An Analysis Of Affective Assessments Of Online Learning Through WhatsApp Group On The Mathematics Students

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Abstract

This study aims to describe the affective assessment of online learning through WhatsApp Group (WAG) media for mathematics students. This study is a descriptive quantitative study. The subjects of this study were 20 students of the Mathematics Study Program, Nahdlatul Ulama University, Purwokerto who had filled out the research questionnaire. This research was carried out in July – August 2021. The instrument used to obtain data in this study was a questionnaire containing 6 close-ended questiouns related to affective assessment in online learning with a Likert scale format distributed via Google Form to 20 respondents. This study used descriptive statistical methods as the data analysis. The study shows that the affective assessment of online learning through WhatsApp Group (WAG) for mathematics students was good according to the data obtained from the students' answers in filling out the questionnaires. During the online learning process, students are able to pay attention well, understand the material more easily, get assignments and assessments, interact and discuss the material actively with lecturers and fellow students. In addition, students also remain motivated to learn online even though learning cannot be done face-to-face.

Keywords: WhatsApp Group; Affective Assessment; Online Learning; Mathematics

INTRODUCTION

At this time Indonesia had a bad condition due to the spread of Corona Virus originated from Wuhan China, which is known as Covid-19. WHO (2020), states that this virus transmits very quickly and may cause death. Based on the data of Worldometer (2020), Coronavirus Casses stated that 2,176,744 patients were exposed to this virus and several patients died. Hence, this virus outbreak has been designated as

the global COVID-19 pandemic. As a result of the Covid-19 pandemic, the government issued several new policies to stop the spread of Covid-19. Firstly, the government invites the public to do physical distancing. In addition, the government also implements policies to stay at home such as working from home or Work From Home (WFH) and any activities related to associations or meetings are abolished and replaced with online media. This policy is also implemented in the world of education from elementary to university levels,where the learning process is carried out through online learning. Therefore, the learning model in school education began to adapt, including through the use of online system. Online learning is carried out as a strategy to stop the spread of Covid-19 in the school environment. It allows the process of learning to be carried out without physical contact and distance (Cropley & Kahl, 1983; Irfan et al., 2020; Marani et al., 2020; Riva et al., 2021; Sadeghi, 2019). In addition, online learning also held through the use of good internet access (Clark & Mayer, 2016; Drennan et al., 2005; Heirdsfield et al., 2011; Moore et al., 2011).

Due to the ongoing pandemic, students must adapt to current conditions. The existence of government regulations that prohibit face-to-face learning makes students turn to online learning as a solution to keep getting knowledge while at home. Literally, online learning is a learning activity carried out using an internet connection. By learning online, students are expected to gain the same knowledge as face-to-face learning, but more relaxed because teaching and learning activities are carried out at home. There are several benefits of online learning that students can get, namely: (1) a more relaxed teaching-learning process; (2) flexible study time; (3) Teach students about discipline and responsibility (Appana, 2008; Song et al., 2004; Suryaman et al., 2020)

In the early days of implementing online learning, of course it was not easy. The campus, lecturers, students, and parents have their own obstacles. One of the obstacles experienced by lecturers is the lack of lecturer skills in operating digital tools. As a result, online learning in the early days of the pandemic was mostly only filled with the assignment process because it cannot be denied that with online learning, lecturers are required to quickly adapt to digital technology. During this Covid-19 pandemic, lecturers are required to be creative in presenting mathematics learning that is fun and easy to understand, so that students can continue to study productively even though the

learning method is done online. Especially for mathematics students, most of the difficulties experienced by them are related to the internet network and difficulties in understanding the material presented by the lecturer. Therefore, lecturers must be able to use learning media that can be accepted by all students without being disturbed by the internet network. In addition, the media can also help students to more easily understand the material.

