The Effect of The Use of Social Media (Whatsapp) towards The Biological Cognitive Learning Outcomes of Class XII MIA Students at SMA Negeri 1 Tinambung

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Abstract

Social media is one of the media that has several positive and negative values. It can be used as a learning medium but can also be a distraction in the learning process. This study aims to determine the effect of social media (WhatsApp) on students' cognitive learning outcomes.. This study uses a type of correlation research with a quantitative approach. The population in this study were all students of SMAN 1 Tinambung. The research sample was 99 students, obtained using a probability sampling technique with the simple random sampling method. The variables studied were: (1) The independent variable was the use of social media; (2) The dependent variable was learning outcomes. Data collection techniques use questionnaires, interviews, and documentation. The results showed a relationship between the use of social media (Whatsapp) and the cognitive learning outcomes of grade XII MIA students at SMA Negeri 1 Tinambung. This is evidenced by the correlation coefficient (r) of 0.258, which is in the low category and the Pearson correlation value or r count (0.258) < r table (0.1975) and the Sig value. (0.010) < 0.05. These results indicate that the effect shown is in a low category. It is hoped that further researchers who will do the same will be more prepared in terms of respondents' willingness.

Keywords: Social media, biology learning

A. Introduction

Learning outcomes result from the interaction of learning actions and teaching activities between students and educators (Fadhilaturrahmi, 2017). The teacher is a role model and guides the learning process (Arnesi & Hamid, 2015) so that students can obtain good learning outcomes.

Smartphones are sophisticated tools equipped with applications to make it easier to connect to the internet (Rahmawati et al., 2017). Social media is online media (in a network) used as a means of online social interaction on the internet and has been widely used in Indonesia. Social media has touched all walks of life in Indonesia, including students. Social media currently consists of various types that can be easily accessed by students, for example, Youtube, Facebook, Blogs, Twitter and Whatsapp (Suroiyah, 2020).

Whatsapp is an internet-based application where users can share various kinds of information individually or in a group according to the supporting features (Rohmawati & Sa'adah, 2021). Based on the results of interviews conducted with educators and several students of SMAN 1 Tinambung, data was obtained stating that since the outbreak of the covid_19 pandemic, the learning process has been conducted online. SMAN 1 Tinambung is one of the high schools that has implemented online learning by utilizing Whatsapp social media as a learning medium so that the learning process continues to run smoothly. The value of cognitive learning outcomes for students of class XII MIA SMA Negeri 1 Tinambung is high, medium and low. Students' high and low cognitive learning outcomes are certainly influenced by several factors, including internal and external factors. One external factor that affects learning outcomes is the use of social media (Whatsapp) during the pandemic. Social media (Whatsapp) is an alternative learning medium during the pandemic so that learning continues and runs smoothly. SMA Negeri 1 Tinambung students use social media as a learning tool.

Research by Alaby (2020) states that WhatsApp social media as a medium of information and learning has a very important role in the lecture process. Whatsapp media functions as a means of education, an evaluation tool, and connecting information. Rohmawati & Sa'adah Research. (2021) concluded that using social media (Whatsapp) was ineffective for learning outcomes. Research by Suryadi et al. (2018) concluded that the correlation between the use of Whatsapp and social media has a powerful influence on the learning discipline of students. Shahid. (2020) concluded that there was a positive and significant effect between the use of Whatsapp social media and student learning motivation. Utomo's research (2018) concluded that applying a problem-based model with the use of the Whatsapp application positively affected student learning outcomes. The advantage of this research is that it can provide information to teachers about the influence of social media on the learning process, where the teacher encourages students to use social media during learning.

Students of SMA Negeri 1 Tinambung create class groups on social media (Whatsapp) to share information about assignments and subject matter given by the teacher. Social media (Whatsapp) apart from being used as a learning tool, some students use social media (Whatsapp) as a place to upload activities, comment on other people's statuses and watch videos. The purpose of this study was to determine the correlation between the use of social media (Whatsapp) on biological, and cognitive learning outcomes of students of class XII MIA at SMA Negeri 1 Tinambung.

