

## The role of new literacy and critical thinking in students' vocational development

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### Abstract

This study aims to illustrate and describe new literacy and critical thinking to support students' vocational development. This is a quantitative descriptive study using a survey approach. The number of respondents was 122 people. The questionnaire was developed to measure student's new literacy and critical thinking. The data analysis technique used was a statistic descriptive method. The results showed: (1) the circulation of information in social media among students is very intensive, (2) the intensification of information on social media encourages students to improve the literacy model in the form of new literacy movements, (3) new literacy encourages the improvement of students' critical thinking, (4) new literacy and critical thinking interact with each other to foster students' vocational development, especially in the formation of soft skills and (5) soft skills related to new literacy and critical thinking, namely, how to obtain, use and disseminate information. Future research requires equity related to the circulation model that can help students predict future needs.

Keywords: New literacy, critical thinking, development, vocational.

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## 1. Introduction

In the era of increasingly advanced technology, research on the implementation of new literacy becomes a field of high interest (Chakrabarty, 2020; Chapman et al., 2019; Chen et al., 2019; West, 2019). The implementation of new literacy in previous research is used to communicate and consume new information critically (Spire & Barlett, 2012). The new literacy is simplified as digital literacy which includes the following: Digital literacy is the competence to search data on the Internet, navigate hypertext, assemble knowledge and evaluate digital content (Bawden, 2008) and communicate (Armstrong & Warlick, 2004). Besides that, digital literacy also includes awareness, attitudes and ability to use digital tools and facilities appropriately (Martin, 2006). Important points of digital literacy are identifying, accessing, managing, integrating, evaluating, analysing and synthesising digital resources, building new knowledge, creating media expressions and communicating with others, in the context of certain life situations, to enable constructive social action (Cohen et al., 2020; Fallon, 2020; Marini et al., 2020; McKinstry et al., 2020). Simply put, digital literacy is the competence to possess and use the information correctly through digital facilities.

Digital literacy is closely related to digital skills, how to use and digital transforming knowledge (Chan, Churchill & Chiu, 2017). This implies that the new literacy is only able to create critical thinking and has not been able to foster maturity in learning, especially in increasing vocationalisation. New literacy helps in the context of workplace functions (Mills, 2010). New literacy provided can make abstract thoughts into something that can be contextualised. This is because digital literacy not only fosters critical thinking but can also help contextualise ideas (Le, Woods, Wang & Lawrie, 2019). New literacy helps students understand the social impacts arising from the use of digital media. This not only helps students add information but also increases sensitivity to social phenomena (Pawluczuk et al., 2019).

By building a literacy culture, it can improve students' critical thinking, because with a literacy culture, students will be faced with some of the problems they find after they read and listen to a story or information. With the problems that students find, it will automatically lead to various problem analyzes so as to form the critical skill of students (Tugtekin & Koc, 2020; Kim, 2019). One of them literacy culture which can be implemented in the school environment is a digital literacy. Leaning (2019) & Nelson et al. (2019) consider that digital literacy is the knowledge and skills to use digital media, communication tools, or networks in finding, evaluating, using, making information, and utilizing the information.

Assumptions from some studies indicate that the digital literacy is closely related to information literacy (Leaning, 2019; Nelson et al., 2019; Neuman et al., 2019). Both require the idea of critical thinking by improving the quality of information through the knowledge (Koltay, 2011). Improving the quality of information can be done by increasing sensitivity, including cognitive, emotional and social competencies that aim to increase sensitivity towards technology and information (Hobbs, 2010; Low et al., 2019; Rutter et al., 2019). The increase of sensitivity in the digital era is also in accordance with the orientation of 21st-century learning, namely, digital lifestyle, thinking tools, learning research and working knowledge (Trilling & Fadel, 2009). Digital lifestyles, reinforcement of thinking tools and working knowledge are very authentic with vocational education to produce graduates who have hard skills and soft skills. The demand is in accordance with the challenges of the world economic forum which has launched the skill structure needed in the 21st century.

