

## Digital literacy ability of private vocational students in Surabaya City

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### ABSTRACT

Digital literacy is an important part of vocational secondary school education. Along with the development of technology and the expansion of access to digital resources, digital literacy is very important for vocational students. Digital literacy itself indirectly helps Vocational High School students to gain greater access to information and helps them in the learning process of various topics using trusted sources. This descriptive quantitative research aims to analyze the digital literacy skills of private vocational students in Surabaya City. Students' digital literacy ability was measured with the Likert Scale as a variable in this study. The population consists of students from four private vocational schools in Surabaya City with a total of 700 students. The sample consisted of 100 students, using a random sampling technique. Data collection is carried out through digital literacy instruments and data analysis using descriptive analysis. The results of the research data analysis showed that respondents' ability to elements of basic literacy skills averaged 2.79, average background knowledge 2.26, and information and communication technology (ICT) skills averaged 2.53. In addition, the attitudes and views of users of student information averaged 2.59. The results showed that the digital literacy ability of private vocational school students in Surabaya City was in the "Good" category.

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## 1. INTRODUCTION

Abilities are an important component in a person's daily life and development. In education, ability is an important component in any process. The need for innovation ability and entrepreneurial ability of vocational high school students provides an important basis for educators to create better management strategies to improve the ability of learners [1]. A very important ability in today's information and technology era is the ability of digital literacy, with reference to a person's ability to use digital technology effectively, understand information found on the internet, and manage risks associated with using technology.

Digital literacy in vocational secondary schools is very important because basically these schools should prepare their students to prepare for entering the professional world [2]. In current conditions, digital literacy is very important because learning has led to technology-supported learning [3]. One reaction to the fundamental transformation in the way we interact with information, education, and society in the digital age is the combination of technology and digital literacy. One of the challenges associated with the integration of technology in learning is digital literacy [4].

Digital literacy; it was first defined as a series to integrate various literacy and other skills, although it does not need to be all-encompassing [5]. Digital literacy is currently defined as literature that sources from

the skills and abilities necessary to navigate complex and fragmented information ecosystems [6]. Digital literacy already includes at least three types of previous literacy: media literacy, information literacy, and computer literacy and information technology communication [7].

Computer literacy, information technology literacy, network literacy, and electronic literacy became very popular in the 1980s [8]. Over time with the development of technology today, there is no denying that people often access information (especially social media content) through digital media platforms [9]. However, technological advances have increased the need for better digital literacy to assess and use content as a source of information [10], [11]. Therefore, the importance of digital literacy in the world of educators in following the digital era allows students to access, understand, and manage information wisely.

It is unfortunate that digital literacy education has not been compulsory in schools, including in Indonesia. In Indonesia, information and communication technology (ICT) subjects have been included in the 2006 curriculum. However, in 2013, digital literacy was removed due to a paradigm shift in the curriculum [12]. Whereas previous research on digital literacy in schools suggested that it could be concentrated on the implementation of an integrated national curriculum [13]–[17]. Indirectly, the education paradigm requires Indonesian people to master six basic literacies if they want to become more competitive and stronger in facing the challenges of the 21st century. Basic literacy includes language literacy, numeracy, science, economics, culture, and citizenship. Creativity, critical thinking, collaboration, problem solving, and communication must be enhanced by mastery of these six literacies [18].

This digital literacy is in line with previous studies, where students filtered raw information from the Internet and then evaluated and converted it into knowledge. In addition, emphasizes the use of the plural, "digital literacy," to discuss various policies related to digital literacy in education [19]. Various sociocultural perspectives see digital literacy as "new literacy" [20]–[22]. It provides a broader understanding of digital literacy with respect to its education. These cases show that the high level of digital literacy of internet users in Indonesia is not the same as unrestricted access to digital media [23]. Therefore, currently educational institutions have implemented digital literacy in the classroom in the learning process to respond to the current situation [24]–[26]. Digital literacy as the ability to use technology and information from digital devices effectively in a variety of contexts, such as academics, careers, and everyday life.