B. Literature Review

1. Social Media

Social media is a tool or media of communication that is often used by humans today. *Social media* is an online media used as a means of social interaction (Suroiyah, 2020). Social media has popular sites today, including Blog, Twitter, Facebook, BBM, Line, Wikipedia, Youtube and Whatsapp. Whatsapp is one of the internet-based social media applications that can be used to communicate with each other, interact and share various kinds of content through the supporting features (Suryadi, 2018).

WhatsApp social media can be used as a learning media for educators and students. WhatsApp social media has a feature that can save documents in the form of pdf, Microsoft word, excel and PowerPoint. Besides being able to be used to store documents, WhatsApp social media can forward voice messages that make it easier for students and educators to get information (Alaby, 2020) quickly. WhatsApp social media aims to replace the SMS function in normal use with a mobile messenger between platforms. WhatsApp social media works based on the internet network, so it still requires a phone number to exchange messages (Ningrum & Pramonojati, 2019).

2. Learning Outcome

Learning outcomes are a measure or level of success that can be achieved by a student based on the experience gained after an evaluation in the form of a test and is usually manifested by specific values or numbers (Wulandari, 2013). Learning outcomes are a form of student achievement after the learning process, which are generally listed in the form of grades and classified into three domains, namely the cognitive, affective and psychomotor. Students will get different learning outcomes according to their ability level (Amri, 2015). Learning outcomes are students' abilities after they receive learning experiences in the learning process (Nurdyansyah, 2018).

Learning outcomes are a peak achieved by a student during the learning process (Suhendri, 2011). Learning outcomes are essential in the world of education because they indicate achieving the planned targets. For students learning outcomes can be a benchmark for mastery of the material presented by the teacher. Good learning outcomes for schools can increase the credibility and reputation of the school both in the community and in the world of education. For offices and educational institutions, learning outcomes are used as evaluation material for implementing school curriculum (Desriana, 2018).

C. Methodology

1. Research Design

This research is a quantitative type of correlation research that aims to determine the effect between two variables. The population in this study were all Biology students of class XII MIA SMAN 1 Tinambung who had used social media (WhatsApp) as a learning media, totaling 160 students. The sample in this study was 99 students obtained by using probability sampling technique with the type of simple random sampling method. The variables studied were (1) the independent variable, namely the use of social media (2) the dependent variable, namely the cognitive learning outcomes. The variables studied are (1) the independent variable is the use of social media (2) the dependent variable is biological, cognitive learning outcomes.

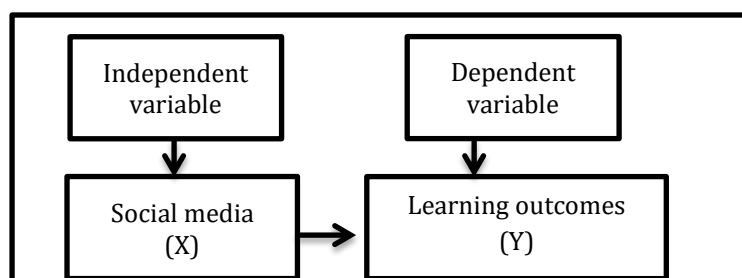The design of the Effect variables can be seen in the Figure 1 below.

Figure 1: Design of the Effect Variables

(Sugiyono, 2016)

2. Instruments

The instruments in this research are questionnaires, interviews, and documentation. The data obtained were analyzed quantitatively, using descriptive and inferential statistical techniques. Descriptive statistical analysis techniques provide an overview of the two variables. The results of the descriptive analysis will be converted into very strong, strong, moderately strong, low, and very low categories. The instrument made is based on conditions at school by adapting several instruments.

