



# Digital Literacy of Junior High School Students in Jember as an Indicator of Readiness in Facing the Society 5.0 Era in Science Learning

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**Abstract:** In order to support educational needs, it is necessary to analyze student readiness in facing the era of society 5.0 by analyzing digital literacy. Digital literacy is a capability that needs to be analyzed before implementing digital technology-integrated learning. Science is a subject of learning that is closely related to the development of science and technology and need to be urged for its development in the society 5.0 era. This study uses a descriptive quantitative research method. The subjects in this study consisted of 75 junior high school students from two schools in Jember Regency who were selected by purposive sampling. The results of the study show that 4 aspects of digital literacy, namely functional skills, effective communication, critical thinking and evaluation, and e-safety are at an advanced level. While aspects of the ability to find and select information and aspects of cultural and social understanding are at the intermediate level. Another aspect that is at the basic level is creativity and collaboration. Referring to these results, students' digital literacy in Jember Regency is already good in various aspects, although there are some aspects that still need to be improved. Digital literacy has the opportunity to facilitate the learning process in the classroom in the era of society 5.0.

**Keywords:** Digital literacy; Education; Learning; Society 5.0

## Introduction

Improving the quality of education in Indonesia has long been pursued through various strategies implemented. One of the policy agendas is an adaptation to the education system with changing times. One form of this policy is realized in the form of government regulation which implies that the National Education Standards are in accordance with the challenges of changing life (Anggraena et al., 2021). The demands of changing times that are currently being faced are demands for change towards the era of society 5.0.

Integration of the virtual world and the deep digital world is a feature of life in the era of society 5.0. (Indarta et al., 2022). Education as one of the efforts in educating the public should maximize the introduction of community life in the 5.0 era to students. Therefore, it is appropriate for technology to be used to expedite the learning process (Mustamiroh & Ramadhayanti, 2021).

Government policies have provided a lot of space for technology integration in learning. The Indonesian government is currently not only focusing on technology and artificial intelligence in learning but also focusing on human resources as the driving force of education (Mansur et al., 2023).

In order to support educational needs, it is necessary to analyze student readiness in facing the era of society 5.0. Student readiness needs to be analyzed first in order to maximize the application of learning in the era of society 5.0. The success of learning media is determined by the characteristics of students (Arono et al., 2022). This is because digital literacy is a capability designed to increase individual self-control in sending and receiving information through digital media (Silvana & Darmawan, 2018). Digital literacy provides opportunities for teachers to explore learning through collaborative digital-based interactive technology and media (Yanuarto et al., 2021). In addition, independent

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learning skills can be improved through good digital literacy skills (Rini et al., 2022). Thus, the analysis of students' digital literacy readiness is something that needs to be tested to measure the extent of students' readiness to accept digital technology integrated learning.

One of the subjects that requires technology integration is science. This is related to the contribution of science itself to technological developments which can increase interest in being involved in the development of science and technology (Ningrum & Wulandari, 2020). It is this linkage that makes science a subject of learning that is closely related to the development of science and technology. Jember is a district that has sought to introduce students to the times through learning. This refers to the results of a research needs analysis (Wahyuni et al., 2022) where students have utilized PowerPoint and Youtube in learning. Therefore, further analysis of students' digital literacy in Jember Regency in order to welcome the era of society 5.0 needs to be done. Thus, an assessment of students'

digital literacy in Jember Regency to estimate students' readiness to face the era of society 5.0 in science learning needs to be carried out.

**Method**

This study uses a descriptive quantitative research method. The subjects in this study consisted of 75 junior high school students from two schools in Jember Regency who were selected by purposive sampling. Digital literacy data collection is carried out by distributing questionnaires directly to students. The questionnaire given to students is a closed questionnaire with predetermined answer choices. The validity test of the student questionnaire instrument was carried out statistically with the help of IBM SPSS Statistics 25 software. The questionnaire given to students consisted of 10 stands covering 8 aspects of digital literacy. A more detailed explanation regarding these aspects is explained in Table 1.