Digital literacy is an important part of vocational secondary school education. Along with technological developments and expanding access to digital resources, digital literacy is essential for vocational high school students. Digital literacy itself indirectly helps vocational high school students to gain greater access to information and helps them in the learning process on various topics using trusted resources. Digital literacy can also help students analyze, assess, and critically understand the information they encounter on the internet. It allows students to become more independent in learning, discover their personal interests, and take initiative in learning. In vocational secondary schools this is very important because digital literacy offers students as a tool or process needed to succeed in achieving their desires, and helps them develop the skills they need.

Taking into account the previous background and opinions, the author wants to conduct research entitled "Digital literacy ability of private vocational students in Surabaya City". The formulation of this research problem is how the digital literacy skills of private vocational students in Surabaya City. The purpose of this study is to analyze the digital literacy skills of private vocational school students in the city of Surabaya.

## **2. RESEARCH METHOD**

### **2.1. Population and sample**

A population is a group of elements or elements that are the subject of research, such as people, animals, plants, institutions, groups, documents, events, symptoms, or concepts [27]. Meanwhile, according to Sugiyono [28], population is a generalization area consisting of subjects or objects that have certain qualities and characteristics that are chosen by researchers to be studied before making conclusions. This research involved students from Vocational High School Indonesia Republic Teachers Association 13 Surabaya, Vocational High School Navy Special 1 Surabaya, Vocational High School Dharma Bahari Surabaya, Vocational High School Lab Unesa, and Vocational High School Rajasa Surabaya, with a total of 700 students. In this study, 100 students from all vocational schools in the population were taken as samples. The random sampling technique is used to randomly select research subjects.

### **2.2. Measuring instruments**

This study uses digital literacy ability instruments developed by Bawden. It covers 4 digital literacy metrics: basic literacy skills, information knowledge background, ICT skills, and attitudes/perspectives of

information users. Likert scales are used to determine scores on each digital literacy metric, as shown in Table 1.

Table 1. Likert scale scoring digital literacy indicator

| Average | Category    |
|---------|-------------|
| 3-4     | Excellent   |
| 2-3     | Good        |
| 1-2     | Good enough |
| 0-1     | Not good    |

### 2.3. Data analysis

The selection of this data analysis technique is based on the purpose of the study, which is to find out the digital literacy skills of private vocational school students in the city of Surabaya. Therefore, data analysis techniques are used with descriptive analysis. Meanwhile, data analysis processing is carried out using the international business machines (IBM) corporation SPSS 19.0 program for windows.

## 3. RESULTS AND DISCUSSION

### 3.1. Digital literacy instrument validity test

In this study, the research sample was 100 students of private vocational schools in Surabaya who were given 29 questions related to digital literacy skills. The SPSS computer program was used to evaluate the validity of the study. The item value is more than 0.194, which is the correlation value of all question items. Question items in the instrument list cannot be used for subsequent analysis or are considered invalid, if the correlation value of the question item is more than 0.194. The product moment method is used to evaluate the validity of the instrument. After conducting validity testing with the SPSS program, eligible questions can be reviewed from the validity results. The results of validity testing conducted with the SPSS program can be seen in Table 2. Based on the findings of the Table 2 validity test using the digital literacy instrument questions listed in the table above, all 29 items were declared valid and could be used in research with a correlation value of more than 0.194.

