Measuring EFL Students' Digital Literacy in the Industrial Revolution Era 4.0

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ABSTRACT

This study is designed to explore the level of EFL students' digital literacy in using technologies to support their learning activities. The researcher employed a survey method in gaining the perspectives of one hundred and seven students from the English education department in one of the Islamic universities in Bengkulu. The researcher distributed the survey of digital literacy scale to be filled out by the respondents to get the data. The results were analyzed quantitatively using simple descriptive statistics by calculating the average value of all answers from thirty-six question items. The findings revealed that the students' digital literacy level was a good category, with an average score of 3.01. Moreover, the students were considered to have a good level of digital literacy overall. On the contrary, they still had low improvement, particularly in areas namely, critical thinking, connectedness, and creativity. Therefore, teachers ought to pay more attention to such issues because they are crucial, particularly for students to achieve the main components of the 4Cs (critical thinking, creativity, collaboration, and communication) in 21st-century learning.

Keywords: *EFL students; digital literacy; industrial revolution era 4.0; literacy; technology literacy*

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INTRODUCTION

The world is currently experiencing the fourth industrial revolution, a new wave of industrial revolution fueled by the development and spread of digital technology. With the advent of the industrial revolution era 4.0, new technologies such as the Internet of Things, Artificial Intelligence, and autonomous vehicles are being integrated into daily life and utilized by the industrial sector (Alkalai, 2004). The rising technologies of the fourth industrial revolution have drastically altered how people live and work.

One important aspect that should be taken into account when using technology is digital literacy (Martin, 2005; Rinekso, 2021). It has to do with the users' skill levels when it comes to utilizing digital tools. The users in question need to be capable of making intelligent use of technology in order to foster constructive relationships and communication (Warschauer & Matuchniak, 2010). Additionally, Rizqiana (2021) and Yu (2022) state that digital literacy is the knowledge and ability to use digital media, communication tools, or networks to seek, use, and create information and to employ it in a way that is shrewd, intelligent, cautious, exact, and law-abiding in order to facilitate communication and interaction in everyday life.

In the educational area, the integration of technology and language learning can aid the teaching and learning process by allowing teachers to design appropriate lessons creatively. On the other hand, students appear to be easily able to increase their learning through the use of technology, especially in the English as a Foreign Language (EFL) classroom in which students learn four language skills: listening, speaking, reading, and writing. The students will easily learn and comprehend the information related to English materials provided from many sources available on the internet. At this point, they must be capable of comprehending the device so that they can have a better result in learning English. As a result, the greater their digital literacy, the better they can use technology for learning.

However, some students are able to use it while others are unable to. The question will then turn to how they will operate it. In accordance with these descriptions, digital literacy is regarded as an important factor in academic settings, particularly in English language teaching and learning. According to Harris (2015), digital literacy includes how people participate in community life as well as obtaining additional education and training. Therefore, it can be said that digital literacy can be included as an important skill in the classroom to improve students' learning process.

A framework for digital literacy that was used in this research was proposed by Chen (2015) in the article by Amin et al. (2022). He stated that in order to utilize digital technologies and platforms in an efficient, responsible, and socially advantageous manner, one must possess

the following nine skills: communication, cooperation, critical thinking, creativity, citizenship, character, curation, copyright, and connection. Moreover, with regard to the application of digital literacy to be implemented in the classroom, there are seven primary components that need to be known and understood, and these are as follows: 1) software and hardware; 2) information and data literacy; 3) communication and collaboration; 4) digital content creation; 5) security; 6) problem solving; and 7) career-related competencies (Law et al., 2018). Each component is essential for students to have in order to be able to make sensible use of digital tools and gadgets in supporting the learning process. Because of this, having an awareness of digital literacy and working to improve one's skills in this area is of the utmost importance in the process of forming one's personality, such as the idea that was implemented in the digital era of 4.0.

The process of learning English, which is currently integrated with technology and digital media, still requires guidance, particularly in increasing digital literacy. This includes teaching students how to search for and filter relevant information, how to use social media platforms as a form of application and creativity from what they have learned, and how to be honest when taking information from the internet. It is these capabilities that need to be strengthened by educators and are expected to grow in students in order to form individuals who are academically successful, responsible, and knowledgeable in the use of technology.

