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The Effect of Critical Thinking on Social Media Use, Tolerance, and Self-Assessment of Adolescents in Tulungagung, Indonesia

Agus Zaenul Fitri

Lecturer of Islamic Educational Faculty of UIN Sayyid Ali Rahmatullah Tulungagung, Indonesia

guszain@yahoo.co.id

Abstract. This study aims to examine and measure the influence of the influence of critical thinking on the use of social media, tolerance, and self-assessment of adolescents at school. Critical thinking has become a necessity for everyone in the era of the digitalization of technology. In dealing with the problems of adolescent life, critical thinking is one of the bases for taking action. Everyday teenagers are faced with very complex problems, such as addiction to the use of social media, lack of tolerance, and inaccurate self-assessment. Lack of literature that discusses the importance of critical thinking in dealing with these problems, researchers are interested in examining the effect of critical thinking on the use of social media, tolerance, and self-assessment of adolescents. This research was a quantitative method, by taking 206 adolescents aged 17-18 years as the research sample. The Statistical Package for the Social Sciences (SPSS) 25 software was used to conduct a one-way Multivariate Analysis of Variance (MANOVA) to determine the difference in effect on the dependent variable showing that there is an effect of critical thinking on the use of social media, tolerance, and self-assessment of adolescents. A percentage of the influence of critical thinking on self-assessment is higher than the use of social media or tolerance. Critical thinking and self-assessment have a very close relationship, so they have a higher influence. It turns out that critical thinking has a major influence on adolescent self-assessment, which is followed by the use of social media and a tolerant attitude. This research is expected to reinforce the importance of critical thinking in adolescents at school.

Keywords. Critical thinking, Social-media, Tolerance, Radicalism, Attitude

Introduction

Critical thinking is a skill that everyone should have in life. Technology is increasingly sophisticated, resulting in more information received by adolescents overload. Both factual information and hoax news. So that to keep up with technological developments, adolescents are required to improve their critical thinking skills. According to Frydenberg in the 21st century, everyone is required to have critical thinking skills, digital literacy knowledge and skills, information literacy, media literacy, and mastering information and communication technology (Frydenberg, M., & Andone, 2011);(Zakiah, 2019);(Malik & Ubaidillah, 2020). Critical thinkers are people who can go further, see problems from multiple perspectives, and make conclusions based on evidence, not their feelings (Murawski, 2014). By increasing critical

thinking skills, adolescents can judge information carefully. Thus, the potential for adolescents to take appropriate actions or decisions also increases.

Social media is an online platform used to establish social relationships with other people who have the same interests, activities, and backgrounds (Akram & Kumar, 2017). According to Nugraheni and Anastasia, social media is online media where users can communicate with each other, find information, and make new friends with all the features they have (Nugraheni & Anastasia, 2017; Nugraheny, 2019). Intercourse in cyberspace that does not recognize space, boundaries, and time can help adolescents seek access to networks of friends, references, information, and world relations to support the realization of their dreams. However, excessive use of social media can reduce the health, and reduce the socialization of teenagers in the real world. Tripathi, G., & Ahad, MA in their research explained that excessive use of technology will cause serious damage to the personality and overall health of adolescents in mental, physical, and social aspects (Tripathi & Ahad, 2019). Besides, being influenced by hoax news, hoax images, hoax videos spread on social media is a bad experience for teenagers in using social media (Coleman, 2013; Van Seters Richard HG, 1990).

Mansyur explained that social media is the medium most used by Indonesians for communication. This statement is based on the results of a 2016 survey by the Indonesian Internet Service Providers Association (APJII), that internet users in Indonesia have reached 132.7 million people, with Facebook being the most frequently visited social media content, namely 54%, followed by Instagram, YouTube, and Twitter (Akram & Kumar, 2017; Ghofur & Raharjo, 2018; Ku et al., 2019; Myers & Hamilton, 2014; Sari, Hartina, Awalia, Irianti, & Ainun, 2011; Tripathi & Ahad, 2019). With a large number of social media users from various levels of society in Indonesia, the chances of harming the use of social media are even greater. Therefore, to overcome the negative effects of social media use, adolescents must have critical thinking skills. The character of critical thinking is the ability to find evidence base to justify a point of view (Ku et al., 2019). So, students who can think critically will be careful in examining a situation or information. Through critical thinking, students will be good at responding to all posts on social media and not easily trusting information that is not clear in reality. Not only responding to posts but by thinking critically, students can be smart and independent using social media.

