Critical thinking ability and information literacy in identifying fake news on social media users

Ina Hayatun Niza[a,1]*, Marty Mawarpury[b,2], Arum Sulistyani [c,3], Risana Rachmatan[d,4]

[a,b,c,d]Fakultas Kedokteran, Universitas Syiah Kuala, Banda Aceh

*[1]inahayatunniza17@gmail.com; [2]marty@unsyiah.ac.id; [3]arum@unsyiah.ac.id; [4]risanarachmatan@unsyiah.ac.id
*Correspondent Author

KATAKUNCI	ABSTRAK
critical thinking; fake news; hoax; information literacy	Information literacy is an ability that a person needs to be able to use information correctly and identify fake news on social media. Critical thinking skills are skills related to information literacy that can help information consumers identify reliable sources while denying fake news (hoax). The purpose of this study was to determine the relationship between critical thinking skills and information literacy in identifying fake news on social media users. This study uses a quantitatif approach with a sample size of 348 people with early adults characterisctics living in Aceh aged 20-34 years and using social media. Data analysis used the Pearson Correlation technique which showed the correlation coefficient r=0.589 with a significance value p=0.000 (p<0.05). The results of the study concluded that there was a positive relationship between critical thinking skills and information literacy on social media users. The majority of the research samples are in the high category for their critical thinking skills and information literacy.
	Kemampuan berpikir kritis dan literasi informasi dalam mengidentifikasi berita bohong pengguna media sosial
KEYWORDS berita bohong; hoax; kemampuan berpikir kritis; literasi informasi	*Literasi informasi merupakan kemampuan yang dibutuhkan seseorang untuk dapat menggunakan informasi dengan benar dan mengidentifikasi berita bohong di media sosial. Keterampilan berpikir kritis merupakan keterampilan yang berkaitan dengan literasi informasi yang dapat membantu dalam mengidentifikasi sumber terpercaya sekaligus menyangkal berita bohong (hoax). Penelitian ini bertujuan untuk mengetahui hubungan antara keterampilan berpikir kritis dan literasi informasi dalam mengidentifikasi berita hoax pada pengguna media sosial. Penelitian ini menggunakan pendekatan kuantitatif dengan jumlah sampel yaitu 348 orang dengan karakteristik dewasa awal yang tinggal di Aceh, berusia 20-34 tahun dan menggunakan media sosial. Analisis data menggunakan teknik Pearson Correlation yang menunjukkan koefisien korelasi r= 0,589 dengan nilai signifikansi p=0,000 (p < 0,05). Hasil penelitian menyimpulkan bahwa terdapat hubungan positif antara keterampilan berpikir kritis dengan literasi informasi pada pengguna media sosial. Mayoritas sampel penelitian berada pada kategori tinggi untuk kemampuan berpikir kritis dan literasi informasi yang dimiliki.*

Introduction

The rapidly growing information age has shown a significant increase in available information sources (Gumelar, Erik & Rabbany, 2019). Aziza (2019) said that technological developments such as computers and internet networks make it easier for people to access existing and circulating information. The same thing was stated by Taala, Franco and Teresa (2019) who said that the increase in the number was in line with the increase in the availability of information and unparalleled internet connections, in addition to the ease of accessibility of existing technology devices. Furthermore, Franco and Teresa said that this development also contributed to the number of hoaxes circulating in the community.

In 2019 the news of "Justice for Audrey" went viral, became a trending topic on Twitter, and spread widely on other social media. Initial news from one of the Twitter accounts that shared a video about (bullying) against Audrey. The news circulating said that Audrey was the victim of a beating by 12 young women, which started from an argument on social media, the perpetrators ganged up on Audrey together and the perpetrator also committed a heinous act by sexually assaulting her. The following are images circulating on social media to campaign for "stop bullying" that occurred in the Audrey case:

Figure 1. Hoax in the case of bullying Audrey which is exaggerated by stating the existence of sexual violence (Source: Ariefana, 2019)

The news continues to be widely circulated and gets a lot of sympathy from netizens and continues to be shared by netizens with the slogan "Justice for Audrey". However, the Pontianak Police later confirmed that it was not true that there was a sexual assault on the victim and the perpetrators did not beat each other at the same time but had a one-on-one duel. In other words, the perpetrators and victims were involved in fights, and statements about the violence that occurred were exaggerated by the victims and trusted by netizens (Fadhil, 2019). This is an example of fake news that was initially believed to be genuine by netizens.

A survey conducted by the Masyarakat Telematika Indonesia (TMI) in 2017 showed that social media is the main source of spreading false information and news in Indonesia (in Gumelar et al., 2019). The Ministry of Communication and Information Technology of the Republic of Indonesia (2019) has also identified, validated, and verified a total of 1,731 hoax circulating in the community from August 2018 to April 2019. Of all the hoax news circulating, hoax in the political category dominated with a total of 620 hoax items, then the

government category was 210 hoax, health category 200 hoax, 159 hoax related to slander, 113 hoax related to crime and the rest were hoax related to religious issues, natural disasters, myths, international and other issues. Another survey conducted by the Ministry of Communication and Information of the Republic of Indonesia Manado (BPSDMP, 2020) found that online media occupied the top position in conveying hoax news during the pandemic, namely 89%, followed by social media as much as 82.3%, television 78.4 %, instant messaging 68.1% and government websites 62.8%.