To summarize, this research needs to be carried out in order for students to have the opportunity to acquire a high level of digital literacy when they are studying English as a second language in the years to come. Research on the level of digital literacy abilities possessed by students is still scarce in Indonesia, particularly in the province of Bengkulu. In this study, the researcher's primary objective was to determine the level of digital literacy skills possessed by the EFL students in one of the universities in Bengkulu. It is hoped that the findings of this research may, at some point in the future, serve as a model or reference for educators to use in the development of instructional resources that can help students become digitally literate when it comes to learning English. Students can develop their capacity to become self-directed learners when they frequently study this second language on their own. As a consequence of this pattern, the students will develop the ability to become self-directed learners, which will result in their being able to know both what they should learn and how they should learn it.

METHOD

This study employed survey research as the method that the researcher utilized to carry out this investigation. According to Cresswell (2012), survey research is a popular design in education. It entails quantitative research processes in which the researcher delivered a survey to a

sample or the whole population in order to describe the population's views, beliefs, habits, or traits. Thus, this type of design is suitable to be conducted in this research which aims to gather the information of students' perspectives toward their digital literacy skill in learning English.

The researcher collected quantitative numerical data using questionnaires which then was statistically analyzed the data to identify trends in responses to surveys and to evaluate research questions. In addition, the researcher analyzed the significance of the data by linking the statistical test's results to previous studies.

The respondents of this study consisted of one hundred and seven students taken randomly from every semester students of English Department Study Program at Islamic State University of Fatmawati Sukarno Bengkulu. In order to have a better understanding of the students' knowledge on their level of digital literacy, a questionnaire with a total of 36 questions was distributed to them by using Google Form. The questionnaire was adapted from Chan's (2015) work and has been validated previously. The measurements used in this study are by using a Likert scale with four options (i.e., strongly agree, agree, disagree, and strongly disagree).

The data collected from the questionnaire were analyzed quantitatively using simple descriptive statistics by calculating the average value of all answers from all question items. Finally, the data were organized to go through data interpretation where the results were interpreted to become findings by categorizing the scales into Very Good (3.26-4.0), Good (2.6-3.25), Less Good (1.76-2.5), and Very Poor (1-1.75) following Arikunto's (2003) theory.

RESULTS AND DISCUSSION

The aim of this study is to investigate the EFL students' digital literacy level in one of the universities in Bengkulu. The results of the analysis are presented in the table 1 below.

Table 1. Result of the Questionnaire

No.	Digital Literacy Aspect	Mean Score	Category
1.	Communication	3.03	Good
2.	Copyright	2.91	Good
3.	Critical Thinking	2.85	Good
4.	Character	3.91	Good
5.	Citizenship	3.18	Good
6.	Curation	2.92	Good
7.	Connectedness	2.61	Good
8.	Creativity	2.74	Good
9.	Collaboration	2.98	Good
	Average Score	**3.01**	**Good**

As shown in table 1, it shows that the EFL students at Islamic State University of Fatmawati Sukarno Bengkulu has understood the aspects digital literacy in using technology for supporting their English learning process. It can been from all nine aspects (communication, copyright, critical thinking, character, citizenship, curation, connectedness, creativity, and collaboration), they are categorized good, with average score for each aspect is 3.01.