Indonesia is one of the largest multicultural countries in the world with Indonesia's socio-cultural and geographic conditions that are very complex, diagrammatic, and broad (Lestari, 2015). The existing diversity is very prone to conflict or division. So that the ability to think critically is needed to accept this diversity. By developing critical thinking skills, adolescents can assess differences as gifts that need to be appreciated and preserved. However, we still encounter many intolerant attitudes among the public as a result of the negative impact of technological advances. Adolescents are more addicted to anti-social and delinquent behavior in the environment, especially they can be attacked by ideas of extremism, violence, criminalization, intolerance, and terrorism (Becker, 2020; Edgeman & Wu, 2016; Kolobova, Languages, Nazarova, & Languages, 2016; Van Seters Richard HG, 1990)

Radicalization As stated by Gatot Edy Pramono, in a discussion commemorating the International Day of tolerance at the Sahid hotel, Sudirman area, Central Jakarta, Friday (11/15/2019), he stated that there are three causes of intolerance in Indonesia (Nugraheny, 2019): 1) the development of globalization, democratization, and science can influence the development of tolerance, 2) democracy which is dominated by "low class", 3) the understanding of intolerance is widely disseminated through social media (H Veiskarami, L Amirian, 2018; Saylor, 2018; Supriyanto & Wahyudi, 2017).

Teenagers in Indonesia are active users of social media so that teenagers in Indonesia are very vulnerable to being influenced by the understanding of intolerance through social media. Starting from this background, the ability to think critically can play an important role in preventing the understanding of intolerance. Because, by thinking critically, adolescents can be smart in making and responding to posts on social media.

Self-assessment is a, which can be used as a reflection of students on the learning activities they have done. The application of self-assessment has several obstacles. Self-assessment is very closely related to spiritual thinking, especially in reflection on performance (Januleviciene & Kavaliauskiene, 2012), besides that critical thinking and self-assessment can test one's logic, so there is not enough critical thinking ability but also needs to be supported by the ability to assess yourself (Ay, Karakaya, & Yilmaz, 2015; Januleviciene & Kavaliauskiene, 2012; Wahyuningsih, Wahyuni, & Lesmono, 2016; Wahyuningsih et al., 2016). Wahyuningsih explained some of these obstacles, including First, the implementation of self-assessment in learning assessment is still debated among experts and teachers. There are still many teachers who worry that self-assessment will result in assessments overestimating and subjective. Second, the problem of time and the level of honesty is still lacking, and students feel less confident in assessing their work (Wahyuningsih et al., 2016).

Critical thinking can help students to see the negative and positive sides of something before accepting or rejecting something. Also, crisis thinking is very fundamental for children in the modern era (Gilmanshina, Smirnov, Ibatova, & Berechikidze, 2021; Suriya Gilmanshina, AygulIbatova, 2021). Critical thinking can also enable students to find truth in the many events and information that surround them every day. So, students who think critically can assess their thinkers and can make decisions appropriately. Research on social media is very important as long as it does not violate the privacy norms and expectations of users (Gilbert, Vitak, & Shilton, 2021).

Study Aim

This study aimed to examine the effect of critical thinking on the use of social media, tolerance attitudes, and self-assessment of adolescents. Researchers want to know how much influence critical thinking has on these three points. Which variable has the bigger influence, why can it have the bigger effect, and which variable has the smaller influence, and why can it have the smaller effect during the Covid-19 Pandemic.

Methods

This research is quantitative with a survey type to determine the factors that influence a person's attitude and behavior (Leavy, 2012). Participants in this study were 860 senior high school adolescents. From 860 adolescents, 208 teenagers were taken as the research sample. The research sample was taken using simple random sampling. Researchers take this technique because researchers assume that every element of the overall population under study has the same opportunity to be selected.

