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Analysis of Digital Literature on Students in Faculty of Teacher Training and Education as a Prospective Teacher

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A B S T R A C T

This research is to reveal how the ability to use and understand digital literacy of students as prospective teachers in FKIP. This is in line with the digital literacy program launched by the Ministry of Education and Culture in 2018. The method used is descriptive quantitative. As the main data in the form of student questionnaire answers that utilize electronic questionnaire instruments distributed through social media. The population of this research is active students at FKIP University Dr. Soetomo Surabaya with a sample size of 140 is random sampling, with an error rate of 4.5%. Data analysis by converting the attitude scale in a value scale of 1-5, to calculate the average value as a generalization of the research results. The results showed that the students' ability in digital literacy was at a level between quite capable and capable. As for those who have reached the fully capable level in the aspects of using search engines of data, creating good communication on the internet, especially on social media, and understanding the existence of internet ethics, copyright issues and plagiarism.

1. Introduction

Indonesia as an international city has entered the era of rapid development of digital technology. This was stated in the opening of the Ministry of Education and Culture's directive that one of the changes in the world was influenced by technological advances (Indonesian Ministry of Education and Culture, 2018). Since the beginning of the twenty-first century, changes in digital technology have accelerated beyond any other field. With this development, in the twenty years after 2000, various inventions in the field of information technology to the present day have been discovered. Digital technology brings various changes in all fields, not just the industrial sector. With the development of digital technology, human work is expected to be easier, more accurate, accurate, and faster in finding solutions for meeting information needs. The rapid and rapid flow of information dissemination in digital form, especially with the help of the internet, makes it easier for users to be able to access any information anytime and anywhere (Havana, 2016). The existence of the internet and all the applications that accompany it are tangible manifestations of the development of information technology today (Sumartono et al., 2020).

The presentation of information in digital form is expected to be easy to access by anyone, anytime, and anywhere. There are many books and abundantly presented in the form of e-books in other words electronic books. So the world of education is

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accustomed to exploring electronic books, electronic journals, electronic learning systems. Especially now, because of the COVID-19 pandemic, which requires online learning, so digital (internet) networks are very important. Learning like it or not, whether we like it or not, is done with a network system using digital technology. Along with the rapid development of the era in the field of information and communication technology, as well as the demands of the times that require the Indonesian people to be technology literate immediately, where the internet is an abundant container for all information, the government immediately made the guidelines contained in the digital literacy support materials (Indonesian Ministry of Education and Culture, 2017). The material describes digital literacy from various references, literacy movements at school, in the family, in the community. Of course, this supporting material is useful for the direction of Indonesian education in welcoming the increasingly rapid progress of the era in the digital era.

The term digital literacy popularized by Gilster (Indonesian Ministry of Education and Culture, 2017) is the ability of individuals to understand and use various information in multi formats from the abundance of variations on information sources presented through computer systems. In UNESCO's sheet, digital literacy refers to a person's broad ability to work and strive using all digital devices, as well as in selecting and sorting out the right tools to use in completing the tasks that must be completed (UNESCO, 2018). Digital literacy includes all types of digital manipulation, such as data management, objects, media, to handle information, communication, calculations, and even modifications.

In the digital literacy support material launched by the Ministry of Education and Culture, it is indicated that there are eight essential elements to develop digital literacy. These eight elements are quoted from Belshaw (Indonesian Ministry of Education and Culture, 2017), namely: 1) cultural elements, namely understanding the various contexts (cultures) of users of the digital world; 2) cognitive elements, related to thinking power in assessing content; 3) constructive elements, related to creativity to produce something actual; 4) communicative elements, related to understanding the performance of networks and communications in the digital area; 5) responsible self-confidence element; 6) creative, relates to doing new things in new ways; 7) critical in addressing content, and 8) socially responsible.

Indonesian Ministry of Education and Culture also provides a design for digital literacy indicators in schools, in the family, and the community (Indonesian Ministry of Education and Culture, 2017). The digital literacy indicators in schools are divided into three bases, namely the class base, the school culture base, and the community base. For the class base, there are at least three indicators, including 1) digital literacy followed by principals, teachers, and education staff; 2) the intensity of the application and use of digital literacy in learning activities; 3) there is an understanding of the use of digital media and the internet by principals, teachers, education staff, and students.