**Table 1.** Digital literacy Aspects

| Aspects                                    | Indicators  |
|--|---|
| Functional skill                           | Frequency of technology usage in everyday life  |
| Creativity                                 | Experience in sharing ideas through digital technology  |
|  | Experience in creating content through digital technology   |
| Collaboration                              | Experience in writing opinions through digital technology   |
| Effective communication                    | The habit of knowing information in society through digital technology                              |
| Critical thinking and evaluation           | Awareness of the Importance of Using Digital Technology for Learning Purposes                       |
| The ability to find and select information | Experience of discovering the truth of news obtained through digital technology                     |
| Cultural and social understanding          | Awareness in assessing the good and bad of studying information about the cultures of other peoples |
|  |   |
| E-safety                                   | Awareness of the importance of filtering information from digital media                             |
|  | Experience in securing information search through digital technology                                |

(Adapted from Hague & Payton, 2010)

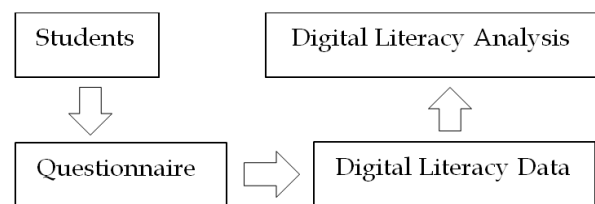
After obtaining digital literacy data from students, the data is then analyzed to obtain conclusions regarding students' digital literacy. Student digital literacy data is presented in the form of a graph of the proportion of student digital literacy from each aspect that is developed. The data obtained on each aspect is presented in the form of a percentage score. In aspects that consist of more than one indicator, the average proportion is taken. Then the categorization of digital literacy data as a result of the research was carried out based on the level of digital literacy presented in table 2 (Nugroho & Nasionalita, 2020).

**Table 2.** Percentage Range of Digital Literacy Levels

| Level        | Percentage range% |
|--------------|-------------------|
| Basic        | 17-45             |
| Intermediate | 45.01-73          |
| Advance      | 73.01-100         |

After providing the data based on the results of the research that has been carried out, the next step is to

analyze the research data in a quantitative descriptive manner. Analysis of the results of the research was carried out based on the supporting literature on the research process. The design of the research process in this study is illustrated in Figure 1.



**Figure 1.** Research Framework

**Result and Discussion**

Digital literacy is important for students today to prepare for the era of society 5.0. The era of society 5.0 provides opportunities for humans to continue to develop behind the development of artificial technology

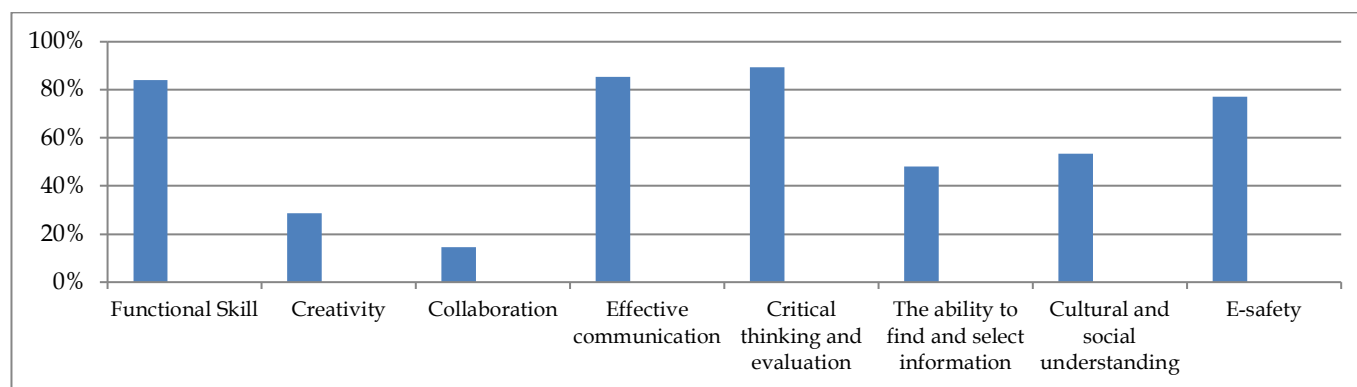
(Indarta et al., 2022). Current technology develops randomly and is continuously updated (Alisia, Lesmono, & Yushardi, 2022). Digital literacy provides opportunities for teachers to explore learning through collaborative technology and digital-based interactive media (Yanuarto et al., 2021). Mastery of science and technology is important for solving various problems (Yusuf, Hidayatullah, & Tauhidah, 2022). Therefore, digital literacy is needed to prepare students' readiness to face the era of society 5.0. Digital literacy is able to maximize students' ability to use digital technology (Rini et al., 2022).

