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Digital Literacy Ability of Students of Biology Education Study Program FSTT Undikma

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Abstract: This study aims to understand the condition of digital literacy skills of S1 students of the biology education study program, Faculty of Science, Engineering and Applied (FSTT) Mandalika University of Education (Undikma). Cross-sectional study with a survey method that aims to analyze variable data collected at a certain point in time throughout the sample population or a predetermined subset. The population of this study is all active Biology Education study program students as many as 212 students. The research sample amounted to 86 students as respondents obtained by accidental sampling techniques. This research instrument is in the form of a google form-based student digital literacy mastery questionnaire, which is given online. The results of the study on each indicator are the Access indicator of 58.1% of students' goals to access the internet to complete assignments, 91.9% using mobile phone media, 40% using subjects as search points, and 67% using complete search keywords to access information from the internet. In the Analyze and Evaluate indicator, 60.5% read and understand the information thoroughly and 48.98% read the information thoroughly and the sources used. In the Create indicator, the new form of information created by students is with 41.9% making research reports, 36.0% using Microsoft Office devices, and 51.2% in the form of writing. The Reflect indicator is the largest percentage of respondents to respect and maintain a code of ethics when accessing information accessed from the internet with a magnitude of 65.1% listing the source of information cited appropriately and 75.6% ensuring the correctness of the information and using as needed. Indiator Act, the actions of college students after accessing and using the internet with 46.5% using information to solve problems and 34.9% to make presentations in public. Based on this description, it can be concluded that students' digital literacy skills have reached the good category.

Keywords: Ability; Digital literacy; Students.

Introduction

In the digital age, the development of information technology and digital content has had a significant impact on most of daily life. It covers almost every aspect of life. At this time, most of the humans now rely on these digital devices to get work done, for example finding the fastest route to the destination, connecting with relatives and friends or even building relationships and business of a company.

Having good skills or understanding is urgently needed to "survive" in a digital environment, not only the ability to use software to perform the necessary tasks, but also includes the ability to assess trustworthy online sources, identify biased web content, share and integrate digital information, build new knowledge and communicate with others and others (Greene et al., 2014; Martin & Grudziecki, 2006). This skill in literature is referred to as "digital literacy".

Digital literacy is a life skill that must be possessed by students in the 21st century (Leahy et al., 2016; UNESCO, 2011). Digital literacy not only involves the ability to use technology, information, and communication devices, but also the ability to socialize, the ability to learn, and have an attitude, think critically, creatively, and inspirationally as digital competencies (Febliza & Oktarian, 2020).

Research on digital literacy has been widely carried out including: research conducted by the Digital Literacy Activist Network (JaPeLiDi). The study

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mapped the digital literacy movement map in Indonesia with studies covering actors, various activities, target groups and partners. The findings of the study concerned digital literacy actors, namely: universities at 56.14%, were the main actors or motors in the digital literacy movement followed by the government at 14.34%, various communities at 13.52%, and non-governmental organizations at 5.32%, and schools and corporations at 3.68% each. In terms of activities, socialization is the most frequent activity, with a percentage of 29.64%, adolescents and students (29.55%) are the most dominant target groups that are the reach of literacy activities, and the partners most involved are schools with a percentage of 32.07% (Kurnia et al., 2017). Based on the findings obtained by JaPeLiDi, it can be seen that the highest digital literacy actors are universities at 56.14%, this shows that there are still high digital literacy actors at the university level.

Digital literacy is essential for learners in higher education must address the incorporation of digital literacy as a basic and core competency (Murray & Pérez, 2014). Students who are said to be digitally literate are learners who are able to access, manage, integrate, evaluate, and create information (Jongsermtrakoon & Nasongkhla, 2015; Wilhelm, 2006). In addition, digital literacy includes cognitive, socio-emotional and technical abilities to use digital technology by realizing continuous changes and dynamics in culture and communication (Murtafi'ah & Putro, 2019). Yazon, Ang-Manaig, Buama & Tesoro (2019), define digital literacy as the ability to operate a computer and access resources for daily use. Meanwhile, according to Akayoglu et al. (2020), digital literacy can be interpreted as skills on how to use digital tools (technical) and skills in using tools for professional and personal (functional) gain. Otieno (2020) views digital literacy as the application of communication technology in a network or online.