The 21st-century skill structure is as follows: (1) solving complex problems; (2) cooperation with others; (3) people management; (4) critical thinking; (5) negotiation; (6) quality control; (7) service

orientation; (8) assessment and decision-making; (9) active listening and (10) creativity. In 2020, the work structure will change to: (1) solving complex problems; (2) critical thinking; (3) creativity; (4) people management; (5) collaboration with others; (6) emotional intelligence; (7) assessment and decision making; (8) service orientation; (9) negotiations and (10) cognitive flexibility (Ongardwanich et al., 2015). Achieving the content of 21st-century learning can use the help of media and information technology. The demands of the 21st century requires a renewal of learning. The content of learning through technology assistance must include: (1) learning and innovation skills including the acquisition of diverse knowledge and skills, learning and innovation, critical thinking and problem solving, communication and collaboration, and creativity and innovation, (2) digital literacy skills include information literacy, media literacy and ICT literacy (3) careers and life skills include flexibility and adaptability which include initiative, social and cultural interaction, productivity and accountability, leadership and responsibility (Ongardwanich et al., 2015). New literacy will become a power in the 21st century (Prensky, 2008). In the 21st century, digital literacy is needed as a socio-cultural interaction (Neuman, Finger & Neuman, 2017). Sociocultural interaction can be defined as a form of interaction that describes an awareness of the circumstances surrounding individuals and how their behaviour is specifically influenced by environmental, social and cultural factors. The sociocultural interactions include how we communicate, understand and relate to others.

Answering the challenges in learning, one of the new media that can be used is E-Media (digital and multimedia), such as online newspapers, online radio, and digital television (Welsh & Wight, 2010). This media can be an alternative to help develop students' digital literacy (Atoy et al., 2020; Dashtestani & Hojatpanah, 2020; Maher, 2020). This option can even become a new literacy movement in technology and information. The new literacy movement includes technological literacy, digital literacy and human literacy (Aoun, 2007). The aim of the new literacy movement is to increase human capacity to create, develop, analyse and spread information. The new literacy movement can be started in the learning environment, especially in the vocational education that is demanded to be adaptive to rapid changes. It is necessary to dissect the role of technology content to support learning in schools (Gee, 1999). The development of new literacy must answer the relativity of time (Gough, 1995) so that new literacy must be supported in education (Stephens, 2000). There are several aspects that can be done in education related to the increase in the new literacy of students. However, this aspect certainly requires a deeper study

The research that links new literacy with increased vocational learning is still very rarely done. Other similar studies were conducted by Setiawan, Yanti and Miraj (2018), Patmanthara and Hidayat (2018), Parkinson and Mackay (2016). The study conducted by Setiawan, Yanti and Miraj (2018) aims to describe the process of teachers' competence adaptation to ICT integrity in learning in Vocational Secondary School. In addition, Parkinson and Mackay (2016) tried to prove that vocational students' literacy practices are more demanding than is generally recognised. Moreover, Patmanthara and Hidayat (2018) tried to improve student's digital literacy skills by applying blended learning model that combines the conventional learning model with an online learning model based on Learning Management System. The research on new literacy is still running partially. This study focuses on looking at the role of new literacy in improving students' vocational learning. Therefore, the new literacy that is owned can help students to adjust quickly in the era of technology which is also getting faster and can be adapted to curriculum literacy (Collins, 2000). New literacy exists to provide a picture that the world is always changing (Coiro et al., 2004; Lankshear & Knobel 2003).

Based on the summary of the findings of previous related studies, it is important to conduct a study describing student's responsibilities related to the importance of new literacy and critical thinking

skills. The aim of this study is to illustrate and describe student's responsibilities related to new literacy and critical thinking to support their vocational skill development.

## 2. Research Method

### 2.1 Research approach and participants

This study used a quantitative approach. Quantitative data were further described to illustrate the effect of new literacy on the development of learners' vocational learning. Precisely, 122 vocational education students in South Sulawesi Province, Indonesia were chosen randomly as the sample of this study. Table 1 describes the demography data of research participants.

Table 1. Demography of the research participants

	Frequency	Percentage
Grade		
I	42	34.42
II	40	32.79
III	40	32.79
Age		
15–16	46	37.70
17–18	55	45.09
>18	21	17.21
Gender		
Females	52	42.62
Males	70	57.38

### 2.2. Research scales

There are two types of data collection techniques used, namely by using questionnaires and interviews. The questionnaire used was developed by the researcher, and the questionnaire was tested in advance to determine the level of validity and reliability of the instrument. The new literacy scale was developed based on the new literacy theory of Coiro et al. (2014). This scale consists of three dimensions, namely the ability to read, write and archive information circulating on social media. Table 2 describes the developed new literacy scale.

