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WhatsApp and Youtube: Buddies for Biology Learning Media During the COVID-19 Pandemic

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Abstract.
This study sought to determine the effectiveness and efficiency of using WhatsApp and YouTube for biology learning media during the COVID-19 pandemic. The data were collected from students in semester 4 of the 2019/2020 academic year who attended biology learning media courses at IAIN Kendari's Biology Tadris Department. The ex-post facto method was used to interpret the current situation as the result of various factors that occurred previously, then to analyze and determine a solution for the current situation using a SWOT analysis. The finding showed that WhatsApp and YouTube could be used as teaching media in biology courses. While this proved to be an effective method, it became less effective due to an unstable internet network in student areas and high internet quota costs. The SWOT analysis revealed a number of challenges that were quickly addressed by internal (campus) and external (ministries) parties by lowering tuition fees and providing free internet quotas for students and lecturers. Based on this, it is possible to conclude that WhatsApp and YouTube can serve as 'buddies' for the COVID-19 pandemic's biology learning media courses.

Keywords: WhatsApp, YouTube, biology learning media, pandemic

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1. Introduction

Indonesia announced the first positive case of Covid 19 on Monday, March 2nd, 2020, which was transmitted through human-to-human transmission [1]. This has prompted the Government to take quick action to overcome this problem, one of which is by imposing physical distancing and limiting community activities in all areas of life including education. Since the existence of Covid 19, educational activities at school/campus/informal institution have been closed. This is because this place is very risky to spread the Covid 19, reminding that the activities in it must involve a large amount of human interaction. However, it does not mean that educational activities are completely off.

Working or studying from home schemes are not new in the world of education. The Universitas Terbuka (UT) is one of the witnesses and living proof of education actors

implemented this scheme (known as Distance Education/PJJ) since September 4^{th} 1984 [2]. Learning activities are carried out in online way, involving the use of learning media in the form of modules, audio, video, computers, internet, radio broadcasts, TV broadcasts, and others [3]. This can be used as an example for other education implementers (ranging from primary education to higher education) to continue to carry out learning activities during the pandemic. Implementers of education in tertiary institutions carry out various learning innovations in lecture activities so that interactions are maintained and educational goals can still be achieved even during the pandemic, including by using the WhatsApp and YouTube application media in the lecture process.

WhatsApp is an online-based platform of social media application designed to make it easier for its users (education implementers) to communicate through various available features [4]. In addition, WhatsApp allows users to communicate without spending a lot of money, and can be operated with unstable network conditions [5]. WhatsApp has several powerful and easy-to-understand features to operate in lectures. One of them is the chat group feature, which allows groups of students who program certain courses to communicate/discuss related lectures [6].

Beside WhatsApp, the YouTube application is also an alternative learning media for universities in their lecture activities. YouTube's reputation as an online-based video service provider application is an opportunity that can be used by educators to make video lecture materials that can be accessed by students anywhere and anytime. This is considered to be a solution for students who live in remote areas and have unstable internet networks during the pandemic. Students can access learning videos that have been explained by educators when the network is stable so they do not worry about missing the material. In addition, YouTube allows students to search for/download reference videos, create their own learning videos, upload, and share them with the public [7], so as to increase the innovation and creativity of students, and indirectly hone higher-order thinking skills when responding to comments/questions from audiences related to the shared videos. This has become a consideration for various higher education institutions to use these two applications. One of them is at the IAIN Kendari, Faculty of Education and Teacher Training, Biology Tadris's Department.

At Biology Tadris's Department, there is one course entitled Biology Learning Media. In this course, students are required to be able to innovate by making learning media of their own work. The lecturer will explain in theory to students about various learning media that can be used in learning biology, which then the students will be assigned to make the media based on the guidance of the lecturer. So, characteristically, this subject really needs interaction between students and lecturers, and the activities must

be visual. However, since the pandemic era, the lecture process has been hampered so that homebase lecturers of the biology tadris study program have made use of the WhatsApp and YouTube facilitiesto keep interacting and create learning media used by students in lecturing activities. Through the WhatsApp chat group, the lecturer will guide students in theory, then assign students to make learning media according to the guidance given. Students make videos of the work process assignments that have been given, by using YouTube as an additional reference, so that students are expected to be able to make their own version of learning media. Furthermore, the video will be uploaded to YouTube and distributed to the public so that it can be checked by the lecturer and can be watched by the public. With this, the lecturer hopes that the interaction between students will continue to be established, and learning objectives can still be achieved even during a pandemic.