Data were collected using a questionnaire as the main instrument, and documentation as a supporting instrument (Stockemer, 2019). Researchers made a questionnaire containing questions about critical thinking, use of social media, tolerance, and self-assessment. Researchers used Google Forms in distributing research questionnaires during the pandemic. The process of distributing this questionnaire was assisted by the homeroom teacher. Measures were carried out by distributing questionnaires to 208 adolescents. All teenagers were asked to fill out a questionnaire according to their respective circumstances.

Measuring Critical Thinking

The ability of critical thinking was measured in 5 aspects, namely: intellectual humility, intellectual courage, intellectual empathy, intellectual integrity, and belief in rationality (Sihotang, 2019). Based on these five aspects, we ask 12 questions, namely: (1) I want to learn from other people, (2) I will be careful in assessing something whose reality is not clear, (3) I give an assessment of something based on that is not clear and definite, (4) I dare to say that what is right is true, (5) I dare not say that what is wrong is wrong, (6) I don't care about other people's bad situations, (7) I can find a way out of other people's bad situations, (8) I can feel the bad situation of others without falling for that person's bad situation, (9) I am ashamed to do the right thing, (10) I can fulfill the promises I have made, (11) Whatever I say is the result of careful consideration, (12) Whatever I do is the result of careful consideration.

Measuring social media usage

The use of social media was measured through two aspects. First, the amount of time used for social media consists of frequency and duration (Elvinaro, 2004). Second, responding to issues related to the use of social media, including selfies, online shopping, user personalization, and sharing culture (Mulawarman & Nurfitri, 2017). To measure social media usage we asked the following 7 questions: (1) I open social media every day, (2) I open social media more than 3 hours per day, (3) I often upload photos to show off, (4) I think positively about people's comments about something I upload on social media, (5) I am not easily tempted by advertisements for goods on social media, (6) Status posts on my social media, show my personality, (7) I am easily provoked with hoax news on social media.

Measuring Tolerance Attitude

Tolerance was measured through three aspects. The first aspect is peace, which consists of caring for others and loving peace. The second aspect is appreciating differences. And the third aspect is awareness, which consists of appreciating the kindness of others, being open, comfortable in life, and comforting others (Supriyanto & Wahyudi, 2017). From this aspect, seven questions are broken down, namely: (1) I don't care about my friends and my environment, (2) I love peace, (3) I respect the freedom of others in making choices, (4) I have not been able to realize that every individual have advantages, (5) I am not ready to live with people who have a different family background or religion, (6) I realize that differences are a gift to be grateful for, (7) I can be grateful for my situation, even though there are differences with friends or my environment

Measuring Self-Assessment

Self-assessment is measured based on adolescent self-confidence in assessing their thoughts, which can be seen through their responsibilities, and their activeness in critical reflection (Nirwana, 2016). The measurement of self-assessment through the following seven questions: (1) I am responsible for my learning process, (2) I am ashamed of being helpless, when I do not understand the material I am learning, (3) I am unable to judge that what I am doing is correct or wrong, (4) I can take lessons from a problem in my life, (5) I am always eager to improve myself to be better, (6) I am not confident in my abilities, (7) When I take exams, I honest to my ability.

The researcher used the multivariate analysis of variance (Manova) test (Creswell, 2014);(Stockemer, 2019). The variance compared is derived from more than one dependent variable. In this study, what was examined with this test was to determine the effect of critical thinking on the use of social media, tolerance, and self-assessment

Results

Participants

The population of all students used in this study consisted of 860 high school students. With a simple random sampling technique, a sample of 208 students was obtained. Data sources: Respondents and Documents. Data collection techniques: questionnaire. Data analysis techniques: validity, reliability, normality, homogeneity, and Multivariate Analysis tests with the help of SPSS for Windows 25.0.

The highest score for the measurement of the critical thinking variable got a score of 48, and the lowest got a score of 24. Based on the research results, 1% got a score range of 24-26; 4.8% got a score range of 27-29; 15.4% got a score range of 30-32; 24% got a score range of 33-35; 22.1% got a score range of 36-38; 21.2% received a value range of 39-41; 8.7% received a value range of 42-44; 1.9% got a score range of 45-46; 1% got a range of values 47-48.