Table 2. Dimensions of the new literacy scale

Dimensions	Number of items	Item
Reading information	3	1–3
Writing information	3	4–6
Archiving information	3	7–9

The results of the trial involving 20 students showed that Cronbach's Alpha value was 0.75. This explains that this questionnaire has a good level of reliability. In addition, the Corrected Item-Total Correlation value for each item is higher than the *R* Table value (0.4683). This explains that all items in this questionnaire have met the validity standard. The role of critical thinking skill variable is measured using a survey. This survey provides an opportunity for students to express their responses regarding the role of critical thinking skills in preventing the spread of false information (hoax). This survey only has two items: (1) By reading, can it foster critical thinking skills and (2) critical thinking skills can prevent the spread of false information. There are four answer options provided, namely

strongly agree, agree, disagree and strongly disagree. In addition to using questionnaires, researchers also interviewed several respondents to obtain qualitative data as supporting data from quantitative data obtained using a questionnaire.

### 2.3. Data analysis technique

The collected data were then processed and analysed. Qualitative data obtained from interviews were analysed using a qualitative descriptive approach, while quantitative data obtained through questionnaires were analysed using descriptive statistical methods. Data analysis was performed to describe and discover the effect of new literacy on the development of students' vocational learning. Furthermore, the data were processed with the help of computer applications (SPSS 26). The data were then presented and described to illustrate the effect of new literacy on the development of vocational learning of students in vocational high schools.

### 3. Finding and Discussion

The effect of new literacy on the development of vocational learning is a study conducted on 122 vocational high school students. Identification is done by first digging up information on the use of social networks among students. The research conducted shows that all samples in this study have social networking as a communication medium. The majority of respondents use social media every day in communication. It is similar to the previous studies which show that the number of social media users has shown a significant increase (Chan & Ngai, 2019; Grover & Kar, 2020; Ogink & Dong, 2019). In detail, the intensity of respondent information can be seen in Figure 1.

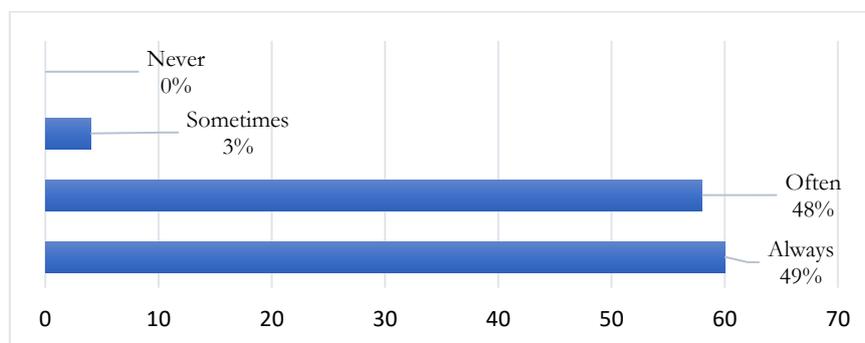


Figure 1. The intensity of the respondents getting information on social media

The results of interviews and observations show that there are several reasons for students using the Internet, including to get entertainment, academic needs and business needs. When using social media as a communication tool, respondents get information circulating on social media even though they do not want that information. It is similar to the previous studies showing that the plenty of information which will be got even the users do not need it. It is one of the methods on Internet in introducing other information (Allcot et al., 2020; Boulianne, Koc-Michalska & Bimber, 2020). As many as 60 respondents or around 49% always get information circulating on social media, as many as 58 people or around 48% of respondents often get information circulating on social media. Data show that the circulation of information on social media is very intensive. From many respondents who received information circulating on social media, the majority doubted the truth of the information. This was indicated by research data which showed 110 respondents or around 90% who doubted the truth of the information. More details can be seen in Figure 2.