Table 2. Digital literacy instrument question validity test

| Question    | Item-total statistics      |                                |                                  |
|-------------|----------------------------|--------------------------------|----------------------------------|
|             | Scale mean if item deleted | Scale variance if item deleted | Corrected item-total correlation |
| Question 1  | 69.66                      | 109.863                        | 0.226                            |
| Question 2  | 69.51                      | 108.252                        | 0.316                            |
| Question 3  | 69.40                      | 109.253                        | 0.280                            |
| Question 4  | 70.54                      | 109.322                        | 0.320                            |
| Question 5  | 69.19                      | 106.721                        | 0.440                            |
| Question 6  | 69.63                      | 106.559                        | 0.388                            |
| Question 7  | 69.62                      | 107.571                        | 0.402                            |
| Question 8  | 69.30                      | 106.980                        | 0.435                            |
| Question 9  | 70.86                      | 107.253                        | 0.345                            |
| Question 10 | 70.70                      | 108.515                        | 0.332                            |
| Question 11 | 70.73                      | 106.765                        | 0.399                            |
| Question 12 | 69.47                      | 109.120                        | 0.276                            |
| Question 13 | 70.56                      | 106.289                        | 0.385                            |
| Question 14 | 69.97                      | 107.221                        | 0.311                            |
| Question 15 | 70.74                      | 107.164                        | 0.402                            |
| Question 16 | 69.54                      | 106.413                        | 0.457                            |
| Question 17 | 70.78                      | 105.022                        | 0.438                            |
| Question 18 | 70.92                      | 107.307                        | 0.381                            |
| Question 19 | 69.52                      | 107.020                        | 0.418                            |
| Question 20 | 69.68                      | 106.462                        | 0.382                            |
| Question 21 | 69.81                      | 106.014                        | 0.403                            |
| Question 22 | 70.28                      | 108.426                        | 0.273                            |
| Question 23 | 70.53                      | 108.110                        | 0.331                            |
| Question 24 | 70.18                      | 108.755                        | 0.235                            |
| Question 25 | 69.17                      | 109.193                        | 0.273                            |
| Question 26 | 69.24                      | 106.427                        | 0.404                            |
| Question 27 | 70.72                      | 102.911                        | 0.443                            |
| Question 28 | 70.71                      | 103.925                        | 0.478                            |

### 3.2. Digital literacy instrument reliability test digital literacy

Reliability tests gauge instrument consistency, a sign of the variability of research instruments. A constructor variable instrument is regarded as trustworthy in reliability testing if its Cronbach Alpha value is higher than 0.70. Over time, a person's responses to inquiries are seen as stable or consistent. Researchers use the following foundation to decide: a construct/variable is considered reliable if it gives a Cronbach Alpha value of more than 0.70; conversely, a construct/variable is considered unreliable if the Cronbach Alpha value is less than 0.70 [29]. Because this research instrument is in the form of a questionnaire, we tested its reliability using the Cronbach Alpha formula. Table 3 are the results of the reliability of digital literacy instruments.

Table 3. Result of digital literacy instrument reliability test results

| Reliability statistics |            |
|------------------------|------------|
| Cronbach's Alpha       | N of items |
| 0.847                  | 29         |

### 3.3. Basic literacy skills

The ability to read, write, understand symbols, and count numbers are considered basic literacy skills. Some examples of these capabilities include understanding terms and symbols (icons) used in software, creating content with images and text, and sharing files through digital platforms. This ability was measured by two parameters used in the study: the ability to connect to a learning platform and the ability to systematically write assignments in Microsoft Word files. Table 4 shows the results of basic literacy skills of private vocational school students in Surabaya City.

Table 4. Results of basic literacy skills

| Statistics |         |      |
|------------|---------|------|
| N          | Valid   | 100  |
|            | Missing | 0    |
| Mean       |         | 2.79 |

In accordance with Table 4, the results of basic literacy skills in private vocational school students in Surabaya City obtained an average score of 2.79. According to the Likert scale in the method, the results of basic literacy skills with an average of 2.79 are categorized as good. The distribution of the results of basic literacy skills in private vocational school students in Surabaya City can be seen in Figure 1. Based on Figure 1 the distribution of the results of basic literacy skills above the respondents' answers, quite a lot of people answered statements with answersn often. Researchers draw conclusions that it can be categorized well about basic literacy skills.

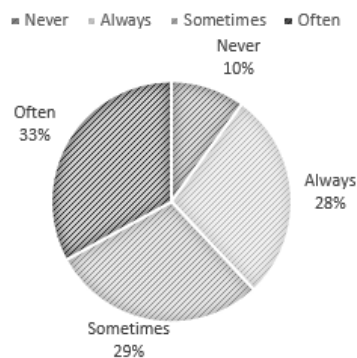


Figure 1. Distribution of basic literacy skills results

### 3.4. Knowledge background

The ability to use what you know to gain more knowledge is the ability of background knowledge.

This includes, in the context of learning, the ability to search for information over the internet and select search results appropriate to the learning context being followed. One of the parameters of the study measured this ability: the ability to use previous knowledge to explore new information and enrich previous knowledge. The results of background knowledge skills in private vocational school students in Surabaya City can be seen in Table 5.