The digital literacy questionnaire developed by researchers was adapted from 8 aspects of digital literacy described by Hague & Payton (2010). The validity of the students' digital literacy questionnaire was tested with the help of IBM SPSS Statistics 25 software. Each questionnaire item tested for validity was analyzed using the Guttman scale. Testing the validity of the instrument is done by looking at the significance value (2-tailed). When Sig. (2-tailed) < 0.05, then the questionnaire items are declared valid and if Sig. (2-tailed) > 0.05 then the questionnaire items are declared invalid. Information on the validation results for each item is explained in the Table 3.

**Table 3.** Instrument Validation Result

| Statements | Sig. (2-tailed) | Result |
|------------|-----------------|--------|
| 1.         | 0.003           | Valid  |
| 2.         | 0.001           | Valid  |
| 3.         | 0.000           | Valid  |
| 4.         | 0.001           | Valid  |
| 5.         | 0.000           | Valid  |
| 6.         | 0.003           | Valid  |
| 7.         | 0.000           | Valid  |
| 8.         | 0.024           | Valid  |
| 9.         | 0.001           | Valid  |
| 10.        | 0.003           | Valid  |

The result of the validation of students' digital literacy instruments shows that the significance of the 10 items of the instrument statement has a significance of less than 0.05. Therefore, all of the instrument items are declared valid. After being declared valid, the student questionnaire was then further analyzed on each aspect of student digital literacy. The results of research on each aspect of digital literacy are illustrated through the graphs in the Figure 2.



**Figure 2.** Percentage of Students' Digital Literacy Aspects

The result of research on the aspect of functional ability shows that students are accustomed to using digital technology in everyday life. The percentage of digital literacy in this aspect is 84% which is classified as medium level. In the aspect of functional skills, indicators are developed to find out about the frequency of use of digital technology by students in everyday life. Based on these results it is known that most students have often and are accustomed to using digital technology in everyday life. Students feel comfortable with technology in their daily lives (Khan & Khan, 2019). Students' attitudes about using digital technology for digital learning as well as their intensity to do so are influenced by both technology and resources (Sayaf et al., 2022). Therefore, the parties involved in the learning process should be able to maximize the resources and

potential of students in science learning integrated with digital technology in the classroom.

**Table 4.** Students' Digital Literacy Level

| Digital Literacy Aspects                   | Digital Literacy Percentages % | Level        |
|--|--------------------------------|--------------|
| Functional Skill                           | 84                             | Advance      |
| Creativity                                 | 28.67                          | Basic        |
| Collaboration                              | 14.67                          | Basic        |
| Effective communication                    | 85.33                          | Advance      |
| Critical thinking and evaluation           | 89.33                          | Advance      |
| The ability to find and select information | 48                             | Intermediate |
| Cultural and social understanding          | 53.33                          | Intermediate |
| E-safety                                   | 77                             | Advance      |

The result of research on the aspect of students' digital literacy creativity is known to be at the basic level. The percentage of creativity aspects in this study is 28.67%. This shows that students who create digital product creations are still low. This is because creativity is not an ability that students can develop by themselves and the teacher's efforts are needed to increase student creativity in learning through good lesson planning (Sumarni & Kadarwati, 2020). Based on this explanation, encouragement of students' creative abilities is needed in science learning.