The highest score for measuring the variable use of social media got a score of 26, and the lowest score was 11. Based on the results of the study, 0.5% got a score range of 11-12; 6.3% got a score range of 13-14; 17.3% got a score range of 15-16. 24% got a score range of 17-18; 29.3% got a score range of 19-20; 15.4% got a score range of 21-22; 5.3% got a score range of 23-24; 0.5% got a score of 25; 1.4% scored 26.

The highest score for measuring the tolerance attitude variable got a score of 28, and the lowest got a score of 15. Based on the results of the study, 3.4% got a value range of 15-16; 7.7% got a score range of 17-18; 14.4% got a score range of 19-20; 24% got a score range of 21-22; 20.7% got a score range of 23-24; 11.1% got a score of 25; 7.7% got a score of 26; 7.2% got a score of 27; 3.8% scored 28.

The highest score for measuring the self-assessment variable received a score of 28, and the lowest score was 13. Based on the results of the study, 1% got a score range of 13-14; 5.8% got a score range of 15-16; 14.4% got a score range of 17-18; 19.7% got a score range of 19-20; 24.5% got a score range of 21-22; 21.2% got a score range of 23-24; 7.2% received a score range of 25-26; 4.3% got a score of 27; 1.9% got a score of 28.

Table 1

Manova Analysis

| Tests of Between-Subjects Effects | | | | | | |
|-----------------------------------|-----------------------|-------------------------|-----|-------------|----------|------|
| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | Use of Social Media | 449,146a | 22 | 20,416 | 3,200 | ,000 |
| | Attitude of Tolerance | 428,334b | 22 | 19,470 | 2,283 | ,002 |
| | Self-Assessment | 832,568c | 22 | 37,844 | 6,075 | ,000 |
| Intercept | Use of Social Media | 28781,328 | 1 | 28781,328 | 4511,138 | ,000 |
| | Attitude of Tolerance | 40512,269 | 1 | 40512,269 | 4750,602 | ,000 |
| | Self-Assessment | 36045,417 | 1 | 36045,417 | 5785,817 | ,000 |
| X | Use of Social Media | 449,146 | 22 | 20,416 | 3,200 | ,000 |
| | Attitude of Tolerance | 428,334 | 22 | 19,470 | 2,283 | ,002 |
| | Self-Assessment | 832,568 | 22 | 37,844 | 6,075 | ,000 |
| Error | Use of Social Media | 1180,311 | 185 | 6,380 | | |
| | Attitude of Tolerance | 1577,646 | 185 | 8,528 | | |
| | Self-Assessment | 1152,543 | 185 | 6,230 | | |
| Total | Use of Social Media | 73671,000 | 208 | | | |
| | Attitude of Tolerance | 107216,000 | 208 | | | |
| | Self-Assessment | 95189,000 | 208 | | | |
| Corrected Total | Use of Social Media | 1629,457 | 207 | | | |
| | Attitude of Tolerance | 2005,981 | 207 | | | |
| | Self-Assessment | 1985,111 | 207 | | | |

a. R Squared = ,276 (Adjusted R Squared = ,190)

| |
|---|
| b. R Squared = ,214 (Adjusted R Squared = ,120) |
| c. R Squared = ,419 (Adjusted R Squared = ,350) |

In column X, next to it there is the use of social media, tolerance, and student self-assessment. This shows the effect of the independent variable on the dependent. Said to be significant, if the value is sig. <0.05.

The three values of the dependent variable above can be concluded as an answer to the following hypothesis:

1. Critical thinking affects the use of social media. A significant value of 0.000 indicates a significant effect. The amount of R Squared in critical thinking on the use of social media is $0.276 = 27.6\%$. This means that the effect of critical thinking on the use of social media is 27.6%. While the rest ($100\% - 27.6\% = 72.4\%$) is influenced by other variables or variables not studied.
2. Critical thinking affects tolerance. A significant value of 0.0002 indicates a significant effect. The amount of R Squared in critical thinking towards tolerance is $0.214 = 21.4\%$. This means that the effect of critical thinking on tolerance is 21.4%. While the rest ($100\% - 21.4\% = 78.6\%$) is influenced by other variables or variables not studied.
3. Critical thinking affects self-assessment. A significant value of 0.000 indicates a significant effect. The amount of R Squared on critical thinking on self-assessment is $0,419 = 41.9\%$. This means that the effect of critical thinking on self-assessment is 41.9%. While the rest ($100\% - 41.9\% = 58.1\%$) is influenced by other variables or variables not studied.