For students of FKIP Dr. Soetomo University, who incidentally is a prospective teacher, is inevitably required to be proficient in digital literacy. However, the demands of teachers in the future are no longer awkward and stuttering in the digital world. Moreover, there has been a national digital literacy movement launched by the Ministry of Education and Culture in 2017 in a series of activities for the national literacy movement. Materials supporting digital literacy in the national literacy movement (Indonesian Ministry of Education and Culture, 2017), include the target direction for digital literacy in schools, in the family, and the community. So as prospective teachers who will later bring about change for students, FKIP students are required not to stutter about digital literacy.

All forms of information with abundant electronic

sources in digital networks must be able to master how to access and process it for prospective teachers. Electronic sources according to Wikoff (Nurrizqi et al., 2020) include databases, collections of electronic journals, electronic books, electronic source management systems, and all connected digital technologies. Likewise, in responding to free digital content, prospective teachers must also understand, be observant, and be careful and wise. Prospective teachers in the digital era are also expected to be able to produce and innovate using digital applications to write and be creative in a positive way. Therefore, it is necessary to analyze how the behavior and understanding of FKIP students as prospective teachers in digital literacy.

For more details on the use of digital literacy, it includes the habit patterns of student activities as prospective teachers, searching for data, evaluating and assigning data, uploading and downloading data, communicating on social media, writing and getting ideas from the internet, compiling knowledge and self-study. In terms of understanding, FKIP Unitomo students in digital literacy include understanding data search engines, understanding hypertext functions, understanding types of electronic sources, understanding data accuracy, understanding the use of digital literacy time, understanding legal, social, and economic risks, as well as understanding the data protection and plagiarism matters. The purpose of this study is to describe the use and understanding of digital literacy for FKIP Unitomo students.

This research method uses quantitative descriptive research, used to examine certain populations or samples, by providing an overview of the object under study through the collected samples as they are and making generally accepted conclusions (Sugiyono, 2016). The research data source is in the form of questionnaire results distributed to active FKIP students online in the 2021-2020 academic year. Research data in the form of student answer choices in multiple-choice questions. Students are only allowed to choose one answer for each question. The population in this study consisted of active students of FKIP University Dr. Soetomo Surabaya for the 2021 academic year, majoring in Indonesian Language Education and Mathematics and Natural Sciences Education. The sample used is by using a random sampling technique, regardless of gender, class, economic level, cultural and ethnic background. The number of sampling in this study was 140 respondents' answers with an error rate of 4.5%. Thus, the level of truth from the survey results to respondents is 95.5%.

The data collection technique used in this research is by using electronic questionnaire distribution techniques to respondents by utilizing social media. For data analysis, this study used descriptive statistical analysis techniques. Respondents' answers in the form of an attitude scale, are converted into a certain score or value to calculate the frequency that appears. The conversion of the attitude scale is described in table 1.

2. Methods

Table 1. Attitude scale conversion

Indicator	Conversion Value
Strongly disagree	1
Do not agree	2
Just agree	3
Agree	4
Strongly agree	5

After being converted in the form of a score, then the data is interpreted descriptively using diagrams, percentiles, and the mean for each variable. The results of the average value can be used as a reference

for the quality of use and understanding of digital literacy in students. As for the validity of the research results, using triangulation between the research team and colleagues who are experts in the field of educational technology.

3. Results and Discussion

After collecting data in the form of respondents' answers through electronic questionnaires distributed through social media, 140 respondents' answers were obtained. In the results of the respondents' answers, regarding the statement of their level of agreement when they get lecture assignments, they often look for answers on the internet, as shown in the table 2. The attitude scale can be described on a continuum in figure 1.