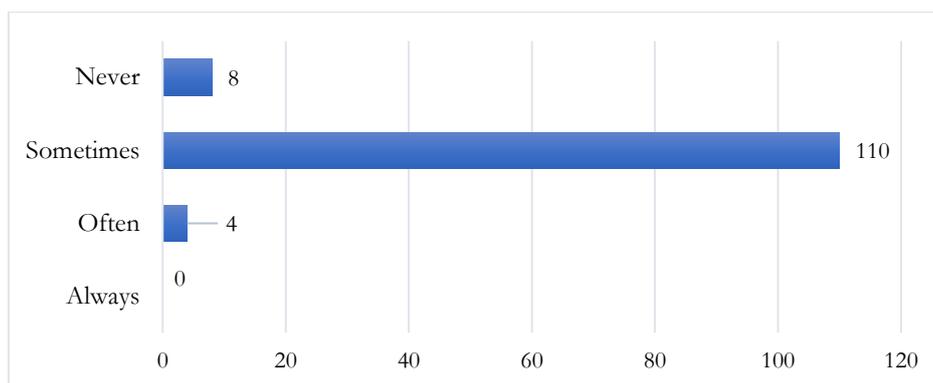


Figure 2. Confidence toward the truth of information circulating

The data in Figure 2 shows the majority of respondents always trace the truth of the information circulating. The way to do this is to compare or look for other sources that are relevant to the information presented. The thing done is related to the triangulation of information sources. After comparing with other sources of information, to believe information, the next thing to do is to look at the credibility of the information source. Feeling doubtful can be said as a positive attitude in accessing the Internet. Because Internet users who have this attitude will not easily believe related to the information they get on the Internet. They will verify the related information. Unlike the case with Internet users who do not have this behaviour, they will easily believe every information they read on the Internet. Research data show that as many as 100 respondents or around 82% are doubtful about the source of information and only as many as 10 people or about 10% are sure of the sources of information circulating. This information can be seen in detail in Figure 3.

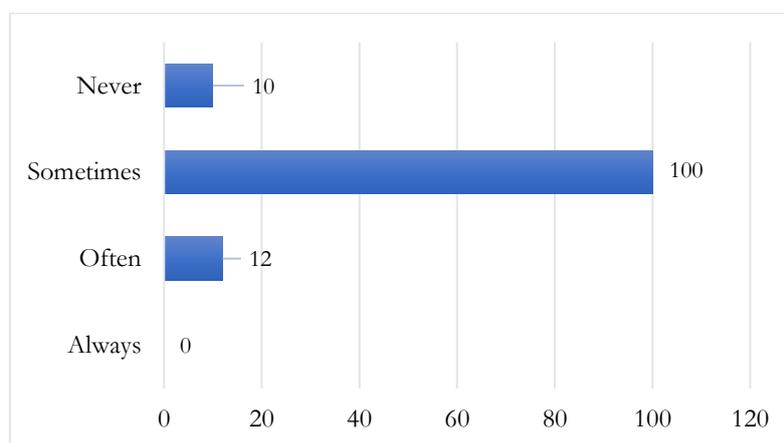


Figure 3. Confidence toward information sources

The data in Figure 3 show that respondents' doubts toward the information source can be caused by the credibility of the media, the legality of the information source and the familiarity of the information source. It is similar to the previous studies showing that there are some factors noticed by an Internet user in reading information from the Internet (Flanagin & Metzger, 2018; Gursoy, 2019; Nekmat et al., 2019). The studies inform that there are several steps taken in ensuring information credibility on the Internet. The website manager is the party that is credible and authorised to convey the information presented. The second aspect is how the quality and the present information is

presented. Good information is not only accurate but also up to date. The next aspect is how the information can provide information in accordance with the information needs of Internet users.

Research data show that the doubt about the truth of information circulating causes respondents to be careful in spreading information. The research data also showed that 72 respondents or 59% had never shared the information which was still unclear. As many as 48 people or around 39% who only occasionally spread unclear information. This shows that the majority of respondents chose to store information obtained from social media. The respondents chose not to be information diffusers. The average respondents consider that sharing information with unclear truth, both the information and the source of the information, can reduce the quality of other people's knowledge. The finding is similar to the previous studies by Li and Lin (2006), Levin and Cross (2004) considering that there are some aspects which should be noticed before deciding sharing information on the Internet, one of them is the credibility of the information. Sharing uncredible information can negatively affect the people who share the information. Unclear information is the beginning of spreading false information in the scientific community. Research data show that overcoming the spread of false information on social media requires critical thinking. A total of 112 respondents or about 91% of respondents in this study consider critical thinking can prevent the spread of false information. Critical thinking is intended to examine the information and its sources before using or participating in disseminating information to others.

From the data found, as many as 116 people, around 95% think that the critical thinking can be developed through reading. It is similar to the results of previous studies by Zubaidah et al. (2018), Taglieber (2000) showing that the reading habit can affect positively the critical thinking skill. Respondents explained that reading is meant in the context of new literacy in the form of the ability to use technology, digital processing and not just reading informational texts. The result of the research shows the high intensity of information circulation among the social media user community. The information circulating increased the critical capacity of the respondents. Information circulating could be in the form of false information. As it was repeated, it was considered as the truth, and in-depth information checking is needed.

Consuming information, using information and transferring information in the digital era or new literacy era provides an increase in the development of students' soft skills. First, new literacy in helping him with information that helps strengthen creativity, critical thinking and truth. The creativity of students will grow if they have the skills to find information before receiving information. This creativity must be supported by skills to use digital media as another part of digital literacy. After having the criteria to search for information, the next step that must be agreed is information review. At this stage, critical thinking is needed to see the truth of information. Critical thoughts that are always accustomed will facilitate students in getting further information. The creativity and critical thinking required by students will be very helpful in determining the truth values of every information offered in the digital world.

