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THE EFFECTIVITY OF ONLINE LEARNING IN EXPLORING MATHEMATICAL ABILITY OF ELEMENTARY STUDENTS ASSISTED WHATSAPP GROUP **APPLICATION**

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Abstract

Mathematical exploration ability is very needed for student. This research focuses to looking for the effectivity of online learning activities in mathematics exploration ability of student in several Indonesia elementary school during the pandemic of covid-19 with the assistance of whatsapp group applications. Whatsapp group is used for connecting learning activities between teacher and student guardians or parents, between teacher and students, among students and among student guardians or parents during the covid-19 pandemic. This Research uses quantitative method. The technique of data collection using questionnaire with the assistance of google form applications. There are 119 respondents who contains 80 female student guardian and 39 male student guardians. Based of collection data which have been done 86,5% respondents answer that learning with assistance of whatsapp group runs effectivitily for exploring mathematical ability. 92,25% respondents answer that teacher always helping online learning by whatsapp group during The covid-19 pandemic. Using Whatsapp group will continue to be used until the better application is found.

Keywords: Mathematical Exploration Ability, Online Leaning, Elementary School Student

Abstrak

Kemampuan eksplorasi matematis sangat dibutuhkan siswa. Penelitian ini difokuskan untuk mencari efektivitas kegiatan pembelajaran online dalam kemampuan eksplorasi matematika siswa di beberapa sekolah dasar Indonesia pada saat pandemi covid-19 dengan bantuan aplikasi whatsapp group. Grup Whatsapp digunakan untuk menghubungkan kegiatan pembelajaran antara guru dengan wali siswa atau orang tua, antara guru dan siswa, antar siswa dan antar wali siswa atau orang tua selama pandemi covid-19. Penelitian ini menggunakan metode kuantitatif. Teknik pengumpulan data menggunakan kuisioner dengan bantuan aplikasi google form. Ada 119 responden yang terdiri dari 80 wali murid perempuan dan 39 wali murid laki-laki. Berdasarkan pengumpulan data yang telah dilakukan 86,5% responden menjawab bahwa pembelajaran dengan bantuan kelompok whatsapp berjalan efektif untuk menggali kemampuan matematika. 92,25% responden menjawab bahwa guru selalu membantu pembelajaran online oleh kelompok whatsapp selama pandemi covid-19. Menggunakan grup Whatsapp akan terus digunakan hingga ditemukan aplikasi yang lebih baik.

Kata Kunci: Kemampuan Eksplorasi Matematis, Pembelajaran Online, Siswa Sekolah Dasar

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INTRODUCTION

During Pandemic of Covid-19, Learning activities in elementary school are done unusually, according to regulation of the minister of education and Indonesian culture No 4 2020 learning activities are moved to student's house assisted by parents or student guardians, It was done in order to minimize Covid-19 transmission.

Corona virus was originally a virus that originated from animals and circulated in animal bodies such as; cows, goats, pigs, chickens, horses and others (Yuliana, 2020), the symptoms caused by the virus include fever, cough, breath, dizziness, sore throat and discharge from the nose (Di Gennaro et al., 2020), Preventive steps that can be done include; use a face mask, cover areas with coughs and coughs, order hands regularly, avoid contact with people infected with the corona virus, keep a distance, avoid eye, nose and mouth activity, go to the doctor immediately for symptoms of the corona virus and follow the advice of the service health in your environment (Di Gennaro et al., 2020).

Given the many preventive steps that must be taken to save yourself and those around you from corona virus infection, face-to-face activities in learning activities are eliminated and replaced with distance learning or online learning. Learning activities should still go on though the outbreak is ongoing therefore teachers, students and student guardians do cooperate. In order to realize the optimal learning activities, teacher and student guardians or parents work together in the activities of learning that are carried out boldly (online) or commonly known as PJJ (Pembelajaran Jarak Jauh) or Distance Learning.

Distance learning activities can also be interpreted as learning from home or commonly called Learning From Home activities (BDR), BDR is a learning activity that does not limit students to get material based on time and place without forgetting the learning objectives (Kurniasari et al., 2020). Distance learning is also learning that prioritizes aspects of independence, that is because in distance learning activities the teacher does not face to face with students, distance learning can also occur in the available media that allows interaction between teachers and students (Prawiyogi et al., 2020). Distance learning has several advantages, namely; enabling students to carry out learning activities anytime and anywhere, allowing students to adapt their education and training activities to their responsibilities (Prawiyogi et al., 2020).