Digital literacy competencies cover many domains with diverse models (Techataweewan & Prasertsin, 2018). Furthermore, Techataweewan and Prasertsin (2018) explained that the Department of Education of Thailand mapped four main digital literacy indicators consisting of technology, critical thinking, collaborative work, and social awareness skills. In addition, Bawden (2008) describes digital literacy consisting of ICT skills, information literacy about information evaluation, media literacy, and internet or network literacy. Alkali and Amichai-Hamburger (2004) and Eshet (2012) formulated six frameworks of thought in digital literacy are as follows: Photo-visual digital skills, Digital skills, Branching digital skills, Information digital skills, Socio-emotional Digital skills, and Direct digital skills. Digital literacy needs to be used individually or collaboratively in networked, computer-supported, and web-based environments for learning, working, or relaxing (Karpati, 2011).

Ensuring the quality of the learning process is the responsibility of universities. Evaluation of the need for online learning needs to be carried out for at least one semester so that the learning concepts in this new normal era are of high quality. Considering that in the digital world there is so much and a variety of information available, students are required to be smart in choosing and sorting information during search, so that the process is effective and efficient as well as the type of information content obtained so that it is in accordance with the information needs of users. This ability is needed so that users do not have difficulties in the process of independently searching for information.

Based on the assignments that researchers due to students of the Biology Education Study Program, some students are still struggling and confused about how to access the information needed to complete the task, not infrequently the information that appears is not in accordance with what is needed. Departing from this problem, this study aims to see an overview of the digital literacy skills of students of the FSTT Undikma biology education study program.

Method

Cross-sectional study research with survey method that aims to analyze variable data collected at a certain point in time across a predetermined sample population or subset (Fraenkel and wallen, 2012). The variable in this study is the digital literacy ability of students, especially the biology education study program FSTT Undikma. The research population is all students of the FSTT Undikma biology education study program who are active as many as 212 people. A research sample of 86 students (respondents) was obtained by accidental sampling technique, which is a method of taking samples accidental with respondents who happen to be or available somewhere according to the research context (Sugiyono, 2012). The instrument of this study is a google form-based questionnaire, which is given online to respondents. The data is grouped based on the dimensions researched after which it is concentrated using the following formula:

$$P = \frac{f}{n} \times 100\% \quad (1)$$

P = Persentage
f = Number of Respondent's Answer
n = Number of Samples

Result and Discussion

This study involved 212 students of the Biology Education Study Program FSTT Undikam as respondents. Data on students' digital literacy is processed using a google form-based questionnaire,

which is given online. The following are the results of research obtained from filling out a questionnaire by 86 students of the FSTT Undikma biology education study program which includes five digital literacy competencies according to Hobs.

Access

The first indicator is access, which is the ability of students to access information related to the process of finding and operating media and technology proficiently and disseminating appropriate and useful information directly to others. Students' digital literacy skills in the indicator consist of four statements that can be seen in Figure 1 to Figure 4.

What is the purpose for which you are accessing information from the internet? 86 answers

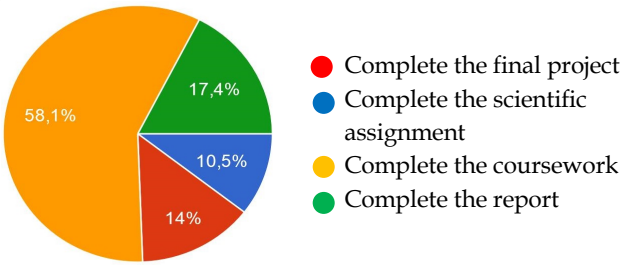

Figure 1. Graph of respondents' goals in accessing information

Based on Figure 1, it can be seen that the purpose of most students (respondents) accessing information via the internet is to complete assignments by 58.1% (yellow), furthermore, the goal of students accessing information is to complete reports 17.4% (green), complete scientific papers 14% (red) and complete final assignments 10.5% (blue).

Respondents accessing information from the internet is mostly to complete lecture assignments given by lecturers and have a predetermined completion time limit. This finding is in accordance with the findings of Komimfo (2020), namely that one of the motivations for adolescents to access the internet is to find information to complete tasks. This is also in accordance with the American Library Association (ALA) (2013) and Hobbs, Renne (2010) regarding digital literacy, namely, a person's ability to use the internet network to obtain information and then evaluate the information will be suitable for the need to be reused to create new information. This can be interpreted that through the digital world (internet) students get a very wide space to be able to obtain (access) as much information as possible more easily. Even the novelty of information through articles contained in online journals is needed in compiling students' final projects. Thus, it can be concluded that the ability to access information is very important for students to support the lecture process and is a skill that must be quasi-qualified in today's digital era.