Table 2
Manova Test Results (Multivariate Test)

| Multivariate Tests | | | | | | |
|--------------------|--------------------|--------|-----------|---------------|----------|------|
| Effect | | Value | F | Hypothesis df | Error df | Sig. |
| Intercept | Pillai's Trace | ,983 | 3635,382b | 3,000 | 183,000 | ,000 |
| | Wilks' Lambda | ,017 | 3635,382b | 3,000 | 183,000 | ,000 |
| | Hotelling's Trace | 59,596 | 3635,382b | 3,000 | 183,000 | ,000 |
| | Roy's Largest Root | 59,596 | 3635,382b | 3,000 | 183,000 | ,000 |
| X | Pillai's Trace | ,700 | 2,560 | 66,000 | 555,000 | ,000 |
| | Wilks' Lambda | ,417 | 2,824 | 66,000 | 547,344 | ,000 |
| | Hotelling's Trace | 1,134 | 3,121 | 66,000 | 545,000 | ,000 |
| | Roy's Largest Root | ,864 | 7,264c | 22,000 | 185,000 | ,000 |

a. Design: Intercept + X
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Based on the table above, the X value has a smaller value than 0.05 (<0.05). This means that there is a significant influence between critical thinking (X) on the use of social media (Y1), tolerance (Y2), and self-assessment (Y3) simultaneously.

Discussion

The results showed that there was a significant effect of critical thinking on the use of social media, tolerance, and student self-assessment. This is interesting because it turns out that the effect on self-assessment is greater than other variables.

Critical thinking is a process of connecting experiences or information contained in the mind with problems that occur so that it can lead to opposition or questions from this

information (Huffman, Carson, & Simonds, 2000; Paul, 2006; Pusparini, 2019). Prasetyo stated that as consumers, people must be smart and able to choose the information needed. Social media can encourage an overload of information in society in today's digital era. If the public does not respond well, as a result, information on social media can lead to consumptive, misleading, and pragmatic attitudes. Such as the impact of spreading information hoaxes from person to person (Kim, 2019; Kosasi, 2020; Leaning, 2019)

Today, social media is no longer a secondary need but has become a primary need, including the main source of social activities (Coleman, 2013); (Myers & Hamilton, 2014). Many activities are facilitated because of social media. However, on the other hand, there are also negative sides to the use of social media, from addiction to crime. In using social media, we are also faced with various positive posts that invite kindness. However, it does not rule out that there are posts that corner someone, causing slander, social discrimination, and other bad impacts. Critical thinking allows a person to assess information carefully, and look for facts that happened (Paul, 2006). So, the purpose of thinking critically about the use of social media is that someone can be free in using and utilizing social media. Freedom to use social media is that we can control the use of social media, not social media that controls us.

One of the virtues of critical thinking is intellectual humility (Pazyura, 2017; Semedo, A.S.D., Coelho, A.F.M. and Ribeiro, 2016); (Sihotang, 2019). This intellectual humility is shown by being careful in assessing something whose reality is not yet clear, and not giving an assessment of something without a clear and definite basis. If it is related to the use of social media, people who think critically will be smart in using social media and are not easily provoked by news hoaxes.

The Influence of Critical Thinking on Attitudes of Tolerance

The ability to think critically can determine whether an individual's behavior is ethical or not. In other words, critical thinking is closely related to ethics and values (Ay et al., 2015). Every word and action that is carried out through critical thinking, is the result of mature thinking so that the output is good ethics.