As the development of technologies, people are becoming more friendly with internet-based social media sites such as WhatsApp. WhatsApp is a software used as a social media that connects many people in an audio-visual communication (Church & De Oliveira, 2013; Mustafa, 2018; Schreiber, 2017; Silfa, 2021). It is also supported by relatively fast chat capabilities when compared to other applications. WhatsApp can be used as an intermediary for learning between lecturers and students through the use of a feature called WhatsApp Group (WAG). Previously, the WhatsApp application was used to provide information and share links for learning. But, nowadays this application also can be used to deliver material and collect learning assignments. WhatsApp is chosen as a learning medium because all students can use this application. WhatsApp application can be used as a e-learning tool since this application meets one of the characteristics of the generation of web 2.0 technology (Prajana, 2017). In addition, based on the results of research by Bahagaskara, it can be concluded that the WhatsApp application can be used in the online learning process although there are still shortcomings in its application (Bhagaskara et al., 2021). There are some obstacles regarding face-to-face implementation through features in the WhatsApp application. However, WhatsApp also has its own advantages because this application is able to accommodate the implementation of the learning process well.

Based on the Regulation of the Minister of Education and Culture No. 23 of 2016 concerning Educational Assessment Standards, what is meant by assessment is the process of collecting and processing information to measure the achievement of student learning outcomes. There are some assessment aspects that must be done by the teacher to his students in the learning process. These aspects include the cognitive, affective, and psychomotor domains. One way to measure learning success is through learning assessment. Therefore, the need for learning assessment can be stated as follows: to measure the success of teacher-managed learning; measuring the level of success of

students in participating in learning activities; provide feedback for students and teachers; as a consideration for institutions and the government to take policies on education; and for self-evaluation of teachers and schools in managing learning.

In addition, Gable said that the affective domain is behavior that contains the appreciation of a certain emotion or feeling (Gable, 1986). The characteristics of affective learning outcomes will appear in students in various behaviors (Cornelius-White, 2007; Waldeck, 2007; Wilson et al., 2001), such as: attention to the subjects, discipline in following lessons, high motivation to follow the lessons they receive, and appreciation or respect to their teachers. Thus, the evaluation of the affective domain is intended to assess aspects of student attitudes in order to determine the extent to which student behavior is in accordance with the expected learning objectives. According to Krathwohl (1956) the affective domain is taxonomyed in more detail into five level (Krathwohl et al., 1956). They are: receiving or paying attention, responding, assessing or appreciating, regulating or organizing, and characterizing with a value.

In addition, the assessment of the affective domain according to Krathwohl et al (1974) includes five levels, namely: (1) Receiving or attending (receiving or paying attention) where there is a person's sensitivity in receiving stimuli (stimulus) from outside that comes to him. These stimuli are in the form of problems, situations, symptoms and others, for example, are: awareness and desire to receive stimuli, control and select symptoms or stimuli that come from outside. Receiving or attending is also often given the understanding as the ability to pay attention to an activity or an object. (2) Responding is the ability possessed by a person to actively involve himself in certain phenomena and react to them in one way. (3) Valuing means giving value or giving appreciation to an activity or object, so that if the activity is not carried out, it is felt that it will bring loss or regret. (4) Organization includes the ability to form a value system as a guide and guide in life, which is expressed in the development of a set of values. (5) Characteristics of values, namely the formation of a pattern of life including the ability to live up to the values of everyday life so that they are used as real and clear guidelines in various fields of life.

After online learning takes place, educators cannot observe their students directly. This indirectly leads to affective assessment which includes behavioral traits such as feelings, interests, attitudes, emotions, or values when participating in online learning.

So it is deemed necessary to conduct an assessment so that educators can evaluate how the affective role of students takes place, given that assessment is one of the activities of evaluation. Based on the explanation of the background above, the researchers interest to conduct a research related to the affective assessment of online learning through WhatsApp Group (WAG) on the students of Mathematics Study Program.

