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Measurement of Digital Literacy Index of High School Students or Equivalent in Bogor Regency

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Abstract
The digitalization era is developing rapidly in Indonesia. The pandemic that occurred accelerated digital transformation in various fields. Various digital platforms were developed to support the continuity of education during the pandemic so that they could develop digital skills and improve the status of digital literacy in Indonesia. In addition to the positive impacts, there are also negative impacts from the development of digital transformation. The National Cyber and Crypto Polytechnic which focuses on information security is committed to encouraging increased digital skills and literacy in the surrounding community. Therefore, this time the National Cyber and Crypto Polytechnic located in Bogor Regency began to focus on developing digital skills and literacy among high school students or equivalent in Bogor Regency. The students' digital literacy status was first measured and then the right program or activity was determined to develop their digital skills and literacy. The digital literacy status was measured based on four pillars, Pillar 1 Digital Skill, Pillar 2 Digital Ethics, Pillar 3 Digital Safety, and Pillar 4 Digital Culture. Data collection was carried out by giving questionnaires to 276 high school students or equivalent who used the internet in Bogor Regency. Students give a score to each statement and then the score will be calculated as an average per pillar. The digital literacy index is obtained from the average score of all pillars. The digital literacy index result is 3.14 which is higher than the West Java digital literacy index of 2.78. In addition, pillar 2 Digital Ethic has the lowest score among the four pillars so that the next program is expected to aim to increase this score.

Keywords: *Digital Skills, Digital Literacy, Digital Literacy Index*

INTRODUCTION

Indonesia is experiencing a very rapid growth of the digitalization era. The current digitalization era has an impact on developments in various areas of community life, especially in Indonesia, such as the economy, industry, defense and security, and education. This will certainly require the Indonesian people to create a digital ecosystem that is able to adapt to current technological developments.

The growth of the digitalization era in Indonesia is also inseparable from the increasing number of internet users in Indonesia. According to a report published by Simon Kemp entitled "Digital 2023: Indonesia" (Simon Kemp, 2023), Indonesia had 212.9 million internet users in early 2023 or equivalent to 77% of the total population in Indonesia. Not only in terms of internet usage, the report also states that the number of active social media users in Indonesia has reached 167 million or 60.4% of the population in Indonesia.

The pandemic that has hit Indonesia since 2020 has accelerated digital transformation in various fields, one of which is education. Limited access to education and challenges in obtaining quality education can be helped through the community's ability to utilize digital information. The distance learning method applied encourages students to be able to adapt to using digital technology as a learning medium. Various digital platforms have been developed to support the continuity of education during the pandemic. Thus, students in Indonesia are expected to be able to develop digital skills and improve the status of digital literacy in Indonesia.

The presence of digital media does not always have a positive impact on all levels of society. Some challenges of digital media become serious challenges, such as the spread of hoax information, hate speech,

and other detrimental digital activities. One of the causes of this phenomenon is the lack of cybersecurity awareness due to low digital literacy skills.

The National Cyber and Crypto Polytechnic is committed to encouraging the improvement of digital skills of the community, especially students in Bogor Regency. The National Cyber and Crypto Polytechnic through the Cryptographic Hardware Engineering Study Program scientific group has a community service program by helping high school/vocational high school students in Bogor Regency to improve the digital literacy of the community, especially students.

The purpose and objectives of this activity are to provide an overview of the pattern of technology and digital media usage of high school/vocational high school students in Bogor Regency; provide an objective, measurable, and representative understanding of the digital literacy conditions of respondents based on primary data and assist in formulating strategies to improve digital literacy of high school/vocational high school students in Bogor Regency.

Digital Literacy

In Indonesia, there are six basic literacy skills that should be mastered by the Indonesian people in the development of Indonesia in the future. The six basic literacies are language literacy, numeracy literacy, science literacy, digital literacy, financial literacy, and cultural and civic literacy. According to the National Literacy Movement Guidebook published by the Ministry of Education and Culture in 2017, Digital literacy is the knowledge and skills to be able to use digital media, communication tools, or networks to find, evaluate, use, create information, and utilize it in a healthy, wise, intelligent, careful, precise, and obedient manner in order to foster communication and interaction in everyday life.