3. Technique of Data Analysis

a. Deskriptive qualitative

Descriptive analysis was used to analyze the questionnaire and interview data by describing it in tabular form. In this study, a descriptive analysis will be carried out using the relative frequency formula as follows: P=F/N X 100%

(Yunita, 2018)

Information:
P = Percentage
F = Frequency sought by the percentage
N = Number of respondents

b. *Statistic Inferensial*

Normality test

A normality test is used to determine whether the research data are normally distributed or not in this study to test the normality of researchers using the Kolmogorov-Smirnov formula with the help of SPSS 25.

If Sig > 0.05, then the data is normally distributed.

If Sig < 0.05, then the data is not normally distributed.

Linearity test

The linearity test aims to determine whether there is a linear relationship between the independent and dependent variables (Rosadi, 2017). The independent variable and the dependent variable are said to have a linear relationship if an increase follows the increase in the independent variable's score in the dependent variable. The linearity test in this study was carried out using a linearity test with the help of the SPSS version 25 computer program. The categories for the data normality test are as follows:

If Sig > 0.05, then the independent and dependent variables have a linear relationship.

If Sig < 0.05, then the independent and dependent variables do not have a linear relationship.

As for the hypothesis test in this study using a correlation test, this aims to determine the level of correlation or relationship between variable X (use of social media (WhatsApp)) and variable Y (students' cognitive biology learning outcomes). This test will be carried out using the product-moment correlation analysis technique with the help of SPSS 25. After the correlation test has been carried out, the next step is to provide an interpretation of the "r" value obtained.

Table 1. Interpretation of Correlation Coefficient (r)

Interval	Level
0,80 – 1,00	Very Strong
0,60 – 0,79	Strong
0,40 – 0,59	Enough
0,20 – 0,39	Low
0,00 – 0,19	Very Low

D. Findings and Discussion

1. *Findings*

a. *Interview by student*

The observations show that most students like the learning process using social media because they can learn anywhere. Students can take advantage of the internet network when learning to use social media to clarify learning materials using the help of WhatsApp. The value obtained in following the learning process is doing the tasks given by the teacher and being active during the learning process. Students have several obstacles, namely feeling bored and lacking focus when participating in learning using social media applications. (Table 2).

Table 2. Student Responses to Learning Using Social Media

Researcher	Student
Do you like the learning process of using social media applications?	Thirteen students like the learning process using social media because they can learn anywhere without having to get ready for school, but there are still two students who don't like the learning process with social media applications because of the limited study time short.
Are you having trouble learning biology using social media apps?	All students have difficulty when learning with social media applications, caused by an unstable network, lack of understanding of the material presented by the teacher and students who are less focused when studying at home because of the many distractions.
Do you feel bored while learning to use social media applications?	Seven students do not feel bored when learning social media applications because students can study anywhere. However, there are still five students who sometimes feel bored because they cannot meet directly with their friends, and three students feel bored during online learning because of the lack of direct

	interaction with the teacher.
Does learning to use social media applications make it easier for you to understand the biology material delivered by the teacher?	Six students easily understand the material because by learning to use social media applications; students can search for material with the help of Google; Nine students do not easily understand the material because sometimes the teacher's voice when explaining the material through voice notes is not very clear what is conveyed and short study time
Do you always follow the learning done with social media applications?	All students always follow the learning process with social media applications
Do you do individual assignments given by the teacher?	Ten students work independently by using the internet, and five work on assignments with their friends if they find it difficult to do them on their own.
Do you often ask if there is a material that is not understood during the online learning process?	Ten students answered yes because they did not understand the material presented by the teacher. Five answered no because they were afraid to ask questions and did not know what to ask, and questions that were usually asked were sometimes used as assignments.
Do teachers use games during the learning process using social media applications?	All students answered no because the teacher never used games during the learning process using social media applications.
Is evaluation done at every meeting?	All students answered that the teacher always gave an evaluation at the end of each lesson

b. Interview by biology Teacher

Interviews was conducted with biology educators for class XII MIA SMA Negeri 1 Tinambung to determine the relationship between the use of social media (Whatsapp) and cognitive biology learning outcomes. This interview's results show that the social media learning process has been implemented since the covid-19 pandemic by applying conventional learning models (lectures and questions and answers) through the Whatsapp application. The learning process with social media is carried out two times a week according to the specified time (Table 3).