However, to determine the effectiveness and efficiency of the use of these two applications, it is necessary to conduct a study of the two applications by giving a student response questionnaire to the methods used by the lecturer.

2. Research Method

This research is a case study research, which was carried out from March to June 2020, at PSTB, FTIK, IAIN Kendari. The data source of this study was students of semester 4, 2019/2020 academic year, who programmed biology learning media courses. The method used in this research is the ex post facto method, which is used to interpret the present situation as a result of various factors that have occurred previously, then analyze and determine a solution for the present situation [8].

2.1. Research Instruments

The instrument used in this study was an online questionnaire (google form based) about student responses to the learning methods used during the lecture process of biology learning media, which were given and filled out at the end of the semester. The instrument model can be seen in Table 1 below.

2.2. Data Collection Technique

The data in this study were obtained by two techniques, namely the questionnaire technique and documentation. The questionnaire was distributed via the WhatsApp

Table 1: Research Instruments

No.	Questions / Indicators	Answer Options		
WhatsApp application				
		Agree	Less Disagree	Disagree
1	Do you agree if the WhatsApp media is used as an alternative to learning biology learning media during this pandemic?			
		Effective	Less effective	Ineffective
2	How effective is the use of WhatsApp in implementing biology learning media courses during this pandemic?			
		Yes	Not really	Not
3	Are you good at using WhatsApp?			
4	Describe your inhibiting factors in using WhatsApp as an alternative to learning biology learning media in this pandemic.			
5	Describe your supporting factors in using WhatsApp as an alternative to learning biology learning media in this pandemic.			
YouTube app				
		Agree	Less Disagree	Disagree
5	Do you agree that YouTube media is used as an alternative to learning biology learning media during this pandemic?			
		Effective	Less effective	Ineffective
6	How effective is the use of YouTube in implementing biology learning media courses during this pandemic?			
		Yes	Not really	Not
7	Are you good at using YouTube?			
8	Describe your supporting and inhibiting factors in using YouTube as an alternative to learning biology learning media during this pandemic			

chat group, which was then filled in directly and virtually by the student concerned. The answer for each instrument item will affect the effectiveness and efficiency of using WhatsApp and YouTube in lecturing activities on biology learning media. Furthermore, documentation techniques are needed to see, know, and understand instructional media videos that have been made by students through the YouTube application.

2.3. Data Analysis

The data will be analyzed by SWOT, which is an analysis of the situation by looking at the four points of view (strength, weakness, opportunity, and threat/challenge), with the hope that the researcher can examine the various factors that affect lecture activities in biology learning media. In addition, to facilitate the SWOT analysis, the data obtained will be analyzed descriptively quantitatively, by determining the percentage of the number of correspondents in filling out the questionnaire that has been given [9].

2.4. Hypothesis

Best buddies = If the WhatsApp and YouTube applications are effective and efficient as teaching media in biology learning media courses in the pandemic era;

Buddies = If the WhatsApp and YouTube applications are only effective but inefficient / inefficient as teaching media in biology learning media courses in the pandemic era, vice versa;

Rival = If the WhatsApp and YouTube applications are not effective and efficient as teaching media in biology learning media courses in the pandemic era

3. Results and Discussion

This research process was carried out during the pandemic era, since the enactment of Working / Learning From Home (W/LFH). The questions made by the researcher are given in the form of an online google form questionnaire which is distributed at the end of the semester of lecture activities. From this distribution, researchers can find out the response about the use of WhatsApp and YouTube applications as teaching media in biology learning media courses. In addition, researchers also assessed the learning media created by students as an alternative for the convenience of conducting a SWOT analysis. The student response to the use of the WhatsApp application can be seen in Table 2 below.

Based on Table 2, it is known that all students (100%) think that the WhatsApp application is very helpful in carrying out the lecture process. Based on the results of the questionnaire that had been filled in, students argued that one of the main things that happened in the biology learning media course was that the lecturer gave information to students about the steps in making learning media in a row. With the help of WhatsApp, these steps can be explained clearly and stored in the conversation

Table 2: Student Responses About the Use of Alternative WhatsApp Teaching Media in Biology Learning Media Courses

No.	Questions / Indicators	Number of Respondents per Answer Choice		
		Agree	**Less Disagree**	**Disagree**
1	Do you agree if the WhatsApp media is used as an alternative to learning biology learning media during this pandemic?	29	0	0
	Total	29		
	%	100	0	0
		Effective	**Less effective**	**Ineffective**
2	How effective is the use of WhatsApp in implementing biology learning media courses during this pandemic?	13	9	7
	Total	29		
	%	44.83	31.03	24.14
		Yes	**Not really**	**Not**
3	Are you good at using WhatsApp?	22	5	2
	Total	29		
	%	75.86	17.25	6.89

log, so that at any time students can open the note if they experience problems in the process of making their media. This is in line with research conducted by Khusaini, Suyudi, Winarto [6].