Table 2. Average level of internet usage to complete tasks

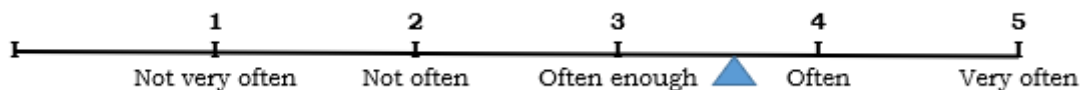| Attitude scale	Score conversion	Number of respondents	Total score	Average
Not very often	1	0	0	570:140 = 3,6
Not often	2	14	28	
Often enough	3	43	129	
Often	4	65	260	
Very often	5	18	90	
Total		140	507	

Figure 1. Attitude scale Average level of internet usage to complete tasks

With the value shown on the scale of the level of internet use to complete lecture assignments, the average respondent is almost close to the frequent level. This is because most of the respondents consist of two majors, namely the Department of Indonesian Language Education and Mathematics and Natural Sciences Education. For respondents from the Mathematics and Natural Sciences Department, they do not often use the internet in completing lecture assignments. Therefore, the average use of the internet to complete coursework is in the category between quite frequent and frequent. The respondent's ability to use search engines such as Google, Mozilla Firefox and Microsoft Explorer, is shown in table 3. The attitude scale can be described on a continuum as follows in figure 2.

Table 3: Average level of ability to use data search engines on the internet

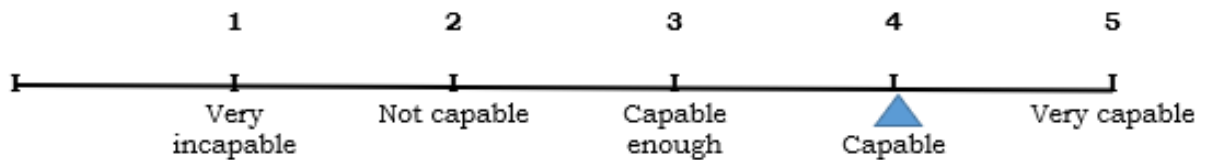| Attitude scale	Score conversion	Number of respondents	Total score	Average
Very incapable	1	0	0	572:140 = 4,08
Not capable	2	5	10	
Capable enough	3	15	45	
Capable	4	83	332	
Very capable	5	37	185	
Total		140	572	

Figure 2. Attitude scale mean level of ability to use data search engines on the internet

From the average results submitted by respondents, it can be concluded that respondents can use data search engines on the internet. With these results, it can be seen that the respondents are already familiar with the existence of data search engines available on the internet. The ability of FKIP students in terms of using keywords and setting limits is shown in the following table (table 4) and figure 3.

Table 4. Average skill level determines keywords and their limitations

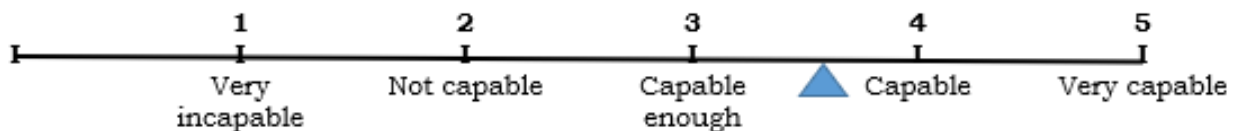| Attitude scale	Score conversion	Number of respondents	Total score	Average
Very incapable	1	2	2	512:140 = 3,65
Not capable	2	6	12	
Capable enough	3	40	120	
Capable	4	82	328	
Very capable	5	10	50	
Total		140	512	

Figure 3. Attitude scale mean ability level determines keywords and their limits.

From the average results, students still need to improve their skills in determining keywords and limitations when searching for data on the internet. Students should be able to fully define keywords and their limitations. The ability of respondents to evaluate information/data on the internet, and determine which data is needed, is shown in the following average table 5 and figure 4.