What media do you use to access information from the internet? 86 answers

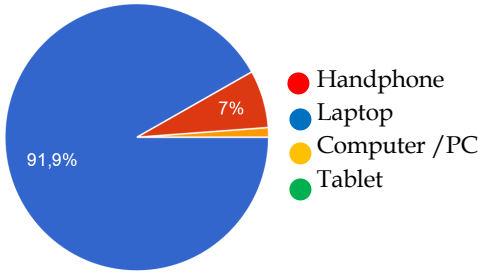

Figure 2. The media graphic used by respondents to access information

Based on Figure 2, it can be seen that 91.9% (blue) of respondent access information from the internet using a cellphone, 7% (red) use a laptop and 1.1% (yellow) use a computer library and tablet.

Students mostly access information using mobile phones. This finding is in accordance with the results of the Komimfo survey (2017), hanphone users based on education, namely 93.02% of mobile phones are used by students. This happens because mobile phones currently have many features (applications) that can support the information retrieval process effectively and efficiently and minimize the use of time (Brian, 2015). In addition, Daeng, Mewengkang and Kalesaran (2017), found that students choose to use smartphones because they can access the internet easily, including many applications, most of which can support their daily activities, especially their activities as students, namely in the lecture process. Based on this, it can be concluded that smartphones are the most widely used media for students to access information from the internet because they can be carried everywhere so that the process of accessing information can be done more easily.

The access point you use to browse information on the internet is? 86 answers

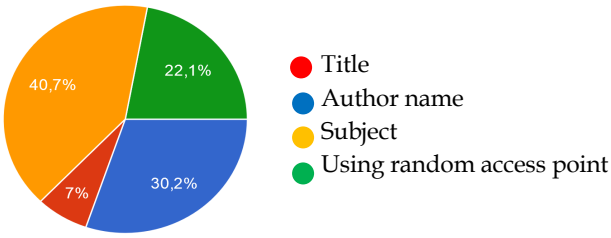

Figure 3. Graph of access points to browse information

The diagram in Figure 3 can be understood that the highest percentage of respondents' access points to browse information from the internet is 40% (yellow) using the subject as the search access point followed successively with 30.2% (blue) using the collection title, 22.1% (green) using a random-access point and 7% (red) using the author's name as the search access point.

Based on this data, it can be interpreted that students can more easily access information by directly

using the subject as a search type on search engines. Fundamental to internet search capabilities is the informant's understanding of the internet itself. This finding is in accordance with Firdaus et al. (2020), stating that the subject access point is a phrase to represent certain information so that it will make it easier to find information. Based on this description, it can be concluded that an understanding of the internet is needed by everyone, especially S-1 students of the Biology Education study program who use the internet in the digital era so that the internet can be used appropriately and optimally.

How do you make it easier to find information from the internet? 86 answers

Based on the diagram in Figure 4 shows the yellow part occupying 67% using complete search keywords to access information from the internet. Furthermore, the blue and red sections were respectively 17.4% and 10.5% of respondents used the term and set up the advanced search feature as a way to access information from the internet. The smallest part of the diagram is that green respects 4.7% of the ways respondents access information from the internet.

The findings are in line with Agustin and Krismayani (2019), who found that students before searching first determine keywords so that it is easier to find information on search engines. From this description, it can be interpreted that students use more search keywords to access information from the internet, this can help students more easily find information relevant to the lecture material. Thus, students will be able to facilitate the completion of their coursework.

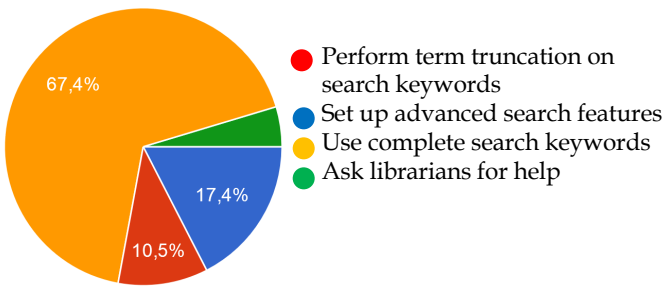

Figure 4. Graph of respondents' ways to make it easier to find information

Analyze and Evaluate

The ability to analyze and evaluate is related to the process of processing and understanding the content of information and being careful to analyze the quality and validity of the message, assessing the accuracy of the author with various points of view and considering the influence of the message to be used.