Table 5. Knowledge background capability results

| Statistics |         |      |
|------------|---------|------|
| N          | Valid   | 100  |
|            | Missing | 0    |
| Mean       |         | 2.26 |

In accordance with Table 5, the results of background knowledge skills in private vocational school students in Surabaya City obtained an average score of 2.26. According to the Likert scale in the method, the results of background knowledge ability with an average of 2.26 are categorized as good. The distribution of background knowledge results in private vocational school students in Surabaya City can be seen in Figure 2. Based on Figure 2 the distribution of background knowledge results above respondents' answers, quite a lot of people answer statements with answersn Sometimes. Researchers draw conclusions that it is a good category about background knowledge.

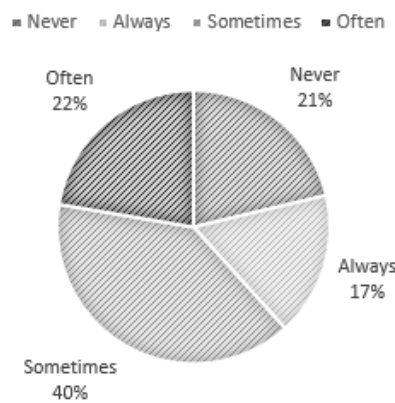


Figure 2. Distribution of background knowledge results

**3.5. Information and communication technology field skills**

Creating or creating digital content using the ability to gather information or knowledge is known as ICT skills. This ability is related to the ability to make documents or scientific papers as a result of learning. One of the parameters used to measure these skills in this study was the ability to create and structure digital content. The results of background knowledge capabilities in private vocational school students in Surabaya City can be seen in Table 6.

Table 6. Result ICT skills results

| Statistics |         |      |
|------------|---------|------|
| N          | Valid   | 100  |
|            | Missing | 0    |
| Mean       |         | 2.53 |

According to Table 6, the ICT ability results of private vocational school students in Surabaya City obtained an average score of 2.53. According to the Likert scale in the method, ICT capability results with an average of 2.53 are categorized as good. The distribution of ICT capability results in private vocational school students in Surabaya City can be seen in Figure 3. Based on Figure 3 the distribution of ICT skills results above respondents' answers, quite a lot of people answer statements with answersn sometimes. Researchers draw conclusions that it is included in the good category of ICT skills.

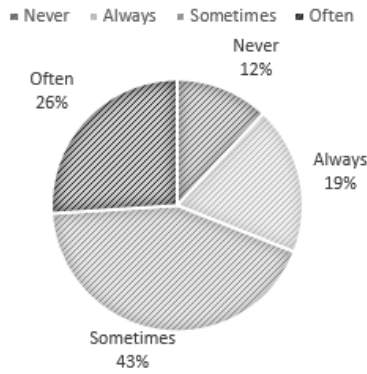


Figure 3. Distribution of ICT skills results

**3.6. Attitudes and perspectives of information users**

It is important to understand that in digital literacy, the effectiveness of information users can be assessed through how actively they participate in online discussions, explore resources, and provide constructive responses to the digital literacy material presented. Two parameters can be used to measure the attitudinal ability of information users in online learning: the ability to include citations from other sources through citation techniques and bibliography; and knowledge of how to use digital information. The Table 7 shows the results of the ability of attitudes and perspectives of information users in students of private vocational schools in Surabaya City.

Table 7. Results of abilities, attitudes, and perspectives of information users

| Statistics |         |      |
|------------|---------|------|
| N          | Valid   | 100  |
|            | Missing | 0    |
| Mean       |         | 2.59 |

In accordance with the information in Table 7, the results of the attitudes and perspectives of information users of private vocational school students in Surabaya City obtained an average score of 2.59. According to the Likert scale on the method, the results of the ability, attitude, and perspective of information users with an average of 2.59 are categorized as good. attitudes and perspectives of information users in private vocational school students in Surabaya City can be seen in Figure 4. Based on Figure 4 the distribution of the results of the attitudes and perspectives of users of information above the respondents' answers, quite a lot of people answered the statement with the answer always. Researchers draw conclusions that can be categorized both about the attitudes and perspectives of information users.