METHOD

This research applied a descriptive quantitative approach. According to (Sudiana, 1989) descriptive quantitative approach used to describe or explain events that happened at the present time in the form of meaningful numbers. The purpose of this study was to describe the affective assessment of online learning through WhatsApp Group (WAG) on the mathematics students. The subjects of this study were 20 students of the Mathematics Study Program, Nahdlatul Ulama University, Purwokerto, who participated in the online learning through WhatsApp Group (WAG) and have filled an affective assessment questionnaire. This research was conducted in July – August 2021.

The data in this study were obtained from an instrument in the form of a questionnaire with close-ended questions that have been selected according to affective assessment in online learning through WhatsApp Group (WAG). There are 6 close-ended questions in the questionnaire related to online learning through WhatsApp Group (WAG). The scale used to measure the affective aspect of the activities of an object is the attitude scale where the type that is often used is the Likert scale. (Djaali & Muljono, 2008) state that the Likert scale is a scale that can be used to measure the attitudes, opinions, and perceptions of a person or group of people about an educational phenomenon or phenomenon, which usually includes a Very Poor to Very Good scale format.

The data in this study were analyzed using descriptive statistics. Analysis of the data that has been collected as it is without the intention of making general conclusions or generalizations using the percentage formula. Data from the results of filling out the questionnaires that have been answered by the respondents were analyzed based on each question using a Likert scale to get the percentage on each criterion so that the dominant criteria will be obtained for each question related to affective assessment. Furthermore, from the results of the data filling out the questionnaire conducted by 20 respondents

who are students of the mathematics study program, each statement in the questionnaire will be further analyzed. Each statement produces different results that show students' affective assessments of online learning through WhatsApp Group.

RESULTS AND DISCUSSION

Due to the Covid-19 pandemic, the implementation of learning is carried out online. This makes the educational world must adapt to this pandemic situation by performing the online learning. One of the universities that also carry out the online learning is the Nahdlatul Ulama University of Purwokerto, in particular the Mathematics Study Program wherein its implementation uses the WhatsApp Group (WAG) media, so that lecturers cannot meet students in person for lectures. Consequently, it is necessary to conduct an affective assessment by students in which to find out to what extent their set goals have been achieved. So, the lecturers will get an insight of how to do in the next lectures.

WhatsApp Group is the online learning media of choice for lecturers and students. That is because WhatsApp is a medium that can be used by all students without having to be disturbed by the internet network. Some mathematics students live in mountains or villages where internet signal is difficult, so the use of WhatsApp groups makes it easier for students to be accessed wherever they live. In addition, WhatsApp Groups can be used both using cellphones and laptops. Furthermore, another important thing that needs to be considered in online lectures is the activeness of students in attending lectures related to affective assessment. Affective assessment needs to be considered during online lectures in addition to cognitive assessments because lecturers and students cannot meet face to face.

To get the data related to the affective assessment in the online learning using the WhatsApp Group (WAG) media, the researcher gave a questionnaire to be filled out by 20 students from the Mathematics Study Program. The result can be shown in Figure 1.

Based on table 1, it can be seen that the results of affective assessment derived from filling out questionnaires by all research subjects consisting of six statements that have five answer choices, namely very good, good, fair, poor, and very poor. Based on the data displayed, it can be seen that each question has many different responses and criteria. Furthermore, based on the results of filling out questionnaires related to