Alfisyah et al., (2020) said that the large amount of hoax information circulating made it difficult for the public to distinguish which information was true and which information was false. In addition, hoax also have a serious impact on the community, both legally, namely violating the law and having an impact on the socio-cultural life of the community. The impact of hoax is also described by Rahadi (2017), among others, which can divide the nation, cause inter-religious hostility, raise suspicion between elements of the nation, hinder development, mutual suspicion between certain ethnicities, intimidation from certain parties and so on.

Fake news (hoax) is categorized into two, namely misinformation and disinformation (Wardle, 2017). Wardle each distinguished these two categories on "intention to deceive". Misinformation is positioned and defined as "accidental sharing of false information" while disinformation is "the intentional creation and sharing of information that is known to be false" (Wardle, 2017). This means that there is fake news circulating on social media or the public whose distribution is not intentional by the social media users themselves. One of the reasons for this misinformation to occur is because of the large amount of news available, making it difficult for people to distinguish which news is real and which is fake news (Stein-smith, 2017). In the past, information was more tightly controlled by members of the media, both by journalists and librarians, but the open and ubiquitous nature of the digital world has made it more difficult for people working in this field to control and verify the information that is available (De Paor & Heravi, 2020). In addition, the emergence of online media or news platforms that are managed independently is also another problem (Santoso, 2020). Santoso said that the characteristics of fast-paced and instant online media encourage this media to pursue broadcasts in producing news and ignore quality, including the truth of the news itself. As a result, there are more and more hoax news circulating and it becomes increasingly difficult to distinguish them.

Machete and Turpin (2020) about information literacy and critical thinking skills, it is explained how fake news can be accepted and received attention due to people's lack of ability to identify fake news. Machete and Turpin also said that the importance of educating the public to identify fake news, as well as the benefits of having information literacy as a life skill. In addition, research conducted by Paskin (2018) on a number of students of History Education at Stanford University also shows that these students (research respondents) are not well educated in critical thinking in identifying which news is real and which is fake news.

The ability to process, identify, and use information/news is called information literacy (Taala et al., 2019). De Paor and Heravi (2020) explain that the solution to combating fake news should not only focus on the purpose of its circulation as is often described but also the way in which it is circulated and spread which also contributes to public mistrust, confusion and doubt. Therefore, those in this field of study must realize and accept that the problem of fake news cannot be stopped but can be challenged with information literacy skills (Rochlin, 2017).

Taala et al. (2019) explain that information literacy is when someone has access to information, then they can process the parts they need, and create the best way to use that information. Information literacy can also include the ability to read passages and quote a text. One of the impacts of low information literacy on an individu is the tendency to misinformation when accessing, processing or disseminating information (Stein-Smith, 2017; Aziza, 2019). This is due to the inability of the individual to distinguish which news is true

and which news is false (Stein-smith, 2017). Whereas if the individual has high information literacy, the individual is likely to be an "information literate" individual (Andreta, 2005; Moradi, et al, 2014; Aziza, 2019). That is, the individual will be more careful in disseminating information because it has evaluated the information obtained.

Weiler (Gasque, 2017) also explains that there is a role for cognitive development that is likely to affect information literacy skills. One of the cognitive processes that play a role in this information literacy ability is critical thinking (De Paor & Heravi, 2020). Gasque (2017) also reveals that information literacy is a skill that must be learned, therefore there are cognitive factors that influence it.

Critical thinking is a way or cognitive strategy to achieve a goal (Halpern, 1999). In 1990, the American Philosophical Association (APA) (Goodsett, 2020) defined critical thinking as "objective, self-assessment that results in interpretation, evaluation, and inference, and explanation of evidence, conceptual, methodological, critical, or contextual considerations that Paul and Elder (2019), the founders of the Foundation for Critical Thinking, define critical thinking as "the art of analyzing and thinking with the aim of improving it." Meanwhile, Facione (2000) defines critical thinking as "judging reflectively what to do or what to believe". The most widely used and cited definition is the definition presented by Robert Ennis (1985). Ennis defines critical thinking as reflective and reasonable thinking that focuses on decisions about what to believe or do" (Ennis et al., 1985).

Andreta (De Paor & Heravi, 2020) emphasizes how the critical and analytical skills associated with information literacy can help informed consumers identify reliable sources while denying fake news. Andreta further explained that the evolving and complex digital environment has exposed individuals to an abundance of diverse choices of information that are not filtered and come in various formats, making it very difficult to verify and validate (De Paor & Heravi, 2020). Andreta believes that it is very important for all members of society to have strong critical and evaluative skills that apply to all information formats, both offline and online.