Table 5. The average level of student ability in evaluating data and determining data requirements

Attitude scale	Score conversion	Number of respondents	Total score	Average
Very incapable	1	0	0	548:140 = 3,9
Not capable	2	2	4	
Capable enough	3	32	96	
Capable	4	82	328	
Very capable	5	24	120	
Total		140	548	

Figure 4. The average scale of the respondent's ability to evaluate information and determine data needs

From the average results seen on the scale, FKIP students are close to the criteria for being able to evaluate information and determine the data needs they need. Only two respondents or 1.4% of 140 respondents felt they were unable to properly evaluate all information and determine data needs. The average value of the respondent's ability to create good communication can be seen in the following score conversion table and he attitude scale can be described on a continuum as follows.

Table 6. The average level of students' ability to create good communication

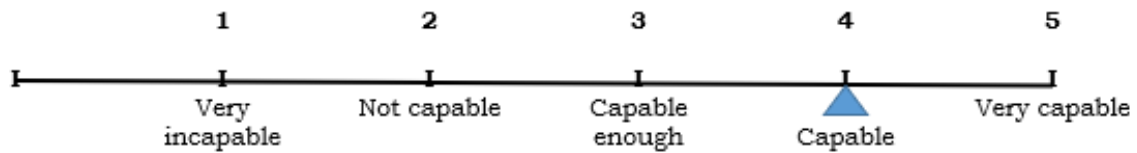| Attitude scale	Score conversion	Number of respondents	Total score	Average
Very incapable	1	0	0	564:140 = 4,02
Not capable	2	5	10	
Capable enough	3	21	63	
Capable	4	79	316	
Very capable	5	35	175	
Total		140	564	

Figure 5. The average scale of the respondent's ability to create good communication

From the average results displayed on the scale, FKIP students have reached the level of being able to create good communication. In this case, it still needs to be improved for 5 respondents or 3.5% of respondents who have a level of not being able to communicate well. The average value of respondents' abilities in independent learning from the internet, compiling their understanding and insight, is shown in the following score conversion table and in the ability category scale can be described on a continuum as follows.

Table 7. The average level of students' ability to learn independently from the internet

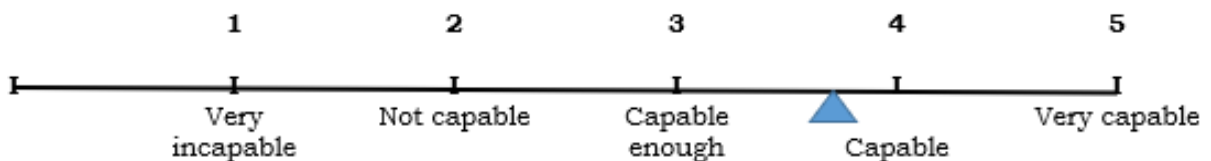| Attitude scale	Score conversion	Number of respondents	Total score	Average
Very incapable	1	0	0	537:140 = 3,8
Not capable	2	6	12	
Capable enough	3	34	102	
Capable	4	77	308	
Very capable	5	23	115	
Total		140	537	

Figure 6. Respondent's ability to study independently on the internet

On this scale, the ability of FKIP students to study independently, develop knowledge and insights independently from using the internet, approach the level of ability. There are still 6 out of 140 respondents (or 4.2%) who are not able to learn independently, compose knowledge and insights independently from the internet. In terms of understanding digital literacy, there are several main things that FKIP Unitomo students should have, namely: about the guiding aspect (hypertext); types of electronic sources; distinguish between accurate data and not on the internet; understanding of legal and social risk aspects regarding the use of information and producing communications on the internet; and awareness of copyright issues, data protection ethics, and plagiarism. The results of respondents on the aspect of understanding the guide (hypertext), are described in the following table.

Table 8. The average level of student understanding of hypertext on the internet

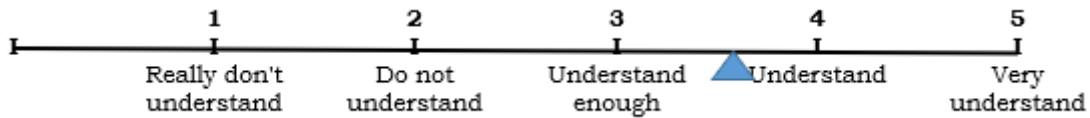| Attitude scale	Score conversion	Number of respondents	Total score	Average
Really don't understand	1	0	0	508:140 = 3,63
Do not understand	2	16	32	
Understand enough	3	37	111	
Understand	4	70	280	
Very understand	5	17	85	
Total		140	508	

Figure 7. The average scale of respondents' level of understanding about directions on the internet.