Digital Literacy Status

Digital literacy status is a parameter calculated based on the results of a digital literacy survey to determine the level of digital literacy of respondents. According to the 2021 Digital Literacy Status in Indonesia report published by the Ministry of Communication and Information, digital literacy status is determined based on a four-pillar framework, namely Pillar 1 *Digital Skill* , Pillar 2 *Digital Ethics* , Pillar 3 *Digital Safety* , and Pillar 4 *Digital Culture* . The implementation of the four pillars in this survey is explained as follows.

1. Pillar 1 *Digital Skill*
   Pillar 1 *Digital Skill* applied in this research survey has eight questions that can measure respondents' ability in using digital technology. These questions include agreement with the following statements:
   a. I am used to comparing different sources of information to decide whether the information is true.
   b. I am used to finding out whether the information I find on a website is true or false.
   c. I am able to interact through various digital technology communication devices.
   d. I have the ability to store data, information, and content in digital media.
   e. I can search and access data, information and content in digital media as needed.
   f. I can upload *files* to the internet.
   g. I can connect my device to the internet network (wifi, LAN, *mobile data*).
   h. I can download *files* /applications from the internet.
2. Pillar 2 *Digital Ethics*
   Pillar 2 *of Digital Ethics* applied in this research survey has seven questions that can measure the behavior of respondents in making decisions about disseminating information through social media or other digital platforms. These questions include agreement on the following questions:
   a. I uploaded a photo with someone else without their permission.
   b. I tag *friends* when they upload content without permission.
   c. I created a group and added people/friends without permission.
   d. I will comment harshly if someone comments negatively on my posts.
   e. When I find interesting information from gossip accounts, I will share it immediately.
   f. I will share screenshots of private conversations on social media or with others if they offend me.
   g. I will invite people to comment negatively on the social media accounts of people I hate.
3. Pillar 3 *Digital Safety*
   Pillar 3 *Digital Safety* applied in this research survey has eight questions that can measure

respondents in terms of personal data security. These questions include agreement on the following questions:

a. I can differentiate between *emails* that contain spam/virus/ *malware* and those that do not.
b. I use applications/ *software* to find and remove viruses on *mobile phones* /computers.
c. I did *a back up* or store data in multiple places, not just one.
d. I know how to *'report abuse'* or report abuse on social networks if there are posts that contain negative content or are detrimental to me.
e. I do not upload personal data on social media.
f. I can disable the option to show my geographic/GPS position (for example on Facebook).
g. I usually create secure passwords with a combination of numbers, letters, and punctuation marks.
h. On social media accounts, I can control who can see my posts (timeline).

4. Pillar 4 *Digital Culture*

Pillar 4 *Digital Culture* applied in this research survey has eight questions that can measure respondents in implementing culture and culture through social media or other digital platforms. These questions include agreement on the following questions:

a. I include the author's name when *reposting* .
b. I take into account the feelings of readers who have different political views.
c. I enjoy and share Indonesian traditional and contemporary arts and culture digitally.
d. I take into account the feelings of readers from other ethnicities.
e. I consider the cultural, religious, and age diversity of friends on social media when sharing messages/information.
f. I take into account the feelings of readers from other religions.

METHODS

In order to develop a targeted program according to the conditions of high school/vocational high school students in Bogor Regency, a mapping of the abilities of high school/vocational high school students in Bogor Regency was carried out by conducting a digital literacy status survey to measure the Digital Literacy Index of high school/vocational high school students in Bogor Regency. This survey was conducted from November 14 to December 2, 2022. This survey succeeded in collecting 276 respondents of high school/vocational high school students in Bogor Regency who use the internet. Survey data collection was carried out through a questionnaire. Students will choose a score for each statement per pillar. Each pillar is then calculated the average value of the statement to produce a score for each pillar. The Digital Literacy Index can be obtained by calculating the average of the four pillar scores.