In explaining the relationship between critical thinking and information literacy, Albitz (Goodsett, 2020) argues that critical thinking skills are an important component of information literacy, but information literacy is not always necessary for critical thinking. He implies that information literacy is similar to a scientific discipline, and critical thinking should be applied to it, as applied to other disciplines. Therefore, every element of information literacy (finding, evaluating, and using information) must be guided by critical thinking abilities and dispositions. Weiner (2011) says that critical thinking is a mental process, and therefore personal and internal, while information literacy is more of a public process with observable techniques. Machete and Turpin (2020) explain that critical thinking skills play an important role in being able to identify fake news. Someone who thinks critically tends to be faster in capturing relevant information, separating irrelevant information, and utilizing that information to find a solution to a problem or make a decision; a person can think logically and rationally, and not seem to be making things up (Muin et al., 2018). Rose-Wiles (2018) also stated that it is important to teach students information literacy and critical thinking skills, so that students can use these skills to be applied in any situation or source of information. Rose-Wiles also advises academic institutions to teach information literacy and encourage students to think critically when accessing news online.

Information literacy and critical thinking are two concepts that are similar and often juxtaposed, becoming frequently researched in the 80s and still being described today (Ennis et al., 1985). Library and information science theorists and practitioners often discuss information literacy, while philosophers, psychologists, and educational researchers are more likely to discuss critical thinking skills (Albitz, 2007). Hollis (2019) said that many researchers have explored the relationship between information literacy and critical thinking skills, but most of the research comes from the perspective of library and information science, rarely found in the psychology literature. The same thing was also expressed by Allen (Hollis,

2019), Allen showed how these two constructs (critical thinking and information literacy) are very compatible. However, the mapping is entirely from an information literacy perspective. While in philosophy, psychology and education are very rarely found.

So far, there have been studies examining the relationship between critical thinking skills and information literacy. However, in Indonesia, research that examines the relationship between these two variables has only been carried out by Aziza (2019). Therefore, the literature in Indonesian regarding the relationship between these two variables is still very limited. Another study conducts by Moradi, et al., (2014), this study examines the relationship between critical thinking skills and information literacy in medical students. In their research, Moradi et al., suggested not to generalize the results of the study because the subject was limited to medical students. Moradi also suggested that future researchers conduct other research differently to take a broader view of the relationship between the two variables.

Based on the limitations of the literature as described above and based on the suggestions of previous researcher, are interested in examining the relationship between critical thinking skills and information literacy in identifying fake news among social media users. The implications of the research results are expected to contribute to the psychology literature as well as library and information science. This research is also expected to be a source of reference for future researchers who use similar themes. In addition, the implication of this research is that it is expected to provide input for the government, formal and non-formal educational institutions, educational psychologists, teachers to be able to pay attention to the components of critical thinking skills as one of the components that need to be taught to students, of course by creating curriculum systems and learning methods that support. It is hoped that students will be wiser in using social media, whether they are still in school or not.

Based on the above background, this study aims to see whether there is a relationship between critical thinking skills and information literacy in identifying fake news among social media users. The hypothesis proposed in this study is "There is a relationship between critical thinking skills and information literacy in identifying fake news on social media users".

Method

This study uses quantitative research methods with the type of correlation research. The characteristics of the sample involved are early adults, aged 20-34 years, domiciled in Aceh, and actively use social media. The sampling technique in this study used non-probability incidental sampling with a total sample of 348 samples. Specifically, data from 23 counties in Aceh with majority in Banda Aceh, which is 46.7%. Most subjects were female with a percentage of 75%, and the remaining 23.9% were male.

Critical thinking was measured using Yoon's Critical Thinking Disposition (YCTD) by Yoon (2004, in Shin et al., 2015). YCTD was adopted from The California Critical Thinking Disposition Inventory (CCTDI) developed by Facione and Facione (1994). Researchers used this scale based on the main theory in this study (Facione & Facione, 1994).

YCTD has been translated into English and a re-study was carried out to see the validity and reliability by Shin et al. (2015), Cronbach's Alpha obtained in the study was 0.84. While the Cronbach Alpha obtained in this study was 0.850. In this study, YCTD was adopted of the English version from Shin et al. (2015). The adaptation process used forward and backward translation. The first thing to do is to translate the measuring instrument from English to Indonesian (forward translation). Then, the measuring instrument that has been translated into Indonesian translated back into English (backward translation). This is done to adjust and facilitate the research sample in understanding the statements in the measuring instrument. In the last stage, the measuring tool that has been translated is then assessed (review) by three reviewers who expert in psychology study.

YCTD consists of 27 items and uses a 5-point Likert scale, namely: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree) and 5 (strongly agree) to see the responses. The lowest score on this scale is 27 and the highest score is 135. Examples of favorable item in YCTD measuring instruments are "I explain reasons if I don't agree with others" and "I turn my mistake into an opportunity to learn". While the unfavorable item one of them is "I tend to make a decision hastily without considering a matter carefully"

The measuring instrument used to measure information literacy in this study is a scale adapted by researchers from the information literacy scale (ILS) developed by Adıgüzel (2011) with Cronbach's Alpha obtained is 0.928. ILS was developed based on the theory of information literacy proposed by ACRL (2000), which is the main theory used in this study. However, Adıgüzel's ILS only includes four of the five dimensions of information literacy proposed by ACRL. The Cronbach's Alpha of the ILS Scale in Adıgüzel study was 0.928. While the Cronbach Alpha obtained in this study was 0.922.