From the results of the scale, students' understanding of the level exceeds the intermediate value between moderately capable and capable. This is because there are about 16 out of 140 students or around 11.4% in the category of not understanding the existence of guides on the internet. Respondents who did not understand the use of hypertext never tried to press or click on the blue text on text on the internet.

In terms of understanding the types of electronic sources (for example electronic books, webpages, online journals, electronic mass media, blogs, social media), it is shown in the following table. In the category scale, students' understanding of various electronic sources on the internet can be described on a continuum as follows.

Table 9. The average level of student understanding of the types of electronic sources on the internet.

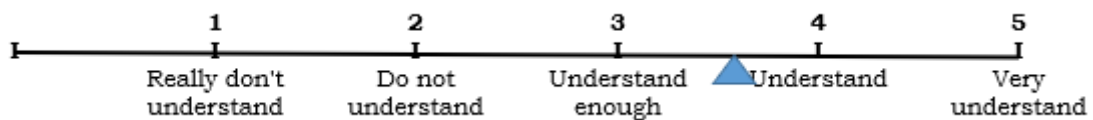| Attitude scale	Score conversion	Number of respondents	Total score	Average
Really don't understand	1	0	0	506:140 = 3,61
Do not understand	2	11	22	
Understand enough	3	50	150	
Understand	4	61	244	
Very understand	5	18	90	
Total		140	506	

Figure 8. The average level of respondents' understanding of the types of electronic sources on the internet.

For the aspect of understanding various electronic sources, FKIP students have not yet reached a complete level of ability, because their achievement scores are between quite capable and capable. There are 11 students or about 7.8% of the total respondents who are at the level of not understanding the existence of various electronic sources on the internet. With the abundance of data on the internet, it certainly requires the ability to examine the data or information contained in it. The truth, accuracy, and level of importance or not of data need to be observed by students. Using correct and accurate data is an important requirement in the academic world. In terms of understanding accurate and inaccurate data, true or false (hoax), important and unimportant on the internet, respondents' answers are shown in the following table. In the category scale, students' understanding of recognizing the accuracy and truth of data on the internet can be described on a continuum as follows.

Table 10. The average level of student understanding recognizes the accuracy and truth of data on the internet.

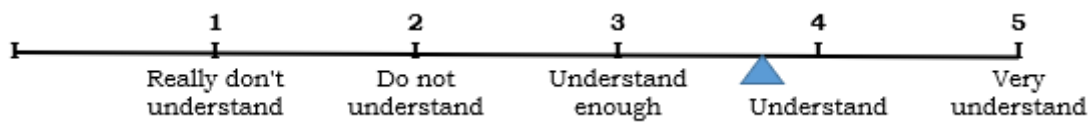| Attitude scale	Score conversion	Number of respondents	Total score	Average
Really don't understand	1	0	0	525:140 = 3,75
Do not understand	2	6	12	
Understand enough	3	45	135	
Understand	4	67	268	
Very understand	5	22	110	
Total		140	525	

Figure 9. The average scale of the respondent's level of understanding recognizes the accuracy of the data on the internet.

By looking at the data scale, the average level of student understanding in recognizing various data, whether the data is accurate or not, true or false, important or unimportant, is at a level that is almost close to the understanding value. The average achievement has not reached the understanding value, because there are 6 respondents or 4.2% who do not understand in recognizing which data is accurate or not, data is true or false (hoax), or does not understand which data is considered important or not.

important. In the use of various information on the internet, especially in social media, there are legal risks (with the ITE Law) and also social sanctions that accompany internet users, especially social media. In the respondent's answer regarding the understanding of the existence of legal risks and social sanctions, it is shown in the following table. In the category scale, students' understanding of the existence of legal and social risks in surfing the internet, especially in social media, is described on a continuum as follows.