Digital literacy skills in the aspect of collaboration is known at the basic level. The result showed that the collaboration aspect was in the proportion of 14.67%. This shows that the number involved in discussions in the digital student space is still small. This research is similar to the findings of research by Rianto & Sukmawati (2021) in which low assumptions are assumed because respondents only consume informational messages and do not actively maximize social media like active users. Various student collaboration strategies can improve student learning outcomes (Mertha et al., 2019). The ability to collaborate also requires students to argue in digital space. The ability to argue is very important in learning because it can improve critical thinking skills, the ability to argue in the academic realm, and the ability to master concepts (Subchan & Umamah, 2022).

Digital literacy research on the aspect of effective communication get a score of 85.33% at an advanced level. This shows that most students are used to obtaining information through digital technology. The aspect of effective communication does not only cover the ability to communicate, digital literacy in the aspect of effective communication also includes a person's ability to understand the needs of society through digital space (Nugroho & Nasionalita, 2020).

Aspect of critical thinking and evaluation of students' digital literacy is at an advanced level. The percentage result of 89.33% in this aspect shows that many students are able to judge that technological progress needs to be utilized in positive things such as learning. Critical thinking means the ability to make decisions based on empirical evidence and based on scientific reasons (Mega, 2022). This can be an indication that students already know how they should behave towards technology. Critical thinking is an inner urge to know information that comes from individual thinking abilities (Siwi & Setiawan, 2021)

The ability to find and select information in students' digital literacy is at an intermediate level. This result is based on the proportion of acquisition in this aspect which is equal to 48%. This indicates that most students are not aware of finding and selecting good and reliable information. The current conditions make it difficult to choose the right information from the internet

and can even cause confusion in society (Rachmawati & Agustine, 2021). Therefore, students should receive further education regarding the ability to find and select information from digital space through learning.

The cultural and social understanding aspect is at the intermediate level. This is related to the total percentage obtained which is 53.33%. These results indicate that most students are aware that being selective in choosing information related to other cultures is important to them. People should have the ability to evaluate information and understand the environment in which it is generated, and disseminated (De Paor & Heravi, 2020). In order to build a social understanding of one's own culture and other cultures, students need to involve critical thinking skills (Hague & Payton, 2010).

The e-safety aspect is known to have obtained an acquisition of 77% or is at an advanced level. This shows that many students have realized how vulnerable information is from digital technology and the importance of securing data when browsing information by blocking spam, using antivirus and so on. E-safety itself is a capability related to data security in the digital space from various things such as virus attacks and others (Nugraha, 2022). E-safety protects and increases the awareness of digital technology users, so that these users are able to control their experiences in engaging with digital technology (Tsokota, Mhloza, & Chipfumbu-Kangara, 2022).

Related to the results of digital literacy that have been shown previously, digital literacy in several aspects is good because most of the aspects are at an advanced level and several other aspects need to be improved. The eight components of digital literacy that have been discussed are not separate from each other, but mutually reinforce other components (Hague & Payton, 2010). Digital literacy should be developed in science learning for preparing society 5.0 era. Digital literacy has a big part in learning where digital literacy is the solution to an effective learning experience (Abiddin et al., 2022).

## Conclusion

The digital literacy results of junior high school students in Jember Regency which were studied referred to 8 aspects of digital literacy. The results of the study show that 4 aspects of digital literacy, namely functional skills, effective communication, critical thinking and evaluation, and e-safety are at an advanced level. While aspects of the ability to find and select information and aspects of cultural and social understanding are at the intermediate level. Another aspect that is at the basic level is creativity and collaboration. Referring to these results, students' digital literacy in Jember Regency is already good in various aspects, although there are some aspects that still need to be improved. Digital literacy



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#### Author Contributions

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#### Conflicts of Interest

The author declares no conflict of interest.