However, only 13 students (44.83%) thought that the WhatsApp application was very effective in being used as an alternative teaching media for biology learning media courses. Meanwhile, 9 students thought it was not effective because the network in their area was unstable and the signal was often lost, even 7 students thought it was not effective because they did not have an internet data package to be able to use WhatsApp. This is in line with research conducted by Rahartri [10] which states that the WhatsApp application is a lightweight, battery-efficient and data packet-saving application, but is still required to use the internet in its work process. In addition, based on one of the internet service provider sites in Indonesia, namely Telkomsel, it is known that the selling price of internet packages is standard [11]. However, with pandemic conditions, students will spend more often on internet data packages and indirectly need more money to buy these internet data packages.

Then, there were 2 students (6.89%) who were not proficient in using the WhatsApp application. This contradicts research conducted by Citra [12], which states that the WhatsApp application is an application that is easy to learn and understand, and does not require special expertise in its operation. After being traced through a completed

questionnaire, it was found that the two students came from underprivileged families so they did not have a smartphone to be able to use the WhatsApp facility.

Based on the data from the research and discussion above, it can be said that the WhatsApp application efficiently acts as a teaching medium in biology learning media courses, but it is less effective considering there are still some big obstacles that must be faced by students if they want to use the application (for example, the absence of a smartphone. as the main support for the use of the application).

Furthermore, student responses to the use of the YouTube application can be seen in Table 3 below.

TABLE 3: Student Responses About the Use of Alternative YouTube Teaching Media in the Biology Learning Media Course

No.	Questions / Indicators	Number of Respondents per Answer Choice		
		Agree	**Less Disagree**	**Disagree**
1	Do you agree that YouTube media is used as an alternative to learning biology learning media during this pandemic?	17	12	0
	Total	29		
	%	58.62	41.38	0
		Effective	**Less effective**	**Ineffective**
2	How effective is the use of YouTube in implementing biology learning media courses during this pandemic?	10	19	0
	Total	29		
	%	34.48	65.52	0
		Yes	**Not really**	**Not**
3	Are you good at using YouTube?	16	13	0
	Total	29		
	%	55.17	44.83	0

Based on Table 3, it is known that 17 students (58.62%) argue that the YouTube application can be used as an alternative teaching media in biology learning media courses. Based on the questionnaire that has been filled in, students argue that the biology learning media course requires visualization in terms of the process and the results. The learning media made can vary because they get reference assistance from YouTube videos so that students can innovate more in making their work. In addition, students also record and upload the manufacturing process to YouTube, making it easier for lecturers to provide objective grades. This is in line with research conducted by Samosir, Pitasari, Purwaka, and Tjahjono [13] who state that the YouTube application is a popular application today where almost everyone uses it and is very suitable for

various needs (one of which is as a learning medium). However, Risyan [14] explains that for standard video sizes, the amount of internet quota used when using YouTube is 562.5 MB / hour. If it is accumulated with the total time spent conducting lectures, then of course this becomes a financial burden for students. Therefore, as many as 12 students (41.38%) thought they did not agree if the YouTube application was used as an alternative media for learning biology. Risyan (2020) explains that for standard video sizes, the amount of internet quota used when using YouTube is 562.5 MB / hour. If it is accumulated with the total time spent conducting lectures, then of course this becomes a financial burden for students. Therefore, as many as 12 students (41.38%) thought they did not agree if the YouTube application was used as an alternative media for learning biology. Risyan (2020) explains that for standard video sizes, the amount of internet quota used when using YouTube is 562.5 MB / hour. If it is accumulated with the total time spent conducting lectures, then of course this becomes a financial burden for students. Therefore, as many as 12 students (41.38%) thought they did not agree if the YouTube application was used as an alternative media for learning biology.

Then, as many as 10 students (34.48%) thought that the YouTube application was very effective in being used as an alternative teaching media for biology learning media courses. Meanwhile, 19 students (65.52%) thought it was not effective because the network in their area was unstable and often lost signal. This is in line with research conducted by Akbar [15] which states that the main obstacle to using YouTube is an internet connection, where a stable internet connection is required to use or obtain information on YouTube. If the internet connection is unstable / lost, the video quality will be reduced and even inaccessible.