How to ensure relevant information for your use? 86 answers

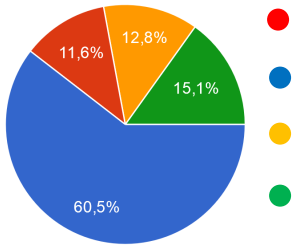

Figure 5. Diagram of how respondents ascertain relevant information for use

Based on the data in Figure 5, it can be seen that the way respondents ensure that the information obtained from the internet is the largest percentage of respondents addressed by blue, namely respondents with a percentage (60.5%) by reading and understanding information thoroughly. The second largest percentage is addressed by green, namely respondents with a percentage (15.1%) ensuring information according to needs. The color yellow is greater than red, namely respondents with a percentage (12.8%) reviewed the information obtained. The smallest data was obtained by the color red which showed respondents with a percentage (11.6%) comparing with similar information.

The findings are in line with the revelation of the University of Illinois at Urbana-Champaign (2021), namely the ability to operate digital technology, correspondence instruments and networks to investigate, assess, utilize, and produce information in various formats from many roots when presented through a computer so that a person in carrying out responsibilities effectively, and can assess and apply new skills gained from the digital area. From this description, it can be understood that, S-1 students of the Biology Education Study Program understand the information obtained by reading and understanding information thoroughly. This is done considering that the internet provides a variety of information for one search theme, thus understanding the information by reading thoroughly from the content of the information is the best way to obtain the information needed relevant to the lecture material.

How do you ensure the correctness of the information you obtain from the internet? 86 answers

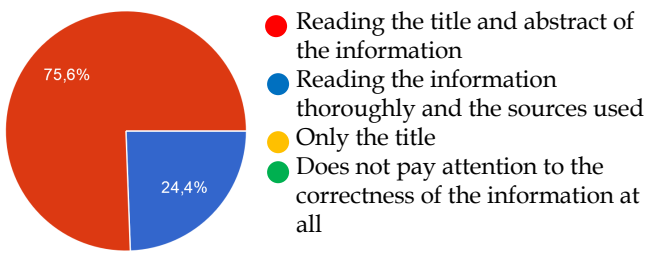

Figure 6. Diagram of how respondents ascertain the correctness of information obtained from the internet

From Figure 6 it can be understood that to ensure the correctness of the information obtained from the internet the most data is addressed by the red part with a percentage (48.98%) reading the information thoroughly and the sources used. Next followed by the blue part with a percentage (46.94%) that is reading the title and abstract from the information. Meanwhile, the other two data do not include the way students ensure the truth of information obtained from the internet.

Based on these data, it can be understood that to understand the information obtained from the internet, respondents read the title and abstract of the information. This is in accordance with the opinion of Beethman, Littlejohn, & McGill (2009), that digital literacy skills are a person's ability to obtain, interpret, manage and allocate the knowledge gained.

Create

Content creation is the ability of students to use the internet to find information that includes writing activities or producing content using creativity and confidence to express themselves, supported by awareness of the purpose of creating the content. To find out student content creation activities in using the internet, it can be seen in Figures 7, 8 and 9.

What new forms of information do you create from the information you obtain from the internet? 86 answers

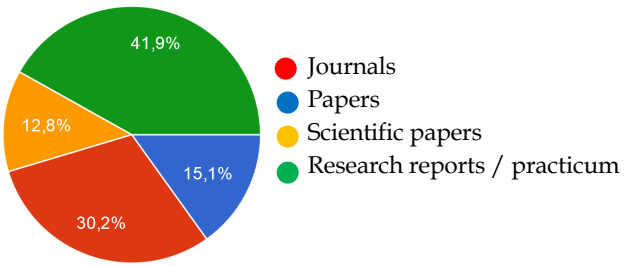

Figure 7. Diagram of a new form of information created by respondents after obtaining information from the internet

Based on Figure 7, it can be seen that the new form of information created by respondents after getting information from the internet is the largest percentage addressed by the green section, namely with a percentage (41.9%) making a research report. The second largest red section with a percentage (30.2%) creates a form of information in the form of a paper.