The adaptation process of ILS scale used forward and backward translation. The first thing to do is to translate the measuring instrument from Turkish to Indonesian (forward translation). Then, the measuring instrument that has been translated into Indonesian translated back into Turkish (backward translation). This is done to adjust and facilitate the research sample in understanding the statements in the measuring instrument. In the last stage, the measuring tool that has been translated is then assessed (review) by five reviewers, which is 3 of them are expert in psychology study and two of them are native speakers of Turkish.

The scale consists of 29 items with a 5-point Likert scale type, namely: 1 (never), 2 (rarely/occasionally), 3 (sometimes), 4 (often), and 5 (always). The lowest score on this scale is 29, while the highest score is 145. Scoring is done by adding up each response. The higher the score obtained, the better the information literacy ability, and vice versa. The lowest score on this scale is 29 and the highest score is 145. Examples of item in ILS are "consider freedom of thought and expression in obtaining information", "accessing and using information legally", and "summarizing the basic ideas of the information obtained by examining its sources".

The data collection process is carried out online by distributing a scaled Google Form that is shared through social media (WhatsApp, Instagram, and Twitter). Data analysis using IBM Statistical Product and Service Solution (SPSS) Version 26 for Windows application. The normality test used the one-sample Kolmogorov-Smirnov test, the linearity test used the ANOVA test for linearity and the hypothesis test used the Pearson correlation test.

Results

The majority of the research subjects were female with a percentage of 75%, and the remaining 23.9% were male. Most of the subjects in this study were 21 years old (33.6%), followed by 22 years old (22.1%), 20 years old (19%) and 23 years old (12.6%). Furthermore, the majority of research subjects are domiciled in Banda Aceh, which is 46.7%. The subject's work is dominated by students with a percentage of 82.5%. The most recent education of the research subjects was SMA/MA/MK/equivalent, namely 80.2% and 16.7% undergraduate.

The majority of the subjects in this study were in the category of high information literacy ability, namely 55.5% subjects, and 44.5% subjects were in the medium information literacy category. Meanwhile, 31.6% of respondents were in the category of moderate critical thinking skills, and 68.4% of the subjects were in the category of high critical thinking abilities in the table 1.

Tabel 1
Information Literacy and Critical Thinking Category Frequency Distribution

Variable		*Frequency*	*Percentage (%)*
Critical Thinking	Low	0	0
	Medium	110	31,6
	High	238	68,4
Information Literacy	Low	0	0
	Medium	155	44,5
	High	193	55,5

Based on the normality test using Kolmogorov-Smirnov on the critical thinking ability variable, it shows that the data is normally distributed because the significance value (p) = 0.077 (p>0.05). Furthermore, the results of the normality test of information literacy using the Kolmogorov-Smirnov also obtained that the data was normally distributed because the significance value (p) = 0.058 (p>0.05). The linearity test performed using the ANOVA test for linearity showed that the significance value was p=0.000 (p<0.05). The significance value of p<0.05 indicates that there is a linear relationship between the variables of information literacy and critical thinking.

Tabel 2
Pearson Correlation Test

		Total_YCTD	*Total_ILS*
Total_YCTD	Pearson Correlation	1	.589**
	Sig. (2-tailed)		0.000
	N	348	348
Information Literacy	Pearson Correlation	.589**	1
	Sig. (2-tailed)	.000	
	N	348	348

Furthermore, hypothesis testing using the Pearson correlation technique showed a significance value p=0.000 (p<0.05). These results indicate that there is a significant relationship between information literacy and critical thinking skills in social media users. Furthermore, the correlation coefficient value r=0.589. These results indicate that there is a positive relationship between critical thinking skills and information literacy on social media users. A positive correlation coefficient indicates that there is a unidirectional relationship, meaning that if one variable shows a high score, the other variables also show a high score. Conversely, if one variable shows a low score, the other variables also show a low score, so it can be concluded that the higher a person's critical thinking ability score, the higher his information literacy. Conversely, the lower a person's critical thinking ability, the lower his information literacy.

According to Sugiyono (2015), the interpretation of the correlation coefficient starting from 0.40 -0.599 means that the level of relationship that occurs between the two variables is moderate. Therefore, it can be said that the level of relationship that occurs between variables in this study is moderate. The results of statistical analysis using multiple linear regression also show the value of R Square (R^2) = 0.347, meaning that the effect of critical thinking skills on information literacy is 34.7%, while the other 65.3% is influenced by other variables not explained in this study

Discussion

This study aims to determine the relationship between critical thinking skills and information literacy in identifying fake news among social media users. The results of data analysis show that there is a relationship between critical thinking skills and information literacy on social media users, thus the hypothesis in this study is accepted. Furthermore, the type of relationship found is a positive relationship which means that there is a unidirectional relationship. This means that if the strategy of critical thinking skills is high, then information literacy is also high. Vice versa if the strategy of critical thinking skills is low, then information literacy will also be low.