RESULTS AND DISCUSSION

Visuals The results of a survey conducted on 276 student respondents showed that the Digital Literacy Status of high school students or equivalent in Bogor Regency is as follows

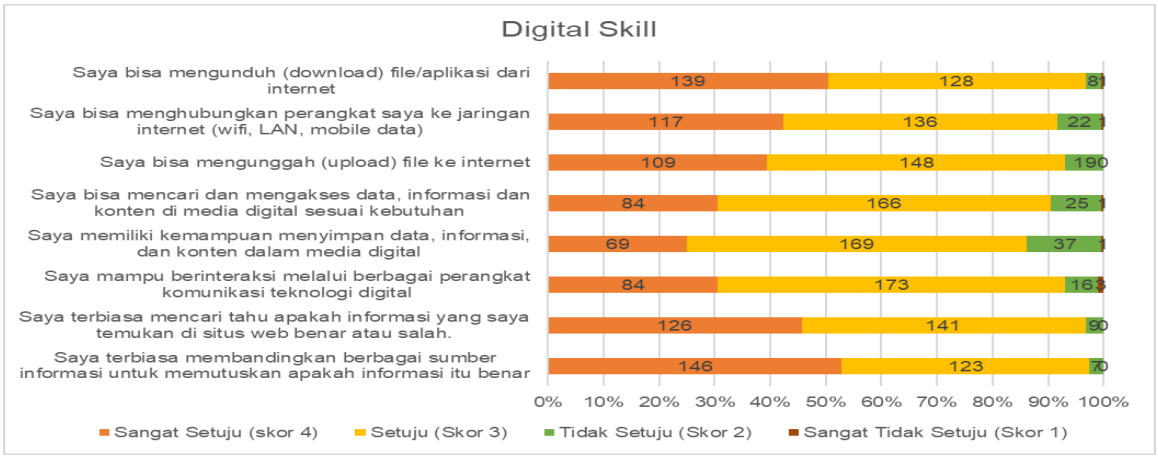

Figure 1: Pillar 1 survey results

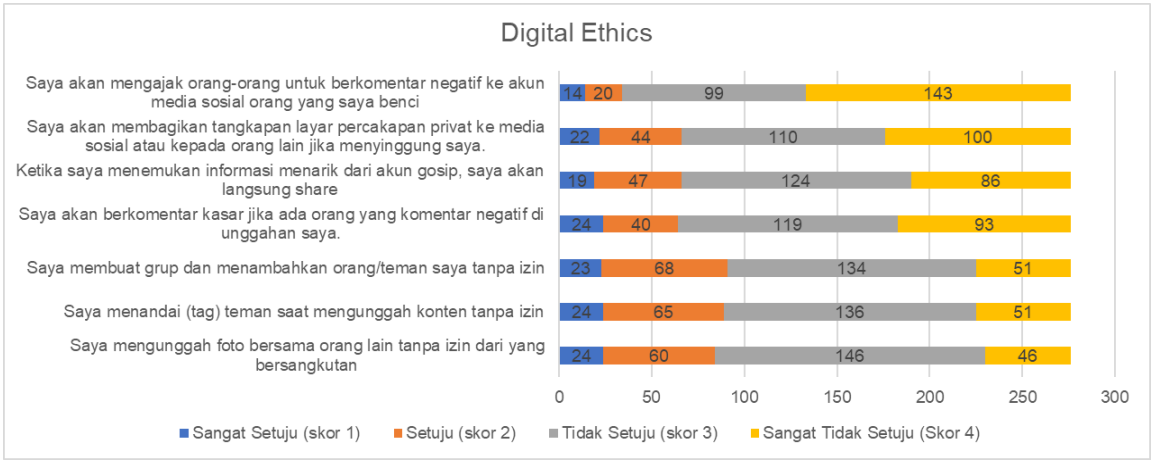

Figure 2 : Results of Pillar 2 survey

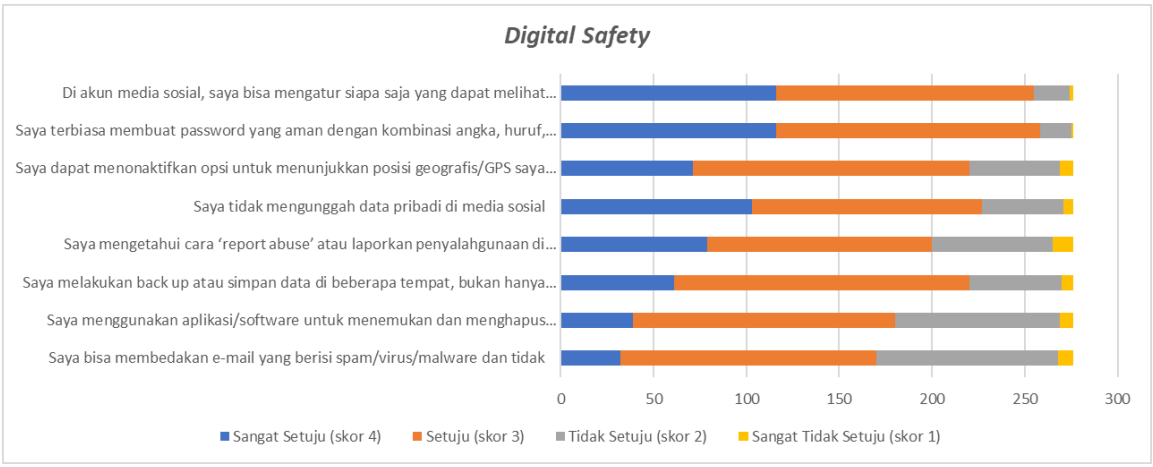

Figure 3: Pillar 3 survey results

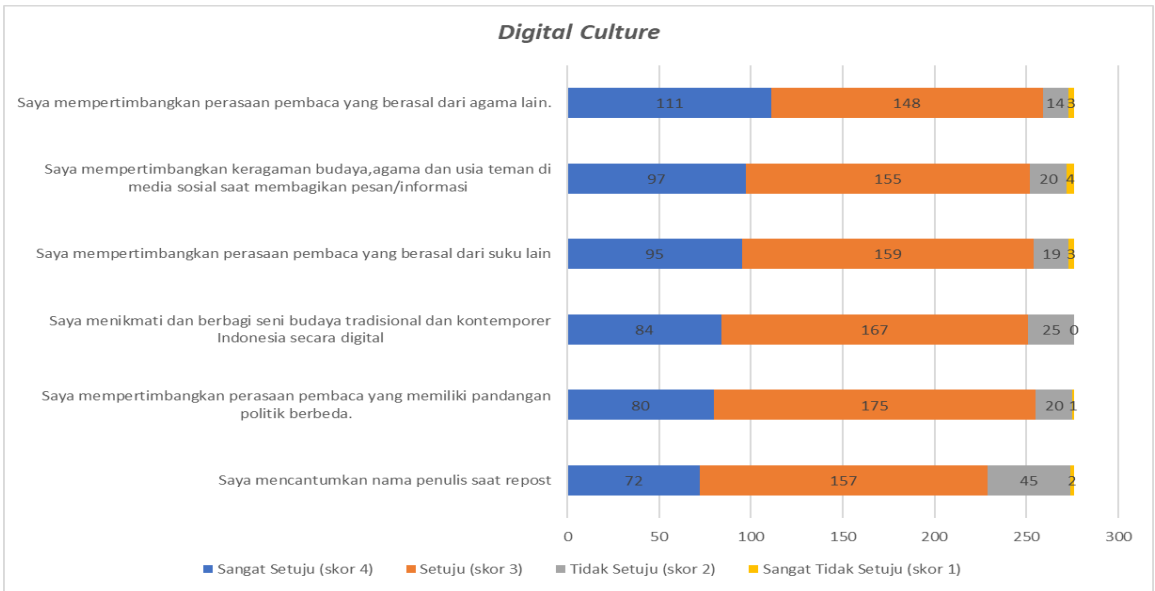

Figure 4 : Results of Pillar 4 survey

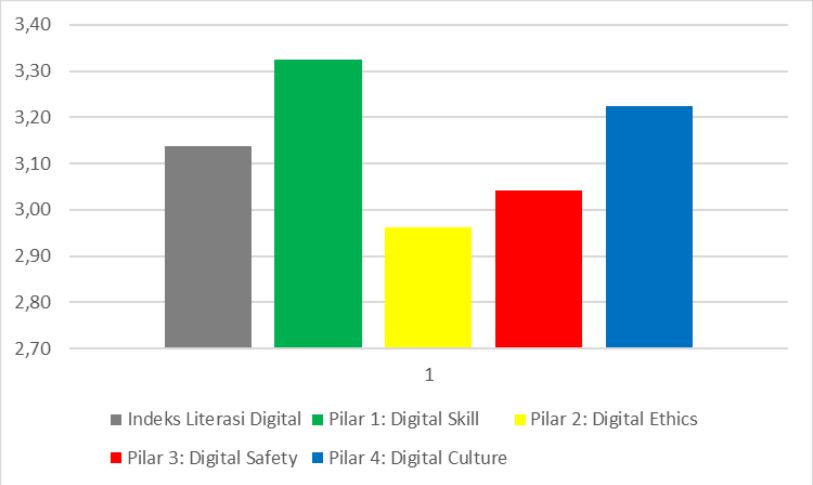

Figure 5: Results of the Digital Literacy Index survey

Pillar 1 consists of 8 question indicators that can be answered with an answer scale. This pillar measures respondents' abilities related to the use of digital applications, for example the ability to download or upload files, as well as other digital-related abilities. Pillar 1 measurements show that the average score for this pillar is 3.32. The majority of respondents have been able to download files or applications from the internet, with an average score *of* 3.47. Respondents have also been able to connect their devices to the internet network, this