Then, there were 16 students (55.17%) who were proficient in using the YouTube application, and 13 students (44.83%) who were less proficient. Based on the questionnaire that has been filled in, it is known that the almost balanced comparison is due to the habit of using the application. Where proficient students are those who open and use the YouTube application every day more than less proficient students. This is in line with the research conducted by Faizah, Fakhrudin, and Bagiya [16], which states that the use of YouTube learning media will be effective if students regularly and continuously take a scientific approach, namely observing, asking questions, exploring, associating, and communicating everything. in competent people.

Based on the data from the research and discussion above, it can be said that the YouTube application is efficient as a teaching medium in biology learning media courses, but it is not effective considering there are still some major obstacles that must be faced

by students if they want to use the application (for example, networks that do not stable, and wasteful use of internet quota).

Furthermore, a SWOT analysis was carried out to see the strengths, weaknesses, obstacles, and challenges faced by lecturers and students if they continued to use the WhatsApp and TouTube applications as alternative teaching media in biology learning media courses during the pandemic. SWOT analysis interpretation can be seen in Table 4 below.

Table 4: SWOT Analysis of Alternative Use of WhatsApp and YouTube Teaching Media in the Biology Learning Media Course

No.	SWOT Analysis / Indicators
	Strength/Power
1	Good time management optimization can occur when using the WhatsApp and YouTube applications;
2	WhatsApp can operate in an unstable network condition;
3	The availability of various concrete references on YouTube, so that students can better understand the material provided by their lecturers;
4	The instructional video media that has been created will be stored forever in the YouTube database, and can be accessed at any time for use as content evaluation;
5	WhatsApp and YouTube only need an internet network to operate, without any additional costs.
	Weakness/Weakness
1	During using WhatsApp, the possibility for unsyncronous learning to occur is greater, due to the low level of supervision by the lecturer;
2	Unstable networks can affect YouTube application performance;
3	There are still many students who live with all limitations, it is still difficult to buy data packages to access the internet;
4	There are still some students who do not have smartphones so they are not proficient in using the WhatsApp application.
	Opportunity/ Opportunity
1	Students can use WhatsApp as a means of sharing knowledge and increasing interpersonal communication capacity;
2	Students innovate by making their own instructional media videos;
3	Students can use YouTube as a means of developing entrepreneurship
	Threat/Challenge
1	Students are trained to control all communication, because the WhatsApp application is a limited privacy system. Where it allows all members of the community to go too far in speaking;
2	Students are trained to learn to operate WhatsApp and YouTube so that they can carry out lecture activities optimally;
3	Students are required to develop higher order thinking skills, as a standard in responding to all comments and questions from YouTube users;
4	The campus can reduce the burden on students by creating a free internet quota program.

Based on table 4, it is known that the number of strengths from using alternative teaching media WhatsApp and YouTube is more than the weaknesses. It can be

assumed that by maintaining strength and increasing opportunities, the WhatsApp and YouTube applications can be a solution for lecturing activities on biology learning media during a pandemic. In addition, to answer the challenges of the SWOT analysis, the internal party (campus) has tried to provide a solution by reducing the cost of the Single Tuition Fee (Uang Kuliah Tunggal/UKT) for IAIN Kendari students starting in the academic year 2020/2021 [17]. In addition, external parties (ministries) also provide solutions by providing free internet quota for education implementers during the pandemic period [18]. Hopefully, with the solution that has been given, it can ease the burden on students regarding network quota and the cost of buying internet packages, so that lecture activities can still be carried out, especially in the use of WhatsApp and YouTube applications which can be accessed easily by students later.

Based on the description above, it can be seen that the WhatsApp and YouTube applications play an efficient role in helping the lecture process of biology learning media. Then, hopefully these two applications will also be of effective value with the various solutions that have been given, so that their effectiveness and efficiency can be achieved.

4. Conclusion

Based on the results of research and discussion, several conclusions can be drawn as follows.

1. WhatsApp is an alternative teaching media that is efficient to use during a pandemic (especially in biology learning media courses), but is less effective in use due to various obstacles experienced by students, for example the absence of a smartphone as the main support for application use;

2. YouTube is an alternative teaching media that is efficient to use during a pandemic (especially in biology learning media courses), but is less effective in use in areas where internet connections are less stable and the selling price of data packages is expensive;

3. Based on the overall data analysis and discussion, it can be concluded that the WhatsApp and YouTube applications are only able to act as ”Friends” for biology learning media courses;

4. Based on the SWOT analysis, it is known that there are many advantages and opportunities in using the WhatsApp and YouTube applications, which can be the

development of learning activities and are able to answer the challenge of making WhatsApp and YouTube the “Best Friends / Friends”.

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