The results of this study are supported by previous research conducted by Rezaiee and Pourbairamian (2016) that there is a positive relationship between critical thinking skills and information literacy. Another study conducted by Aryanti (2019) also stated that there was a very significant positive relationship between critical thinking and information literacy with a correlation coefficient of 0.632 (P=0.000) and an effective contribution of 40%. Furthermore, Aryanti said that it is important to maintain critical thinking skills to become an information literate individual. Similar research results were also found in the research of Supriyanti et al. (2020), critical thinking skills are related to exploring and evaluating information in making arguments according to relevant and appropriate information, as well as analyzing and synthesizing information to solve problems. Where these activities are part of information literacy.

The relationship between critical thinking skills and information literacy is also supported by research conducted by Aziza (2019). Aziza conducted research involving students as research subjects and got the results that there was a positive correlation between critical thinking dispositions and information literacy in students, with p-value = 0.00 and correlation coefficient (r) = 0.621. The same thing was also found in the research Moradi et al. (2014), namely there is a significant correlation between critical thinking scores and information literacy in medical students. Furthermore, there is a direct and significant relationship between the components of critical thinking skills, namely evaluation, inference, analysis, deductive and inductive reasoning with information literacy (Moradi et al., 2014). Information literacy can give students the ability to be able to distinguish valid sources of information in supporting their academic activities (Bury, 2016).

Information literacy also provides students with provisions to utilize various electronic information sources available to help obtain relevant and reliable information to be used as sources in their academic activities (Boger et al., 2015). This information literacy ability equips students with critical thinking to distinguish whether a reliable source of information comes from mainstream and popular sources from sources in the form of reviews from colleagues or other academics (Bury, 2016). This information literacy ability is very useful in today's internet era (Azura, 2018). Furthermore, information literacy should be a way to identify those on social media and online portals. The amount of information obtained by students through social media should make students have to be more critical of the information and have an open mind, so that students have more sources of information that will be given or that they will receive and are not exposed to hoax news on social media (Aziza, 2019). In this case, individuals who have good information literacy will usually look for clear sources of information or knowledge obtained, then rediscover whether the information/news obtained from reliable sources or from sources that actually present information/ fake news (hoax).

Categorization grouping shows that the majority of research subjects are in the category of high critical thinking skills. The high score of critical thinking skills on research subjects can be explained based on the age of the subject. The majority of the subjects in this study were 20 to 23 years old. The age of 20-23 years is included in the category of early adulthood (Santrock, 2011), the age which is the transition period from adolescence to adulthood. These

results are supported by research conducted by Friend and Zubek (1958) which showed that there were differences and changes in the critical thinking abilities of individuals based on their age. At the age of adolescence, critical thinking skills are not yet developed. However, critical thinking skills developed rapidly after that and reached its peak in the mid-twenties. Then it holds up well with age until the mid-thirties, after which it continues to decline with age. The same thing was also found in Denney's research (1995), age was significantly associated with critical thinking skills in adulthood; Performance (critical thinking skills) also declines with age.

Prameswari et al. (2018) said that there are intellectual development factors that affect a person's critical thinking ability. Furthermore, the intellectual development of each individual varies depending on the age and level of development, ideally the older the child, the more clearly the tendency in the maturity of his intellectual process, including the ability to think critically. According to Piaget (in Hurlock, 1996) at the age of teenagers-adults, individuals are already at the stage of formal operational cognitive development. At this stage, individuals have begun to think about concrete experiences, and think about them in a more abstract, idealistic and logical manner and begin to hypothesize. Dwyer et al. (2017) in his research said that mature students performed significantly better over time in terms of critical thinking skills than younger students. This can happen because of the possibility of more involvement in metacognitive students who are more mature, increased autonomy, responsibility and locus of control (Keegan, 2013; Knowles et al., 2014; Rotter, 1990; Wedemeyer, 2010).

The high categorization of critical thinking skills can also be explained based on the education of the research subject. The majority of the subjects' last education in this study was SMA/MA/MK/sederajat and undergraduate. In addition, most of the research subjects are also students. Denney (1995) in his research explains education is also significantly related to critical thinking skills: Performance (critical thinking skills) can increase with increasing education. In line with Friend dan Zubek (1958) also found that education level was positively correlated with critical thinking ability. Furthermore, the correlation shown is relatively low, at 0.31. This shows that the difference in educational attainment may not be very important in taking into account differences in critical thinking abilities. However, this factor cannot be ignored, especially in the late adult age group (above 60 years).

The categorization of information literacy on research subjects shows that most of the research subjects are in the category of high information literacy. The high level of information literacy on the research subject can be explained through the level of education and type of work on the research subject. In the results of the data description, it can be seen that the majority of the subjects are students. These results are similar to the results of research conducted by Azura (2018) namely Airlangga University students (research subjects) are quite capable in implementing the five information literacy standards proposed by the Association of College and Research Library (ACRL). Irhandayaningsih (2021) also found in his research that most respondents had an information literacy level at the 'highly skilled' level when measured using the Association of College and Research Library (ACRL) standards.

Theoretically, some experts have previously had disagreements about the relationship of critical thinking skills with information literacy. The difference of opinion occurred between researchers from literature and researchers in psychology and philosophy. According to Hollis (2019) library and information science researchers have a very narrow understanding of critical thinking, while psychology and philosophy researchers have an equally narrow view of information literacy. For example Paul and Elder (2019) one of the researchers of the discipline of Psychology explains about the sub-components of critical thinking that take the stance that critical thinking is more broad because: "To understand of any content, human communication, book, film, or media message, one must understand not only the raw

"information" it contains, but also its purpose, the questions asked, the concept that composes the information, the underlying assumptions, the conclusions drawn from it, the implications that follow from those conclusions, and the viewpoints that inform them.