The blue section indicates that respondents with a percentage (15.1%) created a journal. The smallest percentage is intended by the yellow part of the new information created in the form of scientific papers, namely with a percentage (12.8%).

Based on the data mentioned above, it can be interpreted that 41.9% of respondents created a new form of information in the form of research reports after getting information from the internet. Only a small part creates a form of information in the form of scientific papers.

What devices do you use to create new information? 86 answers

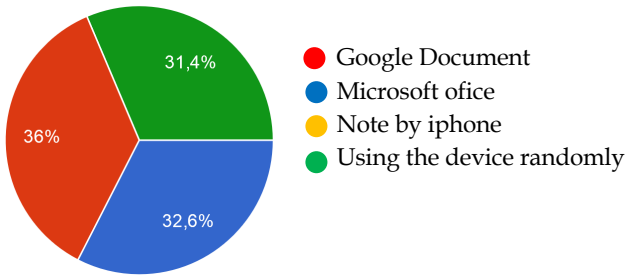

Figure 8. Diagram of the device that respondents use to create new information

Based on Figure 8, it can be understood that the devices used by students to create new information from the internet are the largest part of the red color, namely with a percentage (36.0%) using Microsoft Office devices. The blue part, which is a percentage (32.6%) uses google documents to create new information. The green part is a percentage (31.4%) using random devices. The unselected part is yellow with a percentage of 0%. From this data, it can be interpreted that most respondents with a percentage (36.0%) use Microsoft Office devices to create new information from the internetBased on Figure 8, it can be understood that the devices used by students to create new information from the internet are the largest part of the red color, namely with a percentage (36.0%) using Microsoft Office devices. The blue part, which is a percentage (32.6%) uses google documents to create new information. The green part is a percentage (31.4%) using random devices. The unselected part is yellow with a percentage of 0%.

From this data, it can be interpreted that most respondents with a percentage (36.0%) use Microsoft Office devices to create new information from the internet.

What kind of content do you usually create from the information you get from the internet? 86 answers

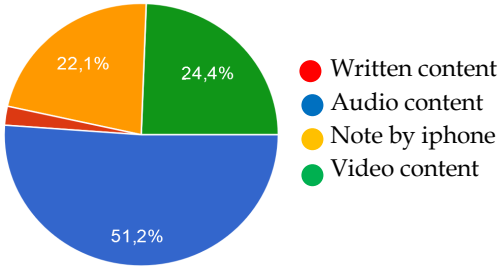

Figure 9. Diagram of the type of content that respondents usually create after obtaining information

From Figure 9, it can be seen that the largest data is aimed at the blue part, namely with a percentage (51.2%) creating written content after getting information from the internet. The green part with a percentage (24.4%) creates information randomly. The yellow part with a percentage (22.1%) creates video content. Only the red part with the smallest percentage (2.3%) creates audio content.

From the data mentioned above, it can be interpreted that the majority of students create a type of information content packaging in the form of writing, namely with a percentage of (51.2%). Only a small percentage of respondents created content with audio content information packaging.

Reflect

Reflection is the ability of students to use the internet in applying social responsibility and ethical principles of their own identity and life experience in their communication behavior. To find out the student's reflection ability before using information from the internet can be seen in Figures 10 and 11.

What do you do to appreciate the work of others obtained from the internet? 86 answers

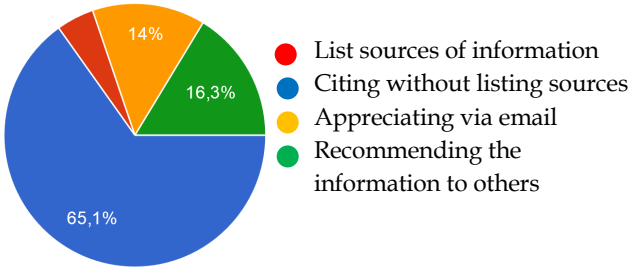

Figure 10. Diagram of how respondents appreciate the work of others who have been accessed from the internet

Based on Figure 10, it can be seen that the largest percentage of respondents to respect and maintain a code of ethics when accessing information accessed from the internet is intended by the blue section, namely with a percentage of (65.1%) listing the sources of information cited appropriately. The amount of the green part is the percentage (16.3%) by recommending the information to others. The size of the yellow part (14%) appreciates directly through the author's email and DM. The smallest amount of data obtained is aimed at the red part (4.6%) by quoting works without the need to include reading sources.