affective assessment obtained from respondents through Google Form, the dominant score for each statement is shown in Table 1.
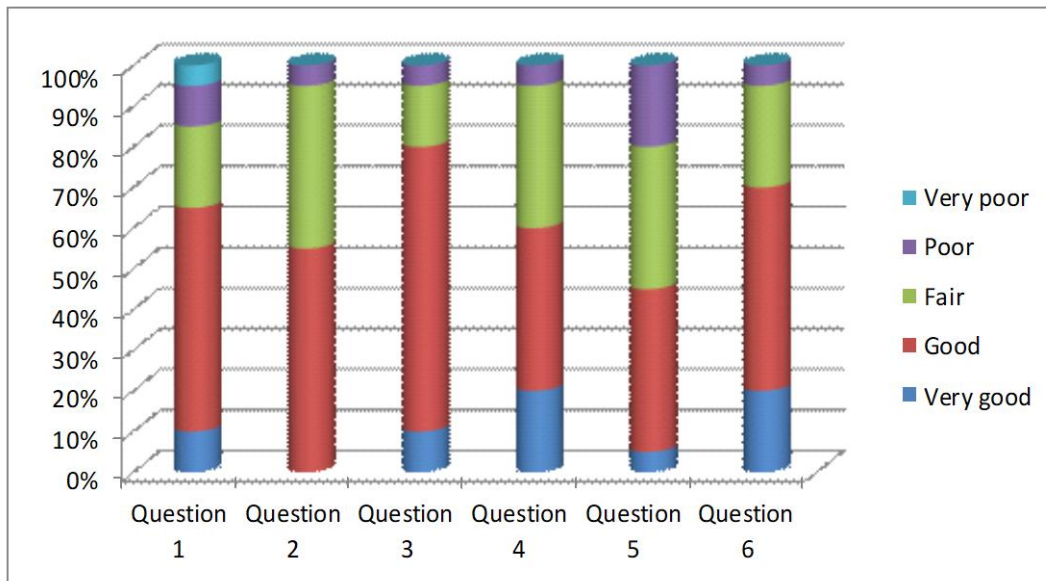

Figure 1. Affective Assessment Result

Table 1. The Percentage of Respondents' Dominant Answers

No	Aspect	Percentage	Criteria
1	What is your attitude toward online learning?	55%	Good
2	Are the materials quite understandable for the students when they attend online learning through WhatsApp Group (WAG)?	55%	Good
3	How are assignments and assessments carried out by lecturers for students?	70%	Good
4	How does the interaction occur between lecturers and students when learning using WhatsApp Group (WAG) as a learning medium?	40%	Good
5	Is it easier for students to discuss through the WhatsApp Group (WAG) in the learning process?	40%	Good
6	Do students still have the motivation to study hard even though they study through WhatsApp Group (WAG)?	50%	Good

According to the Table 1, the dominant answers from the students for each question is categorized into good criteria. The first statement related to student attention when learning online, 55% or 11 students chose good criteria. Furthermore, for the second question related to the presentation of material delivered by the lecturer through the WhatsApp Group media, 55% or 11 students chose good criteria. For the third question related to the assignment and assessment carried out by the lecturer, the dominant student answered the criteria of either 70% or 14 students. Next for questions number 4 and 5, each of the dominant criteria is 40% or 8 students related to lecturer and student interactions and discussion activities during online learning through WhatsApp Group. The last question is related to student motivation to study hard during online lectures as much as 50% or 10 students responded well. It shows that affective assessment in online learning through WhatsApp Group is good and in accordance with the expected learning objectives. For the data analysis, respondents can see the affective level of the individual in the tables and figures for each question which refers to the level of student satisfaction during learning, which is carried out through WhatsApp Group (WAG). The results of the answers to question no. 1 are presented in table 2 and figure 2 below.

Table 2. Student Attention During Online Learning

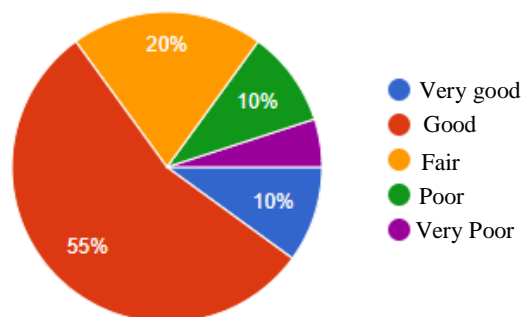| No	Criteria	Number of Students	Percentage (%)
1	Very Good	2	10%
2	Good	11	55%
3	Fair	4	20%
4	Poor	2	10%
5	Very Poor	1	5%