#### References

- Abiddin, N. Z., Ibrahim, I., & Aziz, S. A. A. (2022). Advocating Digital Literacy: Community-Based Strategies and Approaches. *Academic Journal of Interdisciplinary Studies*, 11(1). doi:10.36941/ajis-2022-0018
- Alisia, N., Lesmono, A. D., & Yushardi, Y. (2022). Development of Android-Based Modules to Improve Learning Outcomes and Learning Motivation of High School Students. *Berkala Ilmiah Pendidikan Fisika*, 10(1), 145. doi:10.20527/bipf.v10i1.12606
- Anggraena, Y., Felicia, N., Eprijum, D., Pratiwi, I., Utama, B., Alhapip, L., & Widiawati, L. (2021). *Kajian Akademik Kurikulum untuk Pemulihan Pembelajaran*. Jakarta: Pusat Kurikulum dan Pembelajaran Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Arono, Arsyad, S., Syahrman, Nadrah, & Villia, A. S. (2022). Exploring the effect of digital literacy skill and learning style of students on their meta-cognitive strategies in listening. *International Journal of Instruction*, 15(1), 527-546. doi:10.29333/iji.2022.15130a
- De Paor, S., & Heravi, B. (2020). Information literacy and fake news: How the field of librarianship can help combat the epidemic of fake news. *Journal of Academic Librarianship*, 46(5), 102218. doi:10.1016/j.acalib.2020.102218
- Hague, C., & Payton, S. (2010). *Digital Literacy Across the Curriculum*. Bristol: Futurelab.
- Indarta, Y., Jalinus, N., Waskito, W., Samala, A. D., Riyanda, A. R., & Adi, N. H. (2022). Relevansi Kurikulum Merdeka Belajar dengan Model Pembelajaran Abad 21 dalam Perkembangan Era Society 5.0. *Edukatif: Jurnal Ilmu Pendidikan*, 4(2), 3011-3024. doi:10.31004/edukatif.v4i2.2589
- Khan, S., & Khan, R. A. (2019). Online assessments: Exploring perspectives of university students. *Education and Information Technologies*, 24(1), 661-677. doi:10.1007/s10639-018-9797-0
- Mansur, H., Utama, A. H., Mohd Yasin, M. H., Sari, N. P., Jamaludin, K. A., & Pinandhita, F. (2023). Development of Inclusive Education Learning Design in the Era of Society 5.0. *Social Sciences*, 12(1), 35. doi:10.3390/socsci12010035
- Mega, I. R. (2022). Learners' Digital Literacy In The Online Learning During Covid-19, *English Review*, 10(2), 699-706. <https://doi.org/10.25134/erjee.v10i2.6314>
- Mertha, Y. L. A., Mudakir, I., & Prihatin, J. (2019). The Development of Analytic Team Collaborative Learning Model Based on Brain-Based Learning (BBL) for Junior High School Science Learning in Agroecosystem Areas. *Bioedukasi*. doi:10.19184/bioedu.v17i1.13190
- Mustamiroh, M., & Ramadhayanti, F. (2021). Penerapan Media Pembelajaran Berbasis Software Wondershare Filmora Pada Mata Pelajaran Ipa Di Sd. *Jurnal Pendidikan Mipa*, 11(2), 186-192. doi:10.37630/jpm.v11i2.514
- Ningrum, Y. S., & Wulandari, R. (2020). Korelasi Implementasi Pembelajaran Ipa Daring Terhadap Literasi Teknologi Siswa Di Kelas Viii Smp. *JPPS (Jurnal Penelitian Pendidikan Sains)*, 10(1), 1889. doi:10.26740/jpps.v10n1.p1889-1898
- Nugraha, D. (2022). Literasi Digital dan Pembelajaran Sastra Berpaut Literasi Digital di Tingkat Sekolah Dasar. *Jurnal Basicedu*, 6(6), 9230-9244.
- Nugroho, C., & Nasionalita, K. (2020). Digital Literacy Index of Teenagers in Indonesia. *Journal Pekommas*, 5(2), 215. doi:10.30818/jpkm.2020.2050210
- Rachmawati, T. S., & Agustine, M. (2021). Keterampilan literasi informasi sebagai upaya pencegahan hoaks mengenai informasi kesehatan di media sosial. *Jurnal Kajian Informasi & Perpustakaan*, 9(1), 99. doi:10.24198/jkip.v9i1.28650
- Rianto, P., & Sukmawati, A. I. (2021). Literasi Digital Pelajar di Yogyakarta: dari Consuming ke Prosuming Literacy. *Jurnal Komunikasi Global*, 10(1), 137-159. doi:10.24815/jkg.v10i1.20612
- Rini, R., Mujiyati, Sukamto, I., & Hariri, H. (2022). The Effect of Self-Directed Learning on Students' Digital Literacy Levels in Online Learning. *International Journal of Instruction*, 15(3), 329-344. doi:10.29333/iji.2022.15318a
- Sayaf, A. M., Alamri, M. M., Alqahtani, M. A., & Alrahmi, W. M. (2022). Factors Influencing University Students' Adoption of Digital Learning Technology in Teaching and Learning. *Sustainability (Switzerland)*, 14(1).