From this data, it can be interpreted that in general, respondents with a percentage (65.1%) are to list the sources of information that are written appropriately. Only a small percentage of respondents cited works without the need to list reading sources.

What is your Action after obtaining information from the internet? 86 answers

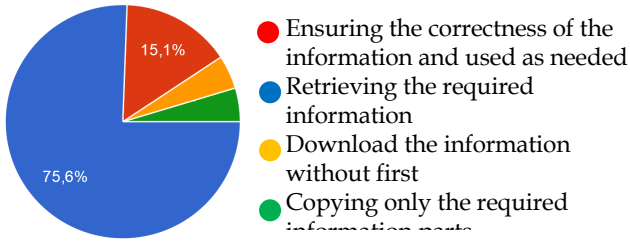

Figure 11. Diagram of respondents' actions after getting information

From Figure 11, it can be seen that the actions taken by respondents after obtaining information from the internet the largest percentage of data is addressed by the blue section with a percentage (75.6%) ensuring the correctness of the information and using as needed. The red part is with a percentage (15.1%) taking the information needed. A total of two sections with yellow and green colors have a percentage equal to the percentage (4.65%) by copying only the required information and downloading the information without first identifying.

From this data, it can be interpreted that most respondents with a percentage (75.6%) ensure the correctness of the information and use it as needed. Few respondents took the information without first identifying or copying the required pieces of information.

Act

Action is the ability of students to use the internet to work individually and together to share knowledge and solve problems in the family, workplace and community, and participate as members of the community. To see student action after getting information from the internet can be seen through Figures 12 and 13.

What actions do you take after accessing and using information from the internet? 86 answers

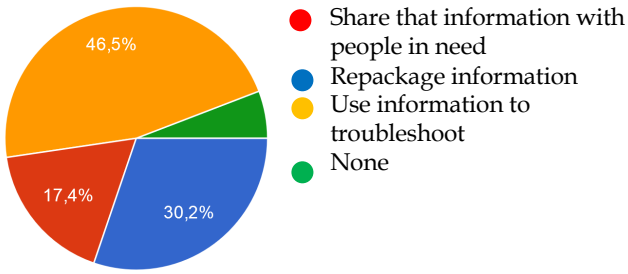

Figure 12. Diagram of actions respondents take after accessing and using information from the internet

From Figure 12, it can be seen that the results of obtaining the largest data on respondents' actions after accessing and using the internet are addressed by the yellow section, namely with a percentage (46.5%) using information to solve problems. The blue section data is with a percentage (30.2%) sharing the information with the public in need. The red section data shows the percentage (17.4%) by repackaging the information. The smallest data acquisition is intended by green data, namely with a percentage (5.9%) of respondents choosing not to take any action after accessing information from the internet.

From the data in the figure, it can be interpreted that most respondents, namely with a percentage (46.5%) use the information obtained to solve the problem. Few respondents shared the information with the public in need, repackaged the information and did not take any action after accessing the information on the internet.

How do you share new information you've gained from the internet? 86 answers

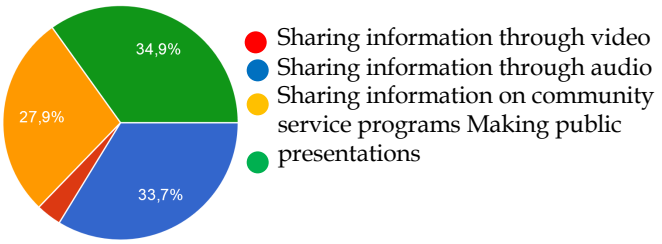

Figure 13. Diagram of how respondents share new information from the internet

From the data in Figure 13, it can be understood that the largest data obtained is intended by green data, namely with a percentage (34.9%) by presenting in public. The data is blue, with a percentage (33.7%) sharing information via video. The yellow data shows the percentage (27.9%) by sharing information on community service programs. The smallest data acquisition is aimed at the red part, which is the percentage (3.5%) of sharing information via audio.From this data, it can be interpreted that the largest percentage (48.98%) shared information by presenting in public. Few respondents shared information via audio.

Conclusion

Based on the results and discussions that have been described previously, it can be concluded that the analysis of digital literacy skills of students of the FSTT Undikma Biology Education Study Program is based on all indicators with good categories.

Acknowledgments

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