While other researchers in the library science literature Daugherty and Russo (2010) presented critical thinking and information literacy as an interdependent set of skills that can be "put together" in instruction. Alfino et al. (2008) sees information literacy instruction as a method of improving critical thinking instruction, perhaps through the application of critical thinking skills to information literacy tasks and tasks. Ward (2006) says that critical thinking is not all there is for information literacy, but that "We use the psychological processes of intuition and imagination as much as critical thinking to mediate our relationship with the world" by noting that information comes from within as well as from existing external sources.

Meanwhile, Albitz (2007) argues that critical thinking skills are an important component of information literacy, but information literacy is not always necessary for critical thinking. He implied that information literacy is like a discipline, and critical thinking should be applied to it, as applied to other disciplines. Therefore, every element of information literacy (finding, evaluating, and using information) must be guided by the ability and disposition of critical thinking. Critical thinking is a mental process, and therefore personal and internal, whereas information literacy is more of a public process with observable techniques (Weiner, 2011).

In conclusion, information literacy and critical thinking shared very similar timelines, became famous as factors of interest in the 80s and continue to be deciphered to this day (Ennis, 2015; Grafstein, 2007). Which concepts involve a person are at least partly due to which disciplines are under them, with theorists and practitioners of library and information science discussing information literacy, and philosophers, psychologists, and educational researchers more likely to discuss critical thinking (Albitz, 2007). Even so, both information literacy skills and critical thinking skills are equally important in today's digital age.

Another thing found in this study is the value of determination between variables. The value of determination in a correlation study aims to determine the magnitude of the influence of the independent variable on the dependent variable (Kuncoro, 2011). Based on the results of the analysis, the correlation coefficient value obtained in this study is 0.589. The value of determination obtained from the coefficient value is 0.347. Its means that the effect of critical thinking skills on information literacy is 34.7%, while the other 65.3% is influenced by other variables not explained in this study. This means that although there is a relationship between the two variables, the strength of the correlation between the variables is moderate (enough), because the value is below 50%.

This research has been carried out in accordance with a scientific methodology and is expected to give satisfactory results, but this research has limitations and shortcomings during the research process. One of them is the spread of the scale of research conducted online so that researchers cannot directly control the subject when filling out answers. In addition, there is also a lack of research when conducting the Try Out scale, namely the lack of a number of subjects obtained and the lack of control from the researcher to ensure that respondents who have filled out the Try-Out scale do not refill the research scale.

The shortcomings in this study are also expected to be a lesson for further researchers to pay more attention to how to control subjects in research, both during trials and research data collection. The next researcher can use questions on the scale to make sure the research subjects never fill out the scale we shared before or use other effective means. If you want to do information literacy research in spreading hoaxes, it is hoped that further researchers will use measuring tools that can better see and describe how individual behavior on social media, especially in understanding, using, accessing, and disseminating news/information.

For further researchers who want to examine critical thinking skills and information literacy, it is recommended to conduct comparative research by comparing them at a certain age or a certain type of education. Can also conduct experimental research, for example

providing appropriate training to improve critical thinking skills and information literacy. The majority of research subjects who are students indicate that the results of this study cannot cover all types of social media users. Therefore, future researchers are also expected to be able to examine certain types of subjects or certain social media users.

Conclusion

Based on the results of data analysis and discussion in this study, it can be concluded that there is a positive relationship between critical thinking skills and information literacy on social media users. This relationship means that the higher a person's critical thinking ability, the higher the person's information literacy, on the contrary, the lower the critical thinking ability, the lower the person's information literacy. The results also show that the critical thinking skills of social media users and information literacy are in the high category

The existence of a relationship between critical thinking skills and information literacy on social media users in this study shows the importance of the role of critical thinking skills for individuals to become more information literate individuals. The implications of this study are aimed at media users in general and students, in particular, to become more critical individuals in social media, seeking information from valid and reliable sources, and being more careful in responding to information on social media. In this way, it is hoped that the community (social media users) will become individuals who are more information literate

Acknowledment

References

Adıgüzel, A. (2011). The development of the scale of information literacy. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, *17*, 15–28. https://dergipark.org.tr/tr/pub/zgefd/issue/47948/606648.

Albitz, R. S. (2007). The what and who of information literacy and critical thinking in higher education. *Portal: Libraries and the Academy*, *7*(1), 97–109.

Alfino, M., Pajer, M., Pierce, L., & Jenks, K. O. (2008). Advancing critical thinking and information literacy skills in first year college students. *College & Undergraduate Libraries*, *15*(1–2), 81–98.