is indicated by a score of 3.34. The majority of respondents also have good habits related to information obtained from the internet, including checking the accuracy of information (average score 3.42) and comparing various sources (average score 3.50). This is sufficient to describe the level of knowledge and ability of the community regarding Digital Skills.

Pillar 2 is formed from 7 question indicators. This pillar measures the behavior and response of the community when receiving and also spreading information received on social media or other digital devices. The score for the Digital Ethics Pillar is quite low, namely 2.96 (scale: 1-4). Many respondents have realized that inviting people to make negative comments is an activity that is not good in terms of digital ethics. This is indicated by an average score of 3.34 or falls into the category of disagreeing with this behavior. In addition, quite a few are also aware not to share personal screen captures (score 3.04). However, many respondents still upload photos with other people (score 2.78) and tag friends when uploading content without permission (2.78). Several questions related to *Digital Ethics* are to find out the positive and negative habits carried out by respondents when carrying out digital activities. Positive activities such as not spreading information that has not been proven to be true are one of the activities carried out by 76.09% of respondents. Negative activities in interacting in the digital world are actually carried out less frequently by respondents. For example, actions such as responding to comments with less than good stickers were not carried out by 76.81% of respondents.

Pillar 3 consists of 8 question indicators. This pillar measures behavior related to personal data security when interacting and using social media and other digital devices. Pillar 3 has a score of 3.04 (scale 1-4). The majority of respondents are able to control who sees their posts, as indicated by a score of 3.34. In addition, people are quite accustomed to creating secure *passwords* (3.35). However, on the other hand, technical security such as recognizing viruses has not been widely carried out by respondents, such as using applications or *software* to find and delete viruses (2.77) and distinguishing emails containing spam/viruses (2.70).