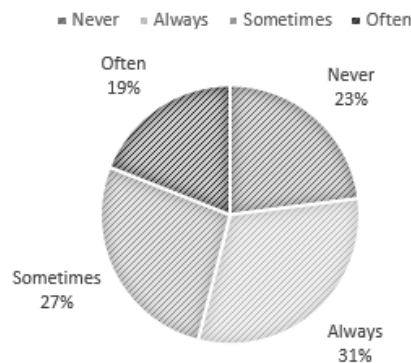


Figure 4. Distribution of the results of attitudes and perspectives of information users

Digital literacy research in vocational high schools in Surabaya revealed a number of excellent results. The data collected from students in this study provides important insights into digital literacy skills among vocational students in the city of Surabaya. The results of the study above show that respondents have good abilities in all four indicators, namely: i) basic literacy skills, ii) knowledge background, iii) ICT field skills, and iv) attitudes and perspectives of information users. However, based on the results of respondents' answers, sometimes quite a lot answer statements with answers. This can be seen from some statements from the knowledge background indicator and the ICT skill indicators acquired are still widely chosen by students with assessments sometimes. From the 2 indicators that mean negative and positive statements, it can be concluded that there are still many vocational students in Surabaya who do not have strong background knowledge about literacy and still lack ICT skills, even though the majority of students currently have access to digital devices and the internet. The results of this study highlight the importance of efforts to improve and develop digital literacy skills among vocational students in the city of Surabaya. Strong digital literacy skills are a key skill that will equip students to add knowledge and insight as a process in following technological developments.

#### 4. CONCLUSION

Data was collected and analyzed taking into account the four elements of digital literacy. The results of the analysis of research data showed that respondents' ability for the basic literacy ability component obtained an average score of 2.79, while the background knowledge ability obtained an average score of 2.26. Information technology skills obtained an average score of 2.53, and the attitudes and views of student information users obtained an average score of 2.59. The results showed that the digital literacy skills of private vocational school students in Surabaya City were in the "Good" category.