Figure 2. Student Attention During Online Learning

From the table and figure 2, it can be seen that there are 2 students (10%) of respondents who answered very good, 11 students (55%) answered good, 4 students (20%) answered fair, 2 students (10%) answered poor, and 1 student (5%) answered very poor. From the results of these data, we can see that the use of WhatsApp Group media makes students pay attention to online learning. This is because the WhatsApp application can be accessed via mobile phones and can be viewed at any time and does not require many steps to operate it. This makes it easier for students to be able to take online lectures. According to Krathwohl et al (2014) one of the affective aspects, the form of receiving (acceptance), can be in the form of awareness and desire to receive a stimulus, control and select symptoms or stimuli from outside. In this case, the activity focusing in online learning which is the concern of the students. Then, the results of the students' responses in answering the questionnaire for question number 3 can be seen in table and figure 3 below.

Table 3. Materials Presentation Through WAG

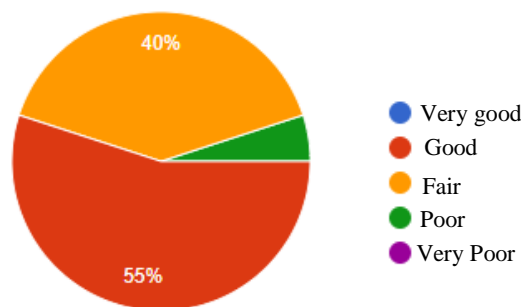| No	Criteria	Number of Students	Percentage (%)
1	Very Good	0	0%
2	Good	11	55%
3	Fair	8	40%
4	Poor	1	5%
5	Very Poor	0	0%

Figure 3. Materials Presentation through WAG

Based on table and figure 3, regarding the materials presenting in the WAG, it can be seen that there are 11 students (55%) responded in good criteria. Furthermore, 8 students (40%) responded fair, 1 student (5%) responded poor, and no respondents answered very good or very poor. From this result, it can be seen that the most dominant

response towards materials presenting in the WAG is good. The provision of shared material is good in terms of exposure through learning videos and PPT materials. It makes the students easier to understand the materials. In addition, the video can be repeated so the students can learn it anytime. Furthermore, the material delivered via WhatsApp is easier to download and does not take a long time. The explanation of the material via video can also be arranged for delivery in about 3-5 minutes, after which students understand the material. If the material has been understood, students can proceed to the next video. So that students will be more active and pay attention to lectures. With WhatsApp Group media, lecturers can manage how the lecture takes place so that students remain active even though they are not face to face.

The response is the reaction given by someone to the stimulation that comes from outside, the stimulation obtained can be in the form of audio from a learning video containing an explanation of the material. While the visual is in the form of PPT which can be downloaded in the WhatsApp application. Furthermore, the results of student responses related to assignments and assessments by lecturers in online learning can be seen in table and figure 4 below:

Table 4. Assignment and Assessment Through WAG

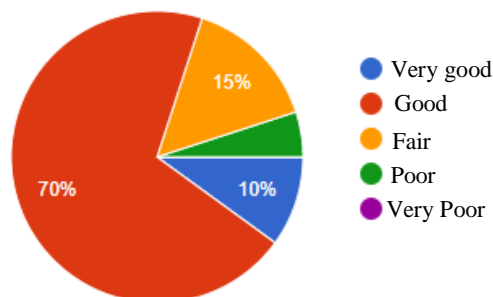| No	Criteria	Number of Students	Percentage (%)
1	Very Good	2	10%
2	Good	14	70%
3	Fair	3	15%
4	Poor	1	5%
5	Very Poor	0	0

Figure 4. Assignment and Assessment through WAG

The data in table and figure 4 shows the assignment and assessment carried out by lecturers to students in online learning through WhatsApp Group (WAG) from 20 students as respondents. From the results of student responses, only 10% or 2 students answered very good, 70% or 14 students answered good, 15% or 3 students answered fair, 5% or 1 student answered poor, and no student answered very poor. More than half of the students' answers for good predicate revealed that the assignments and assessments given by the lecturers were not difficult for students and were relevant to the material being taught. This refers to one of the affective aspects, namely the form of assessment where students can give a value or award for an activity related to the task or assessment given by the lecturer. In online lectures using the WhatsApp Group application, lecturers give assignments or assessments in various forms. Lecturers give assignments in the form of independent/individual assignments and also presentation assignments. The presentation task is intended to explain the questions that have been done to the lecturers and other students. In addition, lecturers also provide assessments in the form of quizzes which are usually given a time limit for collection on the day the quiz is held. Furthermore, the answers to the questionnaire related to the interaction of lecturers and students in online learning can be seen in table 5 and figure 5 below:

Table 5. Interaction between Lecturer and Student in Online Learning

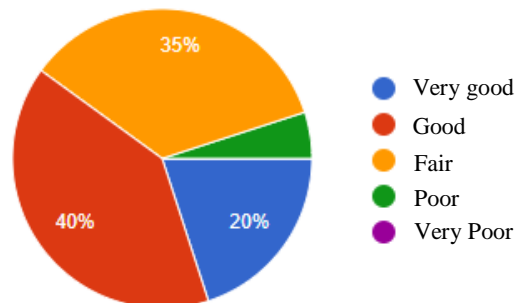| No	Criteria	Students	Percentage (%)
1	Very good	4	20%
2	Good	8	40%
3	Fair	7	35%
4	Poor	1	5%
5	Very Poor	0	0%

Figure 5. Interaction between Lecturer and Students in Online Learning

Table 5 and figure 5 illustrated that WhatsApp Group, as media learning, to have an interaction between lecturer and students in online learning as follows; there were 4 students (20%) selected very good, 8 students (40%) selected good, 7 students (35%) selected fair, 1 student (5%) selected poor, and no one selected very poor. If very good and good results were combined, therefore the total result would be dominant in 60% which the interaction between lecturer and students in online learning were satisfactory. It revealed that WhatsApp was effortlessly adopted by the students to discuss as they would have quick responses, accustomed to utilize to communicate well with lecturers, students, friends and family. Furthermore, WhatsApp did not immensely need internet data if it was applied in a long time. According to (Sari, 2021), WhatsApp features such as text messages, documents, pictures, videos, audios, and video calls are adopted as media learning in online learning to facilitate educators and students to interact. The following is an example of interaction or communication between lecturers and students through the WhatsApp Group application.
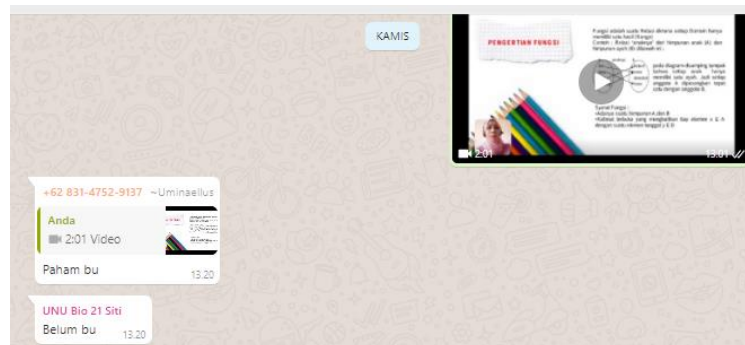

Figure 6. Interaction between lecturer and students

Based on Figure 6, it can be seen that there is an interaction between lecturers and students during lectures via WhatsApp Group where it is seen that the lecturer sends an explanation of the material in the form of a learning video. In the excerpt of the interaction, it is seen that students respond to the learning video that they understand the material explained by the lecturer through the video. The delivery of material in the form of videos is carried out in stages where the duration of the video is made around 3-5 minutes to make it easier for students to understand the material and so that they are not bored. If it is considered that most students already understand and there are no more questions, the provision of material in the form of videos is continued to the next section. Furthermore, the interaction of students and lecturers where students ask for

material that has not been understood from the material learned through learning videos can be seen in Figure 7.