Pillar 4 is measured from 6 question indicators. This pillar measures the application of culture and culture, as well as the living environment when interacting through social media and other digital devices. The national score for Pillar 4 is 3.22 (scale 1-4). The majority of respondents strongly consider the feelings of readers from different religions, this is indicated by a score of 3.33. In addition, consideration of cultural diversity in Indonesia when using social media, as well as feelings from different ethnicities, and different political views are also quite widely applied. Regarding the *Digital Culture Pillar* , 92.39% of respondents consider the feelings of readers who have different political views.

From the pillars that form the Digital Literacy Index, the average score is calculated to get the pillar score, and then the four pillars are calculated on average to get the Digital Literacy Index score. The Pillar 1 score is 3.32, the Pillar 2 score is 2.96, the Pillar 3 score is 3.04, and the Pillar 4 score is 3.22. These four

pillars are included in the moderate category, which means that the level of understanding and knowledge of the Indonesian people regarding these four aspects is included in the moderate level. Based on the scores of the four pillars, the Digital Literacy Index of High School Students or equivalent in the Bogor Regency area shows a figure of 3.14. This is quite high when compared to the Average Digital Literacy Index of West Java which is 3.47 (scale: 1-5) or 2.78 (scale: 1-4).

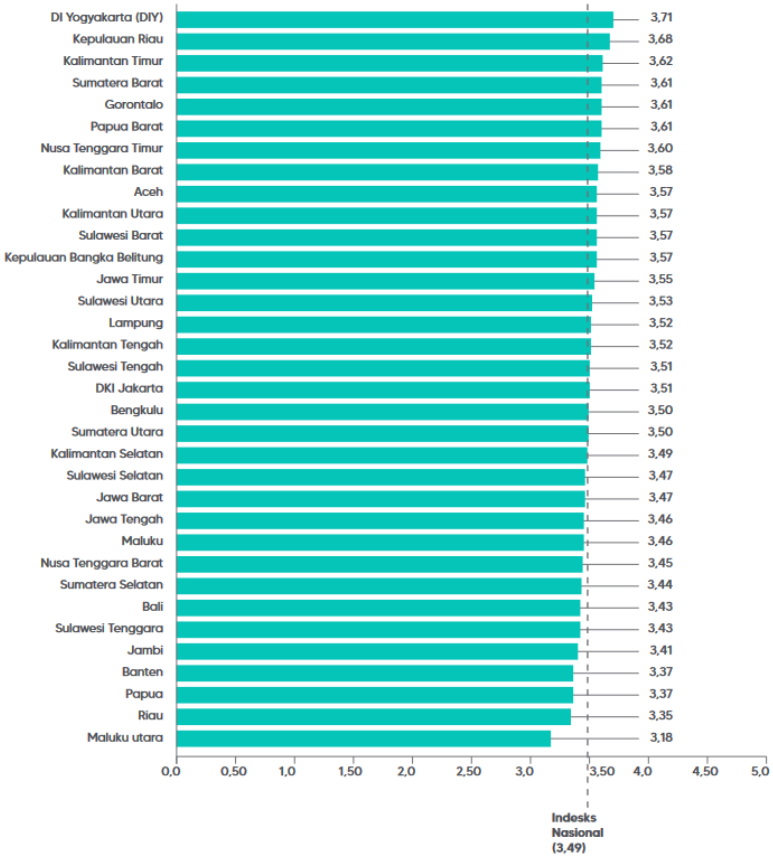

Figure 6 : Results of the National Digital Literacy Index survey (2021

CONCLUSION

From the results of the analysis of the survey that has been conducted, it can be concluded that in general the digital literacy of high school students or equivalent in Bogor Regency is quite good. This is indicated by the Digital Literacy Index which shows a score of 3.14. Of the four pillars that make it up, three pillars are in a condition close to the average while pillar 3 *Digital Ethics* is in the lowest condition.

Further literacy is needed for high school students or equivalent in Bogor Regency, especially regarding digital ethics so that their understanding can be improved and their behavior in cyberspace is more in accordance with what it should be.

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