Distance learning also has obstacles including the following (Abidin et al., 2020):

- 1. Teachers and Students who are not yet proficient in implementing distance learning activities (online). This proves that the importance of mastering technology for a teacher so that learning activities can continue (Yunitasari & Hanifah, 2020)
- 2. Limited facilities including technology and internet support (Arifa, 2020)
- 3. Lack of clear local government directives (Arifa, 2020)
- 4. There is no appropriate curriculum for distance learning activities (Arifa, 2020)

Distance learning is carried out as an effort to break the chain of spread of the Covid-19 virus, but in its implementation it requires thorough readiness such as the availability of communication tools in the form of smartphones, computers and internet networks (Handarini & Wulandari, 2020).

In distance learning activities, the role of the media is indispensable to facilitate interaction between teachers and students, several media that can be used in distance

learning, namely; whatsapp Application, Zoom Meeting, Teleconference, etc (Yunitasari & Hanifah, 2020).

The whatsapp application, especially the whatsapp group facility, is a medium that is often and more widely used in distance learning activities. The Whatsapp Group application is a technology that can be used as a medium of communication between teachers and student guardians or parents in distance learning activities. The Whatsapp application can facilitate online collaboration between students and students and teachers and students making this application more widely used in learning activities, the other hand The WhatsApp application is a free and easy application to use for sharing learning objects (images, sounds, text, documents) so The information and knowledge are easily built into the learning process (Dinni, 2018).

The WhatsApp application is very effective in connecting people, organizations, which are the reason why WhatsApp is more dominant in use by the community even during a survey conducted in 2017 (Trisnani, 2017). The WhatsApp application is a cross-platform application that allows Android, Windows phone, iPhone, Blackberry and Nokia smartphone users to use it, so this application is widely chosen to be a medium of communication in learning activities (Altaany, 2015). The WhatsApp application is also accessed as a simple application because it does not require a password to operate it (Rahartri, 2019).

The whatsapp application is basically a short message sending application such as SMS (short message service), it's just that this whatsapp application does not use credit to send messages but uses the Internet network (Pustikayasa, 2019). some of the facilities used in the WhatsApp application include the following (Prajana, 2017) (Pustikayasa, 2019);

1. Group chat facility

Group chat is a whatsapp application feature that makes communication between several people easily (Pustikayasa, 2019)

2. Facilities sending documents

Facilities sending documents is a feature in the WhatsApp application that allows users to send document files in the form of word, excel, pdf and others to be shared individually or in groups

3. Camera facilities

Camera facilities are features that exist in the WhatsApp application that allow users to take pictures directly through their cellphone camera to share individually or in groups

4. Gallery facilities

The gallery facility is a feature on the WhatsApp application that allows users to share photos or videos in the gallery with other people individually or in groups (Pustikayasa, 2019)

5. Audio facilities

Audio facilities is a feature on the WhatsApp application that allows users to send audio individually or in groups

6. YouTube video box facility

YouTube video box facility is a feature on the WhatsApp application that allows users to send YouTube links individually or in groups

7. Whatsapp desktop facility

Whatsapp web is a whatsapp application feature that allows users to operate their WhatsApp application on a computer provided that whatsapp on the cellphone remains active (Pustikayasa, 2019)

8. Call and video call facilities

Call and video call facilities are features on the WhatsApp application that allow users to make voice or video calls individually or in groups

In learning activities, the use of the WhatsApp application has several advantages, namely (Pustikayasa, 2019);

- 1. The WhatsApp application is able to facilitate teachers to share or share learning materials in the form of ppt, pdf, doc, xls, audio, video and image files directly to students
- 2. The whatsapp application is able to facilitate teachers to ask for responses directly from students regarding the material that has been distributed

In another hand there are lacks of whatsapp application (Pustikayasa, 2019);

- 1. Teachers and students must be connected to internet services to get the latest information
- 2. Communication using images, videos and large files will affect internet data usage (large costs)
- 3. In using the WhatsApp group feature, participants can leave the group without agreement from any party

In distance learning activities, the teacher acts as a facilitator. The teacher as a facilitator leads to be the ideal teacher where the teacher has creative, innovative, passionate, empathetic and flexible teaching (Sayangan, 2018). In facing global needs, teachers must concentrate on four pillars in education, including; learning to know, learning to do, learning to be and learning to live together (Jagtap, 2016). Become student facilitators to develop their skills and create a creative atmosphere in learning activities that must be applied by a professional teacher (Purnama, 2015). The implementation of student-centered learning activities is also a modern learning activity, student-centered learning activities are also able to make learning activities easier and smarter (Jagtap, 2016). In the distance learning based online the teacher does not longer acts as a lecturer but as a guide in the learning process (Munir, 2009).