Based on Figure 7, it can be seen that there is interaction between lecturers and students, where the lecturer explains the material related to logic in the form of learning videos. After students understand or pay attention to the material in the video, students ask the part of the material that has not been understood through the WhatsApp Group application directly. By conveying the question sentence "*Bu ini yang dimasukkan ke diagram koordinat itu yang R atau R*"?", this proves that students attend lectures and try to understand the material. This can be seen from questions related to material that has not been understood. Furthermore, student and lecturer interactions also occur in the WhatsApp Group application where students send the results of doing practice questions and present the results via voice notes in WhatsApp. The following is a snippet of the interaction between lecturers and students which can be seen in Figure 8.

Based on Figure 8, it can be seen that students gave their responses to the practice questions given by the lecturer by sending the results of doing the practice questions followed by presenting or explaining the results of the practice questions using voice notes. This makes it easier for lecturers to be able to correct the results of student work in completing practice questions, and can provide direct responses or reflections on the results of student work. This shows that WhatsApp Group media can still foster cooperative interactions between lecturers and students. This is very helpful for lecturers to be able to find out how far the student understands the material and can be used as an assessment in terms of presentation. Students who can send the results of the practice questions and explain them via voice notes to the lecturers and other students will be given additional points on the value of the assignment or quiz. This will motivate other students to actively participate in online lectures.
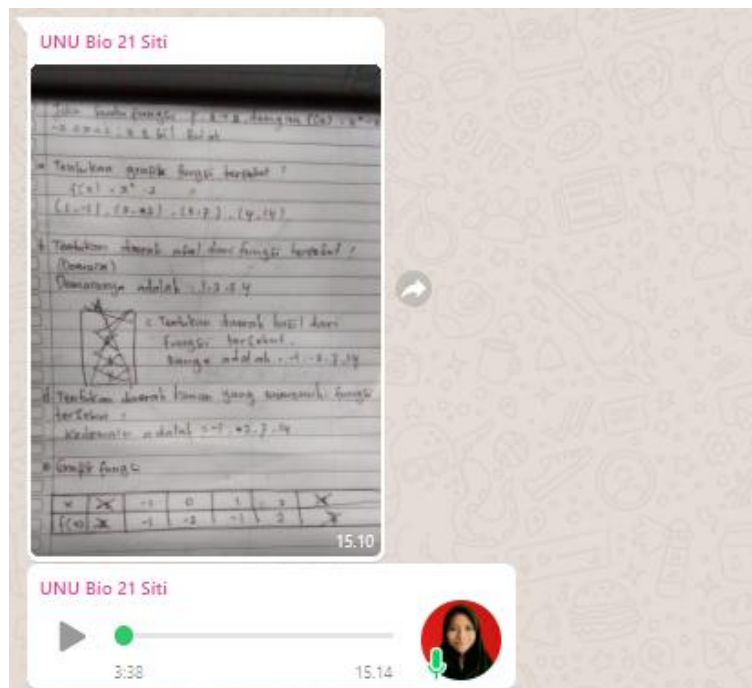
Figure 7. Interaction between student and lecturer

Figure 8. Interaction between student and lecturer

Table 6. Discussion during Online Learning in WhatsApp Group

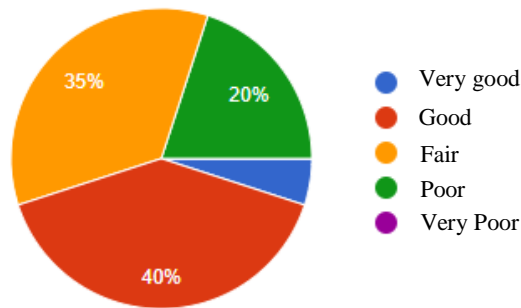| No	Criteria	Students	Percentage (%)
1	Very good	1	5%
2	Good	8	40%
3	Fair	7	35%
4	Poor	4	20%
5	Very Poor	0	0%