The result for each component is explained the tables below:

Communication

One of the most important components of digital literacy is communication. It is just as important to be able to clearly express ideas, ask pertinent questions, show respect for the other person, and build trust when communicating in virtual environments as it is when communicating in person. This aims to improve students' speaking skills. The result of the communication aspect of digital can be seen in the table below:

Table 2. The Result of Students' Digital Literacy on Communication Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Communication	1.	I can easily read online content from the screen	3.15	Good
	2.	I prefer to print reading materials online for better reading.	2.97	Good
	3.	I can type quickly using both hands.	3.03	Good
	4.	I know how to write a formal email.	2.92	Good
	5.	I am very familiar with email delivery and formatting options.	2.83	Good
	6.	I interact via online audio-video calls.	3.29	Very Good
	7.	I enjoy listening online through headphones and speakers.	3.04	Good
		Mean Score	**3.03**	**Good**

The first aspect of digital literacy mentioned by Chen (2015) is communication. It can be seen from table 2, that most students have understood the shift of technology from reading the online texts, writing formal e-mail, interacting with society though audio-video online. The highest aspect can be seen on the practice of how they interact with people using audio-video call. It has the means score 3.29 (categorized as very good). Formerly, it is quite hard to imagine talking to people who are not around us by seeing their faces. But, now, since the advancement of technology, it could happen. Moreover, the Covid-19 pandemic has also brought benefits for educational system to be digitally literate to communicate with people using several kinds of Apps, such as Zoom, Google Meeting, Google Classroom which rarely to use before.

Copyright

The second aspect is copyright. It is about how students know the policies in using technology. The students need to understand about copyright in order to hinder them from plagiarism, taking someone's work on the internet without mentioning their names for the purpose to use it as fulfilling their task or assignment.

The result of this aspect can be seen in table 3 below:

Table 3. The Result of Students' Digital Literacy on Copyright Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Copyright	1.	I know the online plagiarism policy at my institution.	2.93	Good
	2.	I know the consequences of using copyrighted works online without permission.	3.12	Good
	3.	I provide confessions/references in my online work when using collusion (copying from fellow students).	2.70	Good

4.	I use Turnitin or other similar software to check and avoid accidental plagiarism.	2.90	Good
	Means Score	**2.91**	**Good**

As shown in table 3, the students are included into 'Good' category with a mean score 2.91. They have known about the rules in using technology, especially in relation to copyright. Since universities apply rules to check students' writing, such as theses through the *Turnitin* application before they are going to submit a trial, students are very careful about these rules to avoid this plagiarism. Apart from that, they have also taught techniques to avoid academic crime, this plagiarism through various methods taught through academic writing courses. They are also very aware of the consequences they will get when using other people's work without the permission of the author, so that they learn how to use direct and indirect quotations in their writing, both assignments from lecturers or in thesis writing.

Critical Thinking

The third component is critical thinking. The ability to analyze, interpret, synthesize, and evaluate information and arguments, as well as the ability to form informed and reasoned judgments, are all components of critical thinking. Students need to have these skills in order to be able to locate information that is pertinent and accurate regarding a particular topic.

The result of the questionnaire answered by the students can be seen in the table below:

Table 4. The Result of Students' Digital Literacy on Critical Thinking Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Critical Thinking	1.	My university provides me with online activities related to real life problems.	2.88	Good
	2.	I can find a variety of information online, and put it together to solve a problem.	3.13	Good
	3.	I have an online reflective journal to write in.	2.54	Less Good
		Means Score	**2.85**	**Good**

It can be seen from the table 4 above, that, most students are in 'good' category in terms of the critical thinking aspect, with a mean score 2.85. The students have tried to find information on the internet to support their learning process. Nonetheless, it was found that there are few students who have their own reflective journals, while others did not do it. It is shown in the item no. 3, where the students got a 'less good' category, with mean sore 2.54. According to Sudirman et al. (2021), writing a reflective journal can encourage students to develop their critical thinking skills and intellectual abilities. Therefore, it is important for students to write an online reflective journal because it supports EFL students to rethink a wide range of learning activities and to identify the strengths and weaknesses of subsequent learning processes in an online platform.

Character Aspects

The fourth aspect of students' digital literacy is character. Character is the fundamental component of humanity that

serves as the basis for the development of the moral and devout citizen who possesses an educated conscience and an active spiritual life. The students absolutely need to have this skill in order for them to be able to use modern technology in a responsible manner.