Several things that must be owned by a teacher who acts as a facilitator in learning activities include (Linder, 2011):

- 1. They have high knowledge of learning content
- 2. They have the ability to question instructional practices
- 3. They have the ability to change experiences according to context in learning activities.

Student-centered learning activities will produce active students because they are able to manage learning resources and are responsible for the learning activities they do (Naibaho, 2018). In learning activities in elementary schools, student-centered learning activities can also be done by giving them small cases in order to measure aspects of student understanding, the teacher can present these activities individually or in groups (Naibaho, 2018). In addition, teachers must also pay attention to the needs of students by facilitating students in terms of providing motivation to improve skills in learning activities, providing

tools that are able to stimulate student curiosity and provide the facilities needed by students (Naibaho, 2018).

Nowadays learning activities, students don't longer watch to become learners who think traditionally such as; reading, copying, counting, and memorizing, however, students to become learners who are capable of higher order thinking, one of which is an activity that is explored in mathematics learning.

Explored activities, which are activities that lead students to rediscover concepts or theories that have been studied previously to be developed in problem solving, it is called the exploration of mathematical abilities. (Lestari, 2017).

(Lestary, 2017) The first indicator in mathematical exploration ability is students who are able to interpret or understand the problems are given from teacher. Be able to understand the problems (explain by own) is also an indicator of students' proficiency in learning mathematics. (Small, 2017)

The student's ability to check patterns and conduct searches informally is the second indicator of mathematical exploration competence. (Lestari et al, 2017). The act of searching for students in learning activities is called an inquiry where students are trained to be able to find simple theories in the learning process (Abrar, 2015)

The Third Indicator of mathematical exploration competence is when students are able to clarify problem solving efforts, learning mathematics is not only enough to memorize and copy concepts but also students must be able to solve the problems presented either problematic or non-routine problems. The Efforts for increasing student's mathematical completion is the mathematics learning given must emphasize deep. Understanding and so that students can feel the benefits of mathematics in their daily lives (Agustina, 2016).

Symbolizing and generalizing the results of the findings found is the fourth indicator in mathematical exploration competence (Lestari, 2017). This research aims to determine the effectiveness of online learning in exploring the mathematical exploration competence of elementary school students assited by WhatsApp group application. Whatsapp groups are used to facilitate communication between teachers and student guardians or parents, teachers and students, among student guardians or parents, students and the other student guardians or parents.

RESEARCH METHOD

The Quantitative method is used in this research. The quantitative method is considered appropriate in this study because this research is a study that involves a collection of numbers obtained from taking questionnaires from respondents regarding the effectiveness of distance learning in the field of mathematical exploration competencies of elementary students.

Participant

Participants in this research were students guarfians of elementary school in indonesia. There were 39 male sturdent guardians or parents and 80 female student guaridan or parents

Material

The instrument used in this study was a questionnaire in the form of several questions to determine the effectiveness of the WhatsApp group application used to assist

online learning in Mathematics in exploring the mathematical competence of elementary students. The questionnaire was made with the help of the goog form application and distributed on various social media throughout Indonesia.

Procedure Of Research And Data Analysis

This research was conducted in May 2020, starting with observing data from respondents through the Google form as a data collection tool, after that the percentage of data from respondents was checked and several points in the data filled in by respondents were in accordance with research indicators regarding students' mathematical exploration abilities.

The data collected in this study is quantitative data containing questions that lead to indicators of the possibility of mathematical exploration.

RESULTS AND DISCUSSION

Results

Table 1. Respondent's opinion about the role of Teacher and student guardians or Parent **Activities**

Activities				
Aspect		Indicator	F	0/0
		Student guardians or parents always accompany	61	51,3
The Role	of	student in learning activities at home		
student		Student guardians or parents often accompany	37	31,1
guardians	or	student in learning activities at home		
parents	in	Student guardians or parents seldom accompany	20	16,8
learning		student in leaning activities at home		
activities		Student guardians or parents never accompany	1	0,8
		student in learning activities at home		
Total of Respondent		119	100	
		Teacher always giving learning materials on	72	60,5
The Role	of	whatsapp group according to schedule of		
Teacher	in	learning		
learning				
activities				
		Teacher often giving learning materials on	27	22,7
		whatsapp group according to schedule of		
		learning		
		Teacher seldom giving learning materials on	15	12,6
		whatsapp group according to schedule of		
		learning		
		Teacher never giving learning materials on	5	4,2
		whatsapp group according to schedule of		
		learning		
			119	100
Total of Respondent				

Based on research that has been conducted by collecting data online using Google Form, 119 respondents stated that 51.3% always accompany students to study at home, 31.1% often accompany students to study at home and 16.8% say they rarely accompany students to study at home, and 0.8% of respondents said they never accompanied the student learning process at home during the Covid-19 pandemic.