R : Researcher
T : Teacher

Table 3. Student Responses to Learning Using Social Media

R	Since when have you implemented the learning process using social media?
T	Online learning has been implemented since the pandemic to break the chain of the spread of covid-19 by using the whatsapp application
R	What learning models do you apply when using social media?
Q	During online learning, I apply a conventional learning model (lectures and questions and answers) so that students can listen to the a material I convey through voice notes and ask questions when there is material that is difficult to understand.
R	What social media applications do you often use in the biology learning process?
T	They were using the Whatsapp application because it is a commonly used one that makes it easier for students to access.
R	How many times are learning process meetings held during the pandemic?
T	The biology learning process is held two times a week on a predetermined and agreed day and time.
R	Do all students always follow the learning process using social media?
T	All students always follow the learning process but there are still some students who are less active during learning such as not asking if there is material that is not understood
R	Do all students have smartphones or laptops?
T	All students have cell phones, but not all students have good internet access—for example, highland students.
R	What are the students' difficulties during online learning?
T	Difficulties that occur during the learning process are that students have difficulty understanding the material during the online learning process and students also have difficulty accessing the internet
R	What strategies do you use if you have difficulties while learning online?

T	To attract the attention of students to refocus on learning by presenting videos related to learning materials
R	How do you deliver material in online learning?
T	How do you make sure students understand the material being taught?
R	After each lesson, students are given an evaluation of the material that has been studied, such as giving assignments
R	Is there any subject matter that cannot or is very difficult to teach with social media?
T	So far, no difficult learning materials cannot even be taught during online learning.
R	Is the student's score good during the implementation of learning using social media?
T	The value of students is quite good during the learning process during this pandemic
R	What efforts do you make if there are students who get low scores during the evaluation?
T	Give additional assignments or homework for students to do at home
R	How do students react when they do not understand the material delivered through learning using social media?
T	The reaction of students when they do not understand the material is to ask questions about the material presented by the teacher
R	Are students enthusiastic about learning with social media when studying?
T	There are still some less enthusiastic students, this can be seen from the lack of activeness of students during the learning process, such as only listening to the material presented, not asking questions if there is a material that is not understood
R	Do you think studying at home can increase students' motivation and learning outcomes?
T	In my opinion, when students study at home can increase learning motivation because students can take advantage of the internet network so that there is a will in themselves to look for material in various sources such as google and youtube
R	Is the media used always changing during learning?
T	The media used during learning is not replaced because students prefer the media, namely WhatsApp media

Based on the results of interviews with teachers, the teacher argues that students are more enthusiastic when learning by using social media. Even though some students still have low grades, the solution to overcome this problem is that the teacher still gives homework as a repetition of the material that has been taught. Teachers argue that social media helps teachers and students in terms of learning during the pandemic.

c. Questionnaire Data

Student data on the use of social media (WhatsApp) was obtained by researchers from a questionnaire made in the form of a printout and then distributed directly at school to respondents. Students who filled out the questionnaire comprised 99 representatives of each class XII MIA SMAN 1 Tinambung. The researchers used a questionnaire of 30 statements, namely 15 negative statements and 15 positive statements. Each statement consists of 5 alternative answers, namely strongly agree, agree, hesitate, disagree and strongly disagree, each of which has a weight starting from a score of 5, 4, 3, 2, 1 for positive statements and a score of 1, 2, 3, 4, 5 for negative statements (Table 4)

Table 4. Statistics of Average Score of Social Media Use Questionnaire

Statistic	Statistic Value
N	99
Mean	103
Maximum	134
Minimum	95
Standard Deviasi	127,4

2. Discussion

The requirement to perform an analysis using parametric statistics is to perform a prerequisite test, namely the normality test and the linearity test. Normality test using Kolmogorov Smirnov found a significance value of $0.119 > 0.05$ so that the data is declared normally distributed. Based on the results of the linearity test, it can be seen that the deviation from the linearity value is 0.094. When compared with the significance level value, $0.094 > 0.05$

or the deviation from linearity value is more significant than 0.05. This proves that the data is linear because the value is greater than the significance level.