Alfisyah, Apriati, Y., & Azkia, L. (2020). Sosialisasi bahaya hoax di kalangan ibu-ibu jamaah pengajian ar-rahmah kelurahan sekumpul martapura kabupaten banjar. *Bubungan Tinggi: Jurnal Pengabdian Masyarakat*, *2*(1), 10. https://doi.org/10.20527/btjpm.v2i1.1797

Ariefana, P. (2019). *Mendikbud ungkap 2 hoaks di balik pengeroyokan Audrey*. Suara.Com. https://www.suara.com/news/2019/04/11/121657/mendikbud-ungkap-2-hoaks-di-balikpengeroyokan-audrey?page=all.

Aryanti, E. D. (2019). *Hubungan antara berpikir kritis dengan literasi informasi pada mahasiswa dalam menghadapi hoaks di instagram*. Universitas Mercu Buana Yogyakarta.

Aziza, D. F. (2019). Hubungan antara critical thinking disposition dengan information literacy di media sosial pada mahasiswa. *Cognicia*, *7*(2), 270–280.

Azura, T. (2018). *Hubungan antara tingkat literasi informasi dengan tingkat penggunaan electronic information resources pada mahasiswa universitas airlangga surabaya*.

Universitas Airlangga.

Boger, T. S., Dybvik, H., Eng, A. L., & Norheim, E. H. (2015). The impact of library information literacy classes on first year students' searching behaviour. *Journal of Information Literacy*, *9*(1), 34–46. https://doi.org/10.11645/9.1.1979.

BPSDMP, B. P. dan P. S. D. M. K. K. dan I. R. I. (2020). *BPSDMP Kominfo Manado, adakan "survei perilaku masyarakat terkait penyebaran hoaks Covid-19."* Kominfo. https://balitbangsdm.kominfo.go.id/berita-bpsdmp-kominfo-manado-adakan-survei-perilaku-masyarakat-terkait-penyebaran--19-638.

Bury, S. (2016). Learning from faculty voices on information literacy: Opportunities and challenges for undergraduate information literacy education. *Reference Services Review*.

Daugherty, A. L., & Russo, M. F. (2010). Reinforcing critical thinking and information literacy skills through assignment design. *Louisiana Libraries*, *72*(3), 26–29.

De Paor, S., & Heravi, B. (2020). Information literacy and fake news: How the field of librarianship can help combat the epidemic of fake news. *Journal of Academic Librarianship*, *46*(5), 102218. https://doi.org/10.1016/j.acalib.2020.102218.

Denney, N. W. (1995). Critical thinking during the adult years: Has the developmental function changed over the last four decades? *Experimental Aging Research*, *21*(2), 191–207. https://doi.org/10.1080/03610739508254277.

Dwyer, C. P., Hogan, M. J., Harney, O. M., & Kavanagh, C. (2017). Facilitating a student-educator conceptual model of dispositions towards critical thinking through interactive management. *Educational Technology Research and Development*, *65*(1), 47–73.

Ennis, R. H. (2015). Critical thinking: A streamlined conception. In *the Palgrave handbook of critical thinking in higher education* (pp. 31–47). Springer.

Ennis, R. H., Millman, J., & Tomko, T. N. (1985). *Cornell critical thinking tests level X & level Z: Manual*. Midwest Publications Pacific Grove, CA.

Facione, N. C., & Facione, P. a. (1994). *The "California critical thinking skills test" and the national league for nursing accreditation*. 14.

Facione, N. C., Facione, P. A., & Sanchez, C. A. (1994). Critical thinking disposition as a measure of competent clinical judgment: the development of the California Critical Thinking Disposition Inventory. *The Journal of Nursing Education*, *33*(8), 345–350. https://doi.org/10.3928/0148-4834-19941001-05

Facione, P. (2000). The disposition toward critical thinking: its character, measurement, and relationship to critical thinking skill. *Informal Logic*, *20*(1), 61–84.

Fadhil, H. (2019). *Berawal dari bully di medsos, begini kronologi kasus Audrey*. DetikNews. https://news.detik.com/berita/d-4506079/berawal-dari-bully-di-medsos-begini-kronologi-kasus-audrey/2.

Friend, C. M., & Zubek, J. P. (1958). The effects of age on critical thinking ability. *Journal of Gerontology*, *13*(4), 407–413.

Gasque, K. C. G. D. (2017). Metacognição no processo de letramento informacional. *Revista Brasileira de Biblioteconomia e Documentação*, *13*, 177–195.

Goodsett, M. (2020). Best practices for teaching and assessing critical thinking in information literacy online learning objects. *Journal of Academic Librarianship*, *46*(5), 102163. https://doi.org/10.1016/j.acalib.2020.102163.

Grafstein, A. (2007). Information literacy and technology: An examination of some issues. *Portal: Libraries and the Academy*, *7*(1), 51–64.

Gumelar, G., Erik, & Robbany, M. A. (2019). Intensi menyebarkan berita palsu ditinjau dari model kepribadian lima besar pada mahasiswa psikologi. *Jurnal Penelitian Dan Pengukuran Psikologi*, *08*(1), 48–58.

Halpern, D. F. (1999). Teaching for critical thinking: Helping college students develop the skills and dispositions of a critical thinker. *New Directions for Teaching and Learning*, *1999*(80), 69–74.

Hollis, H. (2019). Information literacy and critical thinking: Different concepts, shared

conceptions. *Information Research*, *May*, 1–50.