Someone who thinks critically can be non-emotional, objective, and has an open mind in respecting the opinions and views of others (Karakoc, 2016). Students who have critical thinking high make it possible to have a high tolerance attitude. Because students who think critically are neutral and not emotional in judging something (H Veiskarami, L Amirian, 2018); (Saylor, 2018). So that there is an attitude of respecting the differences that exist in their environment. Through critical thinking, students can assess a difference as a gift to be grateful for and can take hidden lessons. So, students easily accept a difference and enjoy life to be more meaningful. One of the benefits of critical thinking is that it is a filter for the cultural values that we accept and face daily. With critical thinking, one does not simply accept untested assumptions, developing ideologies, and existing habits, but will question and test them, and filter them. By doing all of this, we will find something basic and through critical power make our lives more meaningful (Sihotang, 2019); (Pazyura, 2017; Semedo, A.S.D., Coelho, A.F.M. and Ribeiro, 2016; Willmott, 1993).

Effect of Critical Thinking Against Self-Assessment

A skilled person to uses critical thinking skills in various spheres of life will succeed in avoiding failure due to poor decision making (de Bie, Wilhelm, & van der Meij, 2015). Critical thinking can provide a deeper understanding of a person (Karakoc, 2016). So, people who think critically will be careful in making decisions. Besides, the decisions that have been taken are the result of a thorough thought process.

Critical thinking is a reflective process that leads to action. As for developing it, students must think about what they think (Bezanilla, Fernández-Nogueira, Poblete, & Galindo-Domínguez, 2019). So, through skills critical thinking, students can analyze their thinking and can take action in dealing with problems. The ability to think is one of the assets that students must have as a basis for dealing with IT developments in the XXI century. Because, a person's success depends on their ability to think, especially in solving life problems they face (Ghofur & Raharjo, 2018). Critical thinking makes students accustomed to facing challenges and solving problems by analyzing their thoughts to decide on an action. So, students who think critically, are smart to assess themselves. What are his strengths and weaknesses, what to do when a problem occurs, what to evaluate, and so on?

Socrates, quoted by Sihotang, revealed that knowing ourselves is the basis for acting appropriately, so as critical thinkers we also need to assess ourselves, meaning that we also dare to evaluate ourselves (Sihotang, 2019). Critical thinking skills must be continuously trained so that someone is accustomed to thinking critically in taking action. Especially take action that will be done. So that all actions taken are the result of critical thinking. This can minimize the chance of error in taking action.

Based on the results of the research of researchers, that the effect of critical thinking on self-assessment students shows the highest value of its effect on the use of social media and students' tolerance attitudes. According to researchers, this can happen because students who can think critically, will think carefully every time they take action and are confident in evaluating themselves. These two things, namely critical thinking and self-assessment, have a very close relationship. So that the influence is even higher. Students who have good critical thinking skills will be able to assess themselves well. Likewise, if the students' critical thinking skills are lacking, then their self-assessment of themselves is also lacking.

The findings of this research are very significant in proving the influence of critical thinking (CT) on the use of social media by 27.6%. Meanwhile, the effect of CT on tolerance is 21.4%. While the effect of CT on self-assessment is 41.9%. This shows that CT has the greatest influence sequentially, namely on self-assessment, use of social media, and attitudes of tolerance. This means that the attitude of tolerance is formed because of the students' ability to reflect and select information so that they can use social media well.

The limitations found in this study are that the research method used needs to use a combination method to explain in-depth the reasons why self-assessment has a greater influence on students than the use of social media and tolerance which is influenced by their critical thinking skills.

Conclusion

Finally, this study found that critical thinking skills are closely related to adolescents. When they can think critically, adolescents can assess an action or situation that is in them. The effect of critical thinking on self-assessment is higher than the use of social media and tolerance. Because, before judging something that is outside himself (the environment), a person will judge himself first. A person will face an event or solve problems that exist in himself before solving problems that arise or are influenced by the outside environment.

It turns out that critical thinking is the key to one's success in the digital era. Adolescents are required to be willing to adapt to existing situations, and to be observant, thorough, and intelligent in facing problems to get to the truth. critical thinking has a greater influence on adolescent self-assessment, this ability affects the use of social media and the ability to use social media ultimately makes adolescents' tolerance attitude better.

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