Based on the results of the Product Moment Correlation Test, the results are obtained in the form of a correlation coefficient of 0.258, while the r table is 0.1975, so 0.258 > 0.1975 or the calculated r-value is greater than the r table value. This shows that there is a significant correlation between the two variables.

The researcher obtained data on the correlation between the use of social media (WhatsApp) using a questionnaire instrument and distributed it in schools for class XII MIA students of SMA Negeri 1 Tinambung. In contrast, the results of student biology learning in the form of final grades for the even semester test of the 2021 academic year were obtained by researchers through documentation. The number of respondents who filled out the questionnaire was 99, and the data on learning outcomes taken by researchers also amounted to 99 people.

Based on the results of the correlation analysis test, it is known that there is a significant correlation between the use of social media (WhatsApp) on the biology learning outcomes of students of class XII MIA SMA Negeri 1 Tinambung. It is known based on the value of the correlation coefficient (r), which is 0.258, indicating that the correlation between variables is in a low category. In addition, decision-making is also based on the Pearson correlation value or r count (0.258) > r table (0.1975) and the value of Sig. (0.010) < 0.05. So that there is a significant correlation between the use of social media (WhatsApp) on the biology learning outcomes of class XII MIA students at SMA Negeri 1 Tinambung.

The relationship between the use of social media (WhatsApp) on the biology learning outcomes of class XII MIA students of SMA Negeri 1 Tinambung is in a low category. However, the conclusions of respondents' answers are mostly more focused on indicators of facilitating learning and communicating through applications.

The research results above align with Amri et al. (2021), which concluded that the use of WhatsApp applications and online student learning was very high and proved a strong correlation. This is evidenced by the simple linear regression analysis results where the sig value is 0.000 <0.05. This study is in line with research conducted by Rizallia and Andi (2021), who concluded that online learning using the WhatsApp application significantly improves student learning outcomes.

This study is in line with research conducted by Lestari (2021), which concluded that the use of Google Classroom and WhatsApp has a strong and unidirectional correlation. This conclusion can be seen from the sig value of 0.886 > 0.05. This value shows that 88.6% of student learning variation is influenced by using Google Classroom and WhatsApp, while the remaining 11.4% (100% - 88.6%) is influenced by variables. This study is in line with Nopriyeni et al. (2021), which state that there is a significant influence on student learning outcomes using WhatsApp as an online learning medium. This conclusion can be seen from the sig value of 0.122 > 0.05. Based on the results of the four studies described above, it can be seen that many factors affect student learning outcomes but were not examined in this study.

The research of Siagin & Rahman (2020, p. 10) concluded that three factors influence learning outcomes: parental support, intrinsic motivation and teaching and learning facilities. Research conducted by Siti (2020, p. 1) concludes that four factors influence learning outcomes: health factors and parental support, maturity and personality factors, family and financial factors and school factors.

Research conducted by Suwardi (2012, P. 1) concluded that six factors influence student learning outcomes, namely (1) student psychology factors (27.54%), (2) community environmental factors (10.18%), (3) Family environmental factors (8.70%), (4) Learning support factors (6.98%), (5) Family environmental factors (6.50%), (6) School time factors (6.23%). The factor that contributed the most was the student's psychology factor of 27.54%, and the factor with the smallest contribution was the school time factor of 6.23%.

E. Conclusion

This study concludes that using social media (Whatsapp) affects cognitive learning outcomes in class XII MIA students of SMA Negeri 1 Tinambung. This is evidenced by the correlation coefficient (r) of 0.258, which is included in the low category and the Pearson correlation value or r count (0.258) < r table (0.1975) and the value of Sig. (0.010) < 0.05.

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