Figure 9. Discussion during Online Learning in WhatsApp Group

Table 6 and picture 9 described that the discussion during online learning in WhatsApp group conducted by lecturers and students had 40% or 8 students responded good, 7 students (35%) responded fair, 4 students (20%) responded poor, 1 student responded very good, and 0 student responded very poor. Based on the filling in the questionnaire, discussions during online learning through WhatsApp Group were considered good. This is because in the online lecture process, lecturers always deliver material step by step using learning videos. Thus, students will be interested in asking questions if there is material that they do not understand. In addition, the lecturer also provides practice questions where the lecturer invites students to share the results of doing practice questions in groups to be presented so that there will be discussions between lecturers and students if the answers to questions are still not correct. In accordance with (Susilowati, 2020), students are familiar with WhatsApp Group, the applied learning model utilized in online learning is able to motivate students to have active interaction. It is in line with the research result that most of students had responded discussion during online learning in WhatsApp group with lecturers and students.

The result of students' motivation in online learning can clearly be seen as follows:

Table 7. Students' Motivation in Online Learning

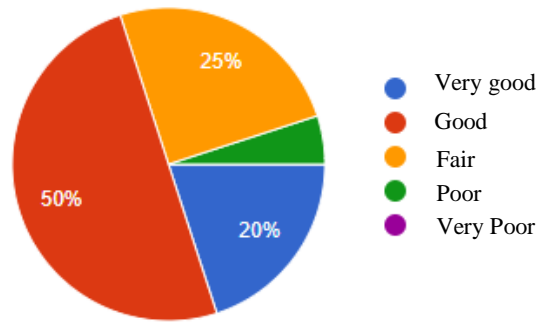| No	Criteria	Students	Percentage (%)
1	Very good	4	20%
2	Good	10	50%
3	Fair	5	25%
4	Poor	1	5%
5	Very Poor	0	0

Figure 10. Students' Motivation in Online Learning

As reported in table 7 and figure 10, it was seen that students' motivation in online learning were 20% or 4 students selected good, 10 students (50%) selected good, 5 students (25%) selected fair, 1 student (5%) selected poor, and no one selected very poor. It shows that most students still have good motivation in participating on the online learning through WhatsApp Group (WAG). This is indicated by the presence of students during online lectures who are always on time starting from giving answers to the greetings delivered by the lecturer. In addition, students always do the exercises given and submit assignments on time. Students are also always enthusiastic if given the opportunity to share the results of working on practice questions followed by explanations via voice notes because the lecturer will give additional points to the value of assignments and quizzes. That is why students are always motivated to actively participate in online lectures. However, even though online learning through WhatsApp Group (WAG) can run well, the face-to-face learning process is still the most desired choice by students. This agrees with (Cahyani et al., 2020) in their research revealing that learning motivation in students who take part in online learning or online in the midst of the Covid-19 virus pandemic situation is decreasing.

From the overall research results that affective assessment on online learning through WhatsApp Group (WAG) produces good criteria for all questions in the questionnaire, this shows that student activity in online learning is good. The results of this study are in line with the results of research by (Melinia, 2021) concluding that the online learning of WhatsApp media in this study has a significant effect on student learning activities at SMA PGRI 01 Kota Bumi, North Lampung. In addition, according to (Gusti et al., 2020) in his research, he concluded that the assessment of the affective

domain of online learning for integrated science courses in class 5A using WhatsApp Group (WAG) was quite good.

CONCLUSION

From this study, it can be concluded that the affective assessment of online learning through WhatsApp Group (WAG) for mathematics students is good according to the results of data obtained from filling out questionnaires by respondents. Where in the online learning process students can pay attention to learning well, students more easily understand the material, get assignments and assessments and can interact and discuss actively with lecturers and fellow students. In addition, students also remain motivated to learn online even though learning cannot be done face-to-face.

The researchers hope that the results of this study can become a reflection of the online learning process through WhatsApp Group (WAG) to be improved so that it will produce a good learning process for students even though face-to-face learning remains what we all expect. In addition, online learning is also expected not only using the WhatsApp application but also using Zoom, Google Meeting, Google Classroom, even if you can use E-Learning so that the knowledge of lecturers and students about learning media can increase.

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