevance online information | 3.55 | .67 |
| Identify why the authors write the online information | 3.10 | .83 |
| Explain why the authors stand a certain point of views in online information | 3.20 | .93 |
| Is it important for you to receive digital literacy instruction for learning foreign language? | 4.15 | .65 |
| **Overall Mean** | **3.6** | **0.80** |

**Table 5. Views and attitudes toward the use of digital technologies**

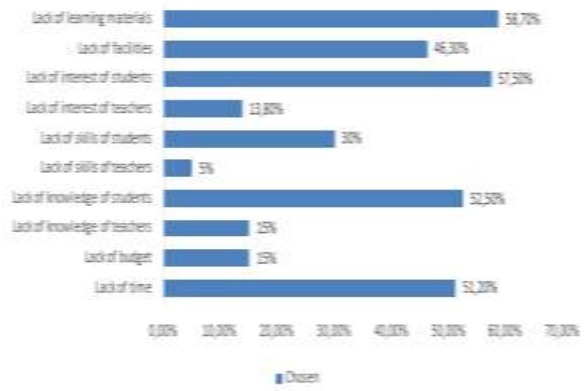
| | | |
|---|---|---|
| I enjoy using digital devices. | 3.60 | .97 |
| I feel comfortable using digital devices. | 3.50 | 1.12 |
| I am aware of various types of digital devices. | 3.30 | .96 |
| I understand what digital literacy is. | 3.65 | .73 |
| I am willing to learn more about digital technologies. | 4.35 | .73 |
| I feel threatened when others talk about digital technologies. | 2.35 | 1.02 |
| I feel that I am behind my fellow students in using digital technologies. | 3.00 | .78 |
| I think that it is important for me to improve my digital fluency. | 4.35 | .79 |
| I think that my learning can be enhanced by using digital tools and resources. | 4.30 | .73 |
| I think that training in technology-enhanced learning should be included in education programs | 4.31 | .71 |
| **Overall Mean** | **3.7** | **0.85** |

The fourthsubsection identified self-ratings of digital information literacy, which helped the researchers know the extent to which students' digital literacy level. As shown in Table 4, overall mean scores were M=3.6, indicating that most students believed they had a high level of digital literacy. From Table 4 above, the highest scores (M=4.15, SD=6.75) referred to the item "Is it important for you to receive digital literacy instruction for learning?", indicating that students strongly agreed that digital literacy instruction is important for their learning. Moreover, the second-highest score (M=3.80, SD=.81) was the item "use computer programming to create software", indicating that the students perceived they had high skill in using computer programming to create software. Meanwhile, the lowest score (M=3.10, SD=.83) was the item "Identify why the authors write the online information", indicating that the students revealed they had low ability to find why authors write the online information.

**B. Students' view and attitude toward the use of digital technology**

From Table 5 above,students attitudes were positive about technology-enhanced learning, as proven by knowing the overall meanof the questionnaire results (M=3.7). Thehighest scores referred to the items "I think that it is important for me to improve my digital fluency", (M= 4.35, SD=.79) and "I am willing to learn more about digital technologies" , (M=4.35, SD=.73). It impliedthat students perceived that they needed to improve their level of digital literacy because they assumed that it is very important for theirlearning. For this reason, they also asserted that they had a high willingness to learn more about digital technology. In addition, the lowest score of this questionnaire section referred the item"I feel threatened when others talk about digital technologies" withscores M=2.35, SD=1.02.

**Figure 1. Factors affecting the use of digital technologies for learning (Note: multiple responses allowed)**




**C. Factors affecting the use of digital technologies for learning**

The questionnaire results revealed that students perceived that the most factors affecting the use of digital technologies for learning were the learning material and thelack of interest. Figure1 above presents the factors affecting the use of digital technologies for learning.

As shown in Figure 1 above, 58.70 % of students chose the item "lack of learning materials" and 57.50 % of students chose the item "lack of interest of students", indicating that the most factor that affected the use of digital technologies for students' learning were learning materials and students' interest. Figure 1 suggests that 52.50 % of students chose the item "lack of knowledge of students", indicating that they still had low knowledgeabout digital technologies for their learning. Further, 51.20 % of students stated that they had lack of time to use digital technologies.

Moreover, the findings of questionnaire also revealed that 95 % of students perceived that the lowest factor affecting the use of digital technologies for language learning was "the lack of skill of teachers", indicating that students assumed teachers' skill did not influence their digital literacy skill for learning.