Hurlock, E. B. (1996). *Psikologi Perkembangan*. Erlangga.

Information Literacy Competency Standards for Higher Education. (2000). http://www.ala.org/acrl/standards/informationliteracycompetency.

Irhandayaningsih, A. (2021). Tingkat literasi informasi mahasiswa menurut standar ACRL: Studi aKasus Peserta KKN UNDIP di Masa Pandemi COVID-19. *ANUVA*, *5*(1), 53–61.

Keegan, D. (2013). *Foundations of distance education*. Routledge.

Knowles, M. S., Holton III, E. F., & Swanson, R. A. (2014). *The adult learner: The definitive classic in adult education and human resource development*. Routledge.

Kominfo. (2019). *Temuan Kominfo: Hoax Paling Banyak Beredar di April 2019*. Kementerian Komunikasi Dan Informatika Republik Indonesia. https://kominfo.go.id/index.php/content/detail/3415/Kominfo+%3A+Pengguna+Intern et+di+Indonesia+63+Juta+Orang/0/berita_satker.

Kuncoro, M. (2011). Metode Kuantitatif. In *Unit Penerbit dan Percetakan Sekolah Tinggi Ilmu Manajemen* (4th ed.).

Machete, P., & Turpin, M. (2020). The use of critical thinking to identify fake news: A systematic literature review. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *12067 LNCS*(April), 235–246. https://doi.org/10.1007/978-3-030-45002-1_20.

Moradi, R., Aabadi, A., Khazayi, A., & Rasouli, B. (2014). Relationship between critical thinking and information literacy of medical sciences students. *Journal of Health*, *7*(3), 365–376.

Muin, A., Hanifah, S. H., & Diwidian, F. (2018). The effect of creative problem solving on students' mathematical adaptive reasoning. *IOP Conf. Series: Journal of Physics*, *948*, 12001.

Paskin, D. (2018). Real or fake news: Who knows? *The Journal of Social Media in Society*, *7*(2), 252–273.

Paul, R., & Elder, L. (2019). *The miniature guide to critical thinking concepts and tools*. Rowman & Littlefield.

Prameswari, S. W., Suharno, S., & Sarwanto, S. (2018). Inculcate critical thinking skills in primary schools. *Social, Humanities, and Educational Studies (SHEs): Conference Series*, *1*(1).

Rahadi, D. R. (2017). Perilaku pengguna dan informasi hoax di media sosial. *Jurnal Manajemen Dan Kewirausahaan*, *5*(1), 58–70. https://doi.org/10.26905/jmdk.v5i1.1342.

Rezaiee, R., & Pourbairamian, G. (2016). Relationship between critical thinking and information Literacy in students of ardabil university of medical sciences. *Journal of Health*, *7*(3), 365–376.

Rochlin, N. (2017). Fake news: belief in post-truth. *Library Hi Tech*, *35*(3), 386–392.

Rose-Wiles, L. M. (2018). Reflections on fake news, librarians, and undergraduate research. *Reference & User Services Quarterly*, *57*(3), 200–204.

Rotter, J. (1990). Internal versus external control of reinforcement. *American Psychologist*, *45*(4), 489–493.

Santoso, D. H. (2020). Hoax ditengah pandemi covid-19. *COVID-19 Dalam Ragam Tinjauan Perspektif*, *1*(2), 451–460.

Santrock, J. W. (2011). Perkembangan anak edisi 7 jilid 2. In *Terjemahan: Sarah Genis B) Jakarta: Erlangga* (7th ed.). Erlangga.

Shin, H., Park, C. G., & Kim, H. (2015). Validation of yoon's critical thinking disposition instrument. *Asian Nursing Research*, *9*(4), 342–348. https://doi.org/10.1016/j.anr.2015.10.004

Stein-smith, K. (2017). Librarians, information literacy, and fake news. *Strategic Library*, *37*, 1–23. http://www.libraryspot.net/SL/SL_Mar17_1.pdf.

Sugiyono. (2015). Metode penelitian kombinasi (mixed methods). In *Bandung: Alfabeta*.

Supriyanti, S., Permanasari, A., & Khoerunnisa, F. (2020). Correlation between information literacy and critical thinking enhancement through PjBL-information literacy learning model. *Journal of Educational Sciences*, *4*(4), 774. https://doi.org/10.31258/jes.4.4.p.774-784.

Taala, W., Jr., F. B. F., & Teresa, P. H. S. (2019). Library literacy program: Library as battleground for fighting fakenews. *OALib*, *06*(03), 1–16. https://doi.org/10.4236/oalib.1105296.

Ward, D. (2006). Revisioning information literacy for lifelong meaning. *The Journal of Academic Librarianship*, *32*(4), 396–402.

Wardle, C. (2017). Fake news. It's complicated. In *FIRST DRAFT*. https://firstdraftnews.org/latest/fake-news-complicated/

Wedemeyer, C. A. (2010). *Learning at the back door: Reflections on nontraditional learning in the lifespan*. IAP.

Weiner, J. M. (2011). Is there a difference between critical thinking and information literacy? *Journal of Information Literacy*, *5*(2), 81–92.