Second, using information in the digital age really requires the involvement and sociocultural aspects. Emotion is needed so that the information used has a positive impact on self-development. For those who understand literacy, the digital age, all information that is negative in nature, may not be used. In addition to challenging self-worth, the new digital era also challenges that any information must be in accordance with the cultural values and social values developed in a society. The third point describes the information transition. The benefits of the new digital era of the dissemination of information strengthen people's trust in certain individuals. Unreliable information will reduce the level of public confidence in the disseminator of the information. To remain trusted by the wider

community, information disseminators must be careful about supporting information through checking information.

Respondents crosschecked information sharing on social media in various ways. The method used by respondents is to check the truth of the information, including checking the source of information, comparing it with other sources of information, checking the credibility of information disseminators and comparing with other literature. Among the checking methods, the majority of respondents do this by checking the source of the information. Optimising this method requires an awareness, attitude and ability of individuals to use digital tools and facilities appropriately to identify, access, manage, integrate, evaluate, analyse and synthesise digital resources, build new knowledge, create media expressions and communicate with others, in the context of certain life situations, to enable constructive social action (Martin, 2006). The use of technology must be able to strengthen the learning function to increase awareness (Falk-Ross, 2001; Greenhow & Robelia, 2009).

Increased awareness has implications for improving the vocational learning process because this is related to students' soft skills. One of them is critical thinking that is needed in the present and future era. This critical thought is related to creating, communicating and consuming information (Spires & Barlett, 2012). Critical thinking also has implications to increase maturity in the learning process. It is closely related to new literacy which includes digital literacy. Tugtekin & Koc (2020) and Kim (2019) consider that one of the factors that affect literacy skills is the ability to think critically. Critical thinking is a directional and clear process used in mental activities such as solving problems, making decisions, persuading, analyzing assumptions, and conducting scientific research. Thus literacy activities are very important to build critical thinking skills of students.

To engage in media and digital literacy, humans must use and include a variety of cognitive, emotional and social competencies that include the use of texts, tools and technology; critical thinking and analysis skills; ability to analyse the composition and creativity of messages and the ability to engage in reflection and ethical thinking (Hobbs, 2010). Despite realising the importance of new era literacy, the majority of respondents in this study still rarely use digital literacy, especially to access e-books or scientific articles using social media. The use of digital media can provide a more direct experience of self-efficacy and influence student thinking and self-confidence (Marci-Boehncke & Vogel, 2018).

Digital literacy is very helpful in increasing work effectiveness and efficiency (Hart, Bird & Farmer, 2019). Everyone knows that technology can work fast and from anywhere, only skills are needed to operate it. This is part of the scope of digital literacy. Digital literacy is not only needed by students while in the learning room. Digital literacy is also needed to prepare for future work. Thus, the digital literacy as a part of the new literacy is very helpful for the development of learner vocations. Some things can be formulated based on research findings. The new literacy has an indirect effect on the development of student vocations. Vocational development is in the form of strengthening soft skills that grow as a result of critical thinking with digital literacy. In addition to critical thinking, new literacy of students also helps students in communicating in the digital age. The intended communication is in the form of skills in consuming information, using information and spreading information on social media as part of digital literacy.

The findings of this study are expected to contribute to improving the quality of vocational schools, especially in Indonesia. There are several policies or programs that can be developed based on the findings of this study. One of the aspects is to focus on developing teaching materials for students that can trigger the ability of new literacy and critical thinking of students. In addition, the

findings of this study can also be a basis in evaluating several aspects of the learning process in vocational schools, for example, the quality of educators, learning facilities, teaching materials used and other aspects in supporting new literacy and critical thinking of students. In addition to contributing to the educational aspect, the findings of this study also contribute to the social aspect of security in accessing the Internet. The findings of this study indicate that new literacy and critical thinking are basic skills that Internet users should possess.

#### 4. Conclusion

Based on the findings of this study, it can be concluded that the new literacy movement which includes digital literacy and information literacy can improve students' critical thinking. Critical thinking is needed to increase maturity and awareness in creating, communicating and consuming information that is circulating. This is very closely related to the soft skills of students. From its implication, the new literacy movement and the improvement of critical thinking really help the development of vocational students, especially in the formation of soft skills. Based on the conclusions that have been formulated, there are some things that can be recommended for future research such as (i) strategies for using and utilising new literacy, (ii) ways to improve critical thinking more effectively, (iii) the role of new literacy in increasing hard skills and (iv) the impact of new literacy and critical thinking in learning. In addition, it is also important to identify the future technology literacy model. This is intended to help students to be able to predict future needs

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