The result can be seen in the table 5 below:

Table 5. The Result of Students' Digital Literacy on Character Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Character	1.	In the online world, I do not use and share personal information, pictures, conversations, etc. without their consent.	3.07	Good
	2.	I avoid posting negative comments online and cutting off other people's discussions and chatter.	3.32	Very Good
	3.	I remain neutral and tolerant during online discussions.	3.21	Good
		Means Score	**3.19**	**Good**

As shown in table 5, the students are placed in 'good' category with a mean score 3.19. Most of the students have realized to use technologies in a proper way by not sharing private information, picture, or images without agreement. When they discuss in online media, they also hinder to post any negative comments in discussion forum. It reveals that they have already had good character in using technologies.

Citizenship

The next component is citizenship. Individuals are encouraged to use their knowledge, skills, and understanding to protect and promote human rights online, such as freedom, privacy, and security, as part of the citizenship aspect of digital literacy. This aspect of digital literacy is known as "digital citizenship." The students will gain a greater awareness of how to protect themselves online as a result of this.

The result of the students answered this aspect can be seen in the table below:

Table 6. The Result of Students' Digital Literacy on Citizenship Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Citizenship	1.	I communicate well with others when using technology.	3.19	Good
	2.	I know the consequences of violating cyber laws in the digital world.	3.09	Good
	3.	I accept and follow the terms and conditions for accessing any information.	3.17	Good
	4.	I respect cultural differences in the online world, and respond accordingly.	3.29	Very Good
		Mean Score	**3.18**	**Good**

From table 6, it can be seen that students are categorized 'good' in terms of their citizenship, with a mean score 3.18. A good citizenship of internet users is one who knows what is right and wrong, exhibits intelligent technology behavior, and makes good choices when using technology. Based on the students' answer, they have used the technology in a good

way by following and accepting the rules in accessing any information in cyberspace. They also have known the consequences if they break the rules.

Curation

Curation is the seventh aspect of digital literacy that the students must possess. Content curation can be one of the most effective teaching strategies for helping students make connections between what they are learning in the classroom and examples from the real world, as well as gaining an understanding of how these two types of learning can be related to one another.

The result of this aspect can be seen in the table below:

Table 7. The Result of Students' Digital Literacy on Curation Aspect

Digital Literacy Scale				
Dimensions	ItemNo.	Statements	Mean	Category
Curation	1.	I'm looking for material from a well-known website.	3.01	Good
	2.	I'm trying to add value to the pieces of information available online.	2.90	Good
	3.	I play my part in adding to, and updating information online.	2.84	Good
		Mean Score	**2.92**	**Good**

Based on the result in table 7, it can be seen that students' curation in using technology is in 'good' category, with a mean score 2.92. Curation involves organizing, storing, and preserving digital data. As not all digital content is created

equally, it is important for students to think about what content should be preserved and why. The preservation efforts will entail sorting through to focus on meaningful digital content to curate.

Connectedness

The result of students' answer on the aspect of connectedness can be seen in the table below:

Table 8. The Result of Students' Digital Literacy on Connectedness Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Connectedness	1.	I am involved in different online communities for volunteer work.	2.53	Less Good
	2.	I participate in various online projects at the national level.	2.50	Less Good
	3.	I am actively interested in various online campaigns for community development..	2.75	Good
	4.	I actively participate in online polls/surveys.	2.72	Good
	5.	I encourage and help my community to post their issues and concerns on social media to get attention.	2.54	Less Good
		Mean Score	**2.61**	**Good**

As shown in table 8, most students have 'good' connectedness in using the technology. Whereas, there are three items of the questionnaire that were categorized 'less good', with mean scores of 2.53, 2.50, and 2.54. It reveals that the students' engagement in online community is not really good, like helping the community to solve their problems to get attention by

public. Moreover, there are only few students who have participated in activities held in national level. After knowing this result, it is hoped that the students can mingle and engage in a community; since they have to be aware of the issues happened locally, nationally, and internationally. They are the next generation; surely have to be an agent of change in their environment. As information is easily accessed today, they can help the community, at least to share those issues to society to get attention from public so that it can be handled faster.