In addition, Figure 1 above gives information that students still had barriers or challenges in using digital technologies. Therefore, teachers should help students to overcome those factors faced by students.

**D. Sources of learning new digital technologies**

From the questionnaire results, students demonstrated that they learned new digital technologies from certain sources. As shown in Figure 2 below, the item "Website"and "Social media" obtained the highest score with the same mean score (M=81.3), indicating that students mostly learned new digital technologies from website and social media sources. Then, Figure 2 also informed that 72.3 of students demonstrated that they found out new digital technologies from "teachers" and 52.5 from friends, indicating that teachers and friends also influence how students develop their knowledge of digital technologies.

Meanwhile, Figure 2below showed students revealed "family" and "TVs"obtained the low scores ( 10 and 30), indicating that those sources had low contribution on students finding out new digital technologies. For this reason, from Figure 2, it can be concluded that students learnerd how to use digital technology from websites and social media rather than other sources.

**Figure 2.The way students find out new digital technologies (Note: multiple responses allowed)**


**4. DISCUSSION**

This present study investigated students' digital literacy level in learning through a closed-endedquestionnaire.The questionnaire results indicated that students had high level of digital literacy in general. They displayed that they were capable of utilizing the digital technologies information. However, their level of digital literacy for learning was in a moderate level. It appeared that most of the students more likely used digital technologies for fun rather than for academic purposes. These findings were congruent with Wareekanto's (2019) findings that students are likely to use technologies most for their non-academic purposes. Also, these findings supportedDudeney et al.'s (2013) suggestion that teachers' guidance is still needed for helping students in utilizing digital technologies for students' learning.

The findings revealed that *Line* and *YouTube* were the applications students had the highest skill to use. The results could be a recommendation for teachers to use *Line* and *YouTube*to support students' learning. As Van de Bogart (2014) suggested, *Line* application provides great potential to improve collaborative learning for students and teachers.

The reasons students had moderate levels were probably because they faced many factorsaffecting the use of digital technologies. They revealed that the most significant factor affectingwasthe lack of learning materials. The lack of learning materials correlates with teachers' or school'spolicies or support. Teachers did not provide effective learning material using digital technologies for students mostly because they have challenges in utilizing digital technologies so that they are not

skillful and comfortable using it (Weerakanto, 2019). It is similar to whatChun et al.'s (2016) reported that teachers still have challenges selecting appropriate digital tools to teach their students.

For this reason, teachers, as the ones who prepare the teaching materials, should be willing to learn and adopt the teaching innovation in this current era with technology integration to respond to the students' needs (Loveless & Williamson, 2013). This study also in line with Van de Bogart (2012) argument that teachers nowadays should be familiar with the use ofdigital technologies and need to change the course evaluation creatively.

The findings revealed thatstudents hadvery positive attitude toward technology-enhanced learning. They strongly agreed digital literacy was very important for their learning so that they were willing to receive digital literacy instruction in the learning process. Similar to Weerakanto's (2019) findings, students in the current era grow up with the innovation of digital technologies, which triggered them to recognize the usefulness of digital literacy instruction for their learning.

Further, thefindings informed that most students found new digital technologies from websites and social media. In addition, most students also confirmed that social media, for example, Pinterest was the highest used to learn L2. These findings were congruent withKucer's (2013) argument that social media and ICTs "literacyhas become multiliteracies, new literacies, or multimodal literacies" (p.3).Weekaranto's (2019) and Cun et al.'s (2016) also stated that social media could influence L2 teaching and learning. It can enhance students learning engagement.Therefore, in the age of internet, websites and social media cannot be separated in pedagogical practice.

## 5. CONCLUSION

This study aimed to investigate the Islamic boarding school students' digital literacy in learning. The results of the present study indicated that students had a high level of digital literacy for general purpose, but moderate level for learning. Although they had a moderate level they were willing to receive digital literacy instructions for their language learning. They also asserted that the lack of learning materials influenced how they use digital technologies for learning. In addition, they demonstrated that they found new digital literacies mostly from websites and social media.

Based on the findings, teachers shouldpromote the digital literacy of their students. Teachers also need to develop their knowledge and skill to increase their digital literacies. If teachers become digitally literate, they can train and guide their students how to use technology for language learning. Such measure could support teaching and learning to become more effective and creative. This study had some limitations, this study only involveda small number of participants so that the results cannot be generalized for all learners. Another limitation, this study just relied on students' voice to know students' level of digital literacy. For this reasonfuture research could examine the roles of teachersin supportingstudents' digital literacy so that both of them could cooperate to use digital literacy on their learning process.

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