Table 11. The average level of students' understanding of legal and social risks in the internet

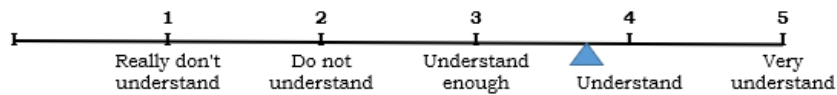| Attitude scale	Score conversion	Number of respondents	Total score	Average
Really don't understand	1	0	0	529:140 = 3,77
Do not understand	2	3	6	
Understand enough	3	40	120	
Understand	4	82	328	
Very understand	5	15	75	
Total		140	529	

Figure 10. The average scale of the respondent's level of understanding recognizes the accuracy of the data on the internet.

With the results of the average value shown on the level of understanding scale, students are almost close to the level of understanding even though they have exceeded 0.77 points from the value of quite understanding, which is 3.77 points. There are still 3 respondents or around 2.1% who are still in the category of not understanding the legal risks and social effects associated with digital literacy activities on the internet. Digital literacy also needs an understanding of digital literacy ethics, copyright protection, and understanding the problem of plagiarism. The respondents' understanding of this problem can be seen from the following table. In the category scale of students' understanding of digital literacy ethics, copyright protection, and understanding of the problem of plagiarism, it is described on a continuum as follows.

Table 12. The average level of student understanding of digital literacy ethics, copyright and plagiarism

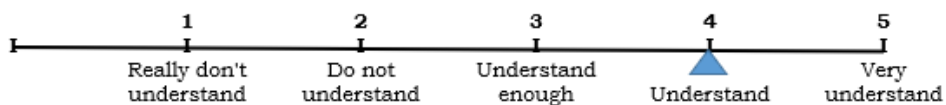| Attitude scale	Score conversion	Number of respondents	Total score	Average
Really don't understand	1	1	1	567:140 = 4,05
Do not understand	2	4	8	
Understand enough	3	18	54	
Understand	4	81	324	
Very understand	5	36	180	
Total		140	567	

Figure 11. The average scale of the respondent's level of understanding recognizes the accuracy of the data on the internet.

From the scale of understanding FKIP students about digital literacy ethics, copyright protection, and understanding the problem of plagiarism, they are already at the level of understanding. This level is still followed by 3.5% of the total respondents or 5 students who are in the category below quite understanding.

4. Conclusion

In this study, the level of digital literacy skills of FKIP Unitomo students in terms of using the internet in completing lecture assignments was quite frequent (with an average value of 3.6 on a scale of 1-5). The ability of FKIP Unitomo students is between quite capable and capable, not moving at an average value of 3.6 from an attitude scale of 1-5, namely the student's ability in aspects of determining keywords in searching data on the internet, understanding of directions (hypertext), and understanding of the types of electronic sources (e-source).

The ability of Unitomo FKIP students in the aspect of distinguishing data that is accurate or not, true or false, important or unimportant data at an average value of 3.75 (on a scale of 1-5), in the category between quite capable and capable. Not much different from the average value of 3.7 (from a scale of 1-5), in the category between quite capable and capable, namely in the aspect of students' understanding of legal and social risks in digital literacy, especially on the use of social media and the use of data on the internet. In terms of the ability to study independently through the internet, students are close to the level of ability, namely the average value of 3.8 (from a scale of 1-5). In the aspect of the ability to evaluate data on the internet and determine the data needed, the average value is 3.9 (from a scale of 1-5). FKIP Unitomo students are in the capable category, with an average value of 4 or more than 4 (from a scale of 1-5) seen in the aspects of using a data search engine, creating good communication on the internet, especially on social media, and understanding the existence of internet etiquette, copyright issues, and plagiarism.

For the academic community, considering the conclusions obtained, there is a need for self-improvement in digital literacy. FKIP students are prospective teachers who should at least be fully capable of digital literacy. Students need self-awareness to complete their competence in digital literacy aspects. This research can still be developed to examine from another point of view that is still related to digital literacy. The object of digital literacy research is still open for further research with different methods.

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