Creativity

The next aspect of digital literacy that the students should know is creativity. Digital creativity is the use of digital tools and technologies to explore creative ideas, apply different approaches, and discover new ways to present one's work and research. This could involve taking a photo, recording a video, or incorporating a unique element into a presentation. Thus, students really need to have this creativity while using technology.

The result of the questionnaire can be seen in the table below:

Table 9. The Result of Students' Digital Literacy on Creativity Aspect

Digital Literacy Scale				
Dimen sions	Item No.	Statements	Mean	Category
Creativit	1.	I write blogs online that provide new ideas and perspectives.	2.49	Less Good
	2.	I like to post new information on my social media accounts.	2.80	Good
	3.	I create my own videos and post them online.	2.69	Good
	4.	I have creative ideas but don't know how to use them online.	2.96	Good
Mean Score			**2.74**	**Good**

The result of students' creativity is in 'good category', with a mean score 2.74. It shows that they like to post information about their activities in social media by creating videos through some apps. Yet, to write in a blog is an activity that is rarely done by the students. The result of the mean score is 2.49, categorized as 'less good'. It is in line with the previous aspect of critical thinking where students are not likely to write an online reflective journal of their own. Knowing this reality, the teachers, of course, should enhance students writing ability in order to build their critical thinking because it is one of the aspects mentioned in 21st century skills as one of the thinking skill that the students must have in this globalized modern era.

Collaboration

The last aspect of students' digital literacy is collaboration. When using technology together, it is necessary to effectively collaborate with one another in order to achieve a particular goal, to allow for the co-construction of knowledge, to foster peer learning, and to support one another in the completion of group projects. The result of this aspect can be seen in the table below:

Table 10. The Result of Students' Digital Literacy on Collaboration Aspect

Digital Literacy Scale				
Dimensions	Item No.	Statements	Mean	Category
Collaboration		In the online world,		
	1.	I work with other people in the group.	2.95	Good
	2.	Working in online groups helps me learn from others.	2.94	Good
	3.	I work online with my colleagues to find solutions to problems.	3.06	Good
		Mean Score	**2.98**	**Good**

From the table 10, the mean score of collaboration aspect is 2.98. It reveals that the students are in 'good' category in collaborating with people in online platforms. Learning to work with others is a life skill that will stand to every student in the future. Since, now, people live in the era of technology, which demands them not only to live face to face, but also provide us to contact with someone we have never seen before by online meeting. It proves that technology makes collaboration and teamwork easy. The students do not need to meet in a place to discuss their assignment, but they can find out other partners in cyberspace who can help them to solve it through online discussion they did.

From overall result of English students' digital literacy, they are categorized in 'good' level. They have understood how to use technology in a proper way, followed the rules and guidelines on the internet usage by avoiding plagiarism, hindering negative contents or posts, and keeping private

information. Nonetheless, there are still some aspects of digital literacy that they should foster, especially to the thinking skills which are demanded by 21st century learning. They are critical thinking and creative thinking.

CONCLUSION

This article has analyzed the EFL students' level of digital literacy in higher education at one the universities in Bengkulu. Based on the results of the analysis, it can be concluded that the students' digital literacy level is in a good category. The aspects of digital literacy was measured by nine components, namely communication, copyright, critical thinking, character, citizenship, curation, connectedness, creativity, and collaboration. Even though, in general, the students are categorized good in the level of their digital literacy, there must be some enhancement for them especially for critical thinking, connectedness, and creative thinking. The students are still lack of the ability for those aspects. Therefore, the teachers should give more attention on those things because they are very important, particularly for students to achieve the components of 4Cs' in 21st century learning. Digital skills and English can help many of the adult students advance in the workplace or prepare our younger students for improved job opportunities in the future. Moreover, they can make the classes significantly more pertinent and engaging in the present. According to Jenkins (2009), what students

do in their online lives has nothing to do with what they are learning in school, and what they are learning in school contributes little or nothing to who they are after school has ended. By incorporating teaching about digital literacy into the English classes, it can make them more pertinent to their students' lives outside the classroom.

The findings of this study also inform the level of English students' digital literacy, which can be useful for teachers to determine their teaching and learning activities related to English and the use of technology in the classroom.

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