doi:10.3390/su14010493

- Silvana, H., & Darmawan, C. (2018). Pendidikan literasi digital di kalangan usia muda di kota bandung. *Pedagogia*, 16(2). doi:10.17509/pdgia.v16i2.11327
- Siwi, E. F., & Setiawan, Y. (2021). Pengembangan Buku Cegahan IPA untuk Meningkatkan Kemampuan Berpikir Kritis Siswa di Sekolah Dasar. *Jurnal Basicedu*, 5(4), 2220–2230. Retrieved from <https://jbasic.org/index.php/basicedu/article/view/1157>
- Subchan, W., & Umamah, N. (2022). Triadic Analysis of Students' Self-Regulated Learning as a Response to Learning Support of Environmental Science Course. *Pancaran Pendidikan*, 11(2), 41–52. doi:10.25037/pancaran.v11i2.392
- Sumarni, W., & Kadarwati, S. (2020). Ethno-stem project-based learning: Its impact to critical and creative thinking skills. *Jurnal Pendidikan IPA Indonesia*, 9(1), 11–21. doi:10.15294/jpii.v9i1.21754
- Tsokota, T., Mhloza, V., & Chipfumbu-Kangara, C. T. (2022). A strategy to enhance e-safety among first-year students at Zimbabwean universities: an action research. *Educational Technology Research and Development*, 70(2). doi:10.1007/s11423-022-10078-z
- Wahyuni, S., Wulandari, E. U. P., Rusdianto, Fadilah, R. E., & Yusmar, F. (2022). Pengembangan Mobile Learning Module Berbasis Android Untuk Meningkatkan Literasi Digital Siswa Smp. *LENSA (Lentera Sains): Jurnal Pendidikan IPA*, 12(2), 125–134. doi:10.24929/lensa.v12i2.266
- Yanuarto, W. N., Jaelani, A., & Purwanto, J. (2021). Flipped Classroom Model: Empowering Digital Literacy for Mathematics Learning in Society 5.0. *Indonesian Journal of Science and Mathematics Education*, 4(2), 158–171. doi:10.24042/ij sme.v4i2.9638
- Yusuf, A. M., Hidayatullah, S., & Tauhidah, D. (2022). The Relationship Between Digital and Scientific Literacy with Biology Cognitive Learning Outcomes of High School Students. *Assimilation: Indonesian Journal of Biology Education*, 5(1), 8–16. Retrieved from <https://doi.org/10.17509/aijbe.v5i1.43322>