#### REFERENCES

- [1] P. Li, L. Gong, Y. Miao, Y. Zhao, A. Li, and H. Ren, "Higher vocational students' innovation and entrepreneurship ability demand prediction," *International Journal of Emerging Technologies in Learning (IJET)*, vol. 18, no. 08, pp. 196–209, Apr. 2023, doi: 10.3991/ijet.v18i08.39249.
- [2] R. Dewanti, B. Febri, and D. Solihat, "DIGITAL literacy in vocational high school english learning materials," *English Review: Journal of English Education*, vol. 10, no. 2, pp. 667–678, Jun. 2022, doi: 10.25134/erjee.v10i2.6305.
- [3] A. Purmadi, M. Muzakkir, and E. R. P. Astuti, "Developing m-learning applications to support digital literacy of vocational high school students," (*JINOTEP (Jurnal Inovasi dan Teknologi Pembelajaran) Kajian dan Riset dalam Teknologi Pembelajaran*), vol. 9, no. 3, p. 291, Nov. 2022, doi: 10.17977/um031v9i32022p291.
- [4] I. Blau, T. Shamir-Inbal, and O. Avdiel, "How does the pedagogical design of a technology-enhanced collaborative academic course promote digital literacies, self-regulation, and perceived learning of students?," *The Internet and Higher Education*, vol. 45, p. 100722, Apr. 2020, doi: 10.1016/j.iheduc.2019.100722.
- [5] P. Gilster, *Digital literacy*. Canada: John Wiley and Sons, Inc., 1997.
- [6] D. Bawden, "Origins and concepts of digital literacy," *Digital literacies: Concepts, policies and practices*, vol. 30, no. 2008, pp. 17–32, 2008.
- [7] Y. Eshet, "Digital literacy: a conceptual framework for survival skills in the digital era," *Journal of Educational Multimedia and Hypermedia*, vol. 13, no. 1, pp. 93–106, 2004.
- [8] T. Koltay, "The media and the literacies: media literacy, information literacy, digital literacy," *Media, Culture & Society*, vol. 33, no. 2, pp. 211–221, Mar. 2011, doi: 10.1177/0163443710393382.
- [9] A. Rahma, "The effect of smartphone use on student life activities (case study of man 1 rengat barat)," *Let's Fisip*, vol. 2, no. 2, pp. 1–12, 2015.
- [10] D. Bawden, "Information and digital literacies: a review of concepts," *Journal of Documentation*, vol. 57, no. 2, pp. 218–259, 2001, doi: 10.1108/EUM0000000007083.
- [11] A. Martin and J. Grudziecki, "DigEuLit: concepts and tools for digital literacy development," *Innovation in Teaching and Learning in Information and Computer Sciences*, vol. 5, no. 4, pp. 249–267, Dec. 2006, doi: 10.11120/ital.2006.05040249.
- [12] J. Warsihna, S. Mutmainah, and I. Utari, "E-sabak (tablet) untuk pembelajaran di indonesia," *Jurnal Teknodik*, vol. 19, no. 4, pp. 293–304, Sep. 2015, doi: 10.32550/teknodik.v19i3.171.
- [13] O. Berge, "Rethinking digital literacy in nordic schoolcurricula," *Nordic Journal of Digital Literacy*, vol. 12, no. 1–2, pp. 5–7, Jun. 2017, doi: 10.18261/issn.1891-943x-2017-01-02-01.
- [14] S. Javorský and R. Horváth, "Phenomenon of digital literacy in scope of european cross-curricular comparison," *Procedia - Social and Behavioral Sciences*, vol. 143, pp. 769–777, Aug. 2014, doi: 10.1016/j.sbspro.2014.07.468.
- [15] G. Polizzi, "Digital literacy and the national curriculum for england: learning from how the experts engage with and evaluate online content," *Computers & Education*, vol. 152, p. 103859, Jul. 2020, doi: 10.1016/j.compedu.2020.103859.
- [16] G. Polizzi and R. Taylor, "Misinformation, digital literacy and the school curriculum," *Media Policy Brief 22. London: Media Policy Project, London School of Economics and Political Science*, 2019.
- [17] J. Sefton-Green, H. Nixon, and O. Erstad, "Reviewing approaches and perspectives on 'digital literacy,'" *Pedagogies: An International Journal*, vol. 4, no. 2, pp. 107–125, Apr. 2009, doi: 10.1080/15544800902741556.
- [18] F. Dafit, A. Hamidah, M. Yudiana, M. Wahidah, and Nurmayeni, "Implementation of literacy movement in sdn 88 pekanbaru," *Buletin Ilmiah Pendidikan*, vol. 2, no. 1, pp. 132–135, Jul. 2023, doi: 10.56916/bip.v2i1.448.
- [19] D. J. L. Julie Coiro, Michele Knobel, Colin Lankshear, *Handbook of research on new literacies*. New York: Routledge, 2014, doi: 10.4324/9781410618894.
- [20] J. P. Gee, *Social linguistics and literacies: ideology in discourse*, 2nd ed. London: Taylor and Francis, 1996.




- [21] M. L. Colin Lankshear, *Literacy, schooling and revolution*, 1st ed. Routledge, Taylor & Francis, 1987.
- [22] R. L. STREET, "SPEECH convergence and speech evaluation in fact-finding interviews," *Human Communication Research*, vol. 11, no. 2, pp. 139–169, Dec. 1984, doi: 10.1111/j.1468-2958.1984.tb00043.x.
- [23] L. Puspitasari and K. Ishii, "Digital divides and mobile internet in indonesia: impact of smartphones," *Telematics and Informatics*, vol. 33, no. 2, pp. 472–483, May 2016, doi: 10.1016/j.tele.2015.11.001.
- [24] I. Bhatt, "Digital literacy practices and their layered multiplicity," *Educational Media International*, vol. 49, no. 4, pp. 289–301, Dec. 2012, doi: 10.1080/09523987.2012.741199.
- [25] F. Derbel, "Technology-capable teachers transitioning to technology-challenged schools," *Electronic Journal of e-Learning*, vol. 15, no. 3, pp. 269–280, 2017.
- [26] M. Hall, I. Nix, and K. Baker, "Student experiences and perceptions of digital literacy skills development: engaging learners by design?," *Electronic Journal of e-Learning*, vol. 11, no. 3, pp. 207–225, 2013.
- [27] S. Jusuf, *Introduction to research methodology (in indonesian)*. Jakarta: Mitra Wacana Media, 2012.
- [28] Sugiyono, *Quantitative, qualitative, and r&d research methods*. Bandung: ALFABETA, 2015.
- [29] J. C. Nunnally, and I. H. Bernstein, *The Assessment of Reliability. Psychometric Theory*, pp. 248-292, 1994.

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