The role of parents or student guardian at home cannot be separated from collaboration with teachers at school, this is evidenced by the percentage of teacher involvement in online learning during the Covid-19 pandemic 60.5% said that teachers at school always provide learning material in the WhatsApp group accordingly. with the lesson schedule, 22.7% stated always, 12.6% stated rarely and 4.2% stated that the teacher never provided learning in accordance with the applicable lesson schedule in the WhatsApp group.

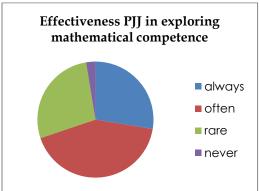


Figure 1. Students Guardians or parents opinion about the effectivity PJJ in exploring mathematical competence

According to The Pie Chart, The effectiveness of distance learning activities (PJJ) in exploring the mathematical competence of elementary school students 32 out of 119 respondents stated that students are always able to recognize math problems in the form of stories given by the teacher, 49 people said they often, 32 people said rarely and 3 people said never. Distance learning has also been done by.

In addition to emphasizing the aspects of recognizing problems given by the teacher, students' mathematical exploration abilities also include aspects that emphasize problem solving, double-checking the data obtained and concluding student research results or student searches.

The following is a graph of students' mathematical exploration skills during the Covid-19 pandemic with distance learning assisted by the WhatsApp group application

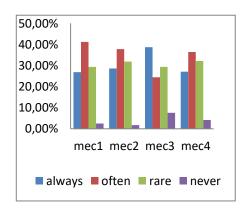


Figure 1. student's mathematical exploration ability

Note:

 Mec_1 = Mathematical exploration competence₁

Mec₂ = Mathematical exploration competence₂

Mec₃ = Mathematical exploration competence₃

Mec₄ = Mathematical exploration competence₄

In this research, the maximum score (criterion) for students' Mathematical Exploration Ability is 1600, the total score obtained from the observation results is 1384. Based on the data obtained, the effectiveness level of Online Learning in Exploring Mathematical Competence of Elementary School Students with the help of the Whatsapp Group Application is 86.5%.

discussion

The results show that the WhatsApp group application can be a mediator between teachers and student guardians or parents, between teachers and students, among students and among student guardians or parents. It was also found that the use of the whatsapp group application in learning activities was effective in distance learning activities.

Research using the WhatsApp group was also carried out by Ira and Agus (Mayangsari & Apriant, 2017) in Bandung-West Java. The research involved two groups, namely a group of parents from private schools in northern Bandung and a group of parents from Islamic schools (pesantren) in southern Bandung city. In this study, the group of parents of private students at north Bandung reached 35% of active conversations on the WhatsApp group, while the group of parents of Islamic school students (pesantren) at South Bandung received a higher percentage of 46%. In addition to research conducted by Ira and Agus, a similar research was also conducted by Dahdal (Dahdal, 2020) which conducted observations of 23 students at a UAE university, 94% of students said that the WhatsApp application was able to facilitate communication between professors and students, 88% of students said that they were motivated to join the discussions held in the WhatsApp group, in that study students also said that using the WhatsApp group application was able to complement their learning experience.

From some of the studies mentioned above, they show that using whatsapp groups application can increase the effectiveness of student learning activities, because whatsapp groups application is able to be mediator in communication between teachers and guardians of students or parents, between teachers and students, among students and among student guardians or parents.

In the other hand, mathematical exploration competence will be realized if communication occurs smoothly between teacher and student guardians or parents and between teacher and students. It because there will be many misunderstandings in conveying material relating to story-based questions (exploration) and it can be resolved by communication occurs smoothly. The use of the WhatsApp group application is also able to improve interpersonal skills between students (Sánchez & Pico, 2020)

When students have difficulty solving questions in the form of stories question (exploration), the teacher can provide appropriate direction in the form of sample questions, case examples or directions in the stages of solving these questions.

In PJJ (Pembelajaran Jarak Jauh) or distance learning activities, The teacher can also provide direction to student guardians or parents to provide direct guidance in order to optimize the learning activities that are being carried out.

CONCLUSION

Based on the research objectives that have been made, using the WhatsApp group application is able to be mediator between teachers and guardians of students or parents, between teachers and students, among students and among student guardians or parents in learning activities.

The whatsapp group application is also able to streamline mathematics learning related to mathematical exploration competencies, because the use of WhatsApp groups can solve problems When students have difficulty solving problems in the form of stories (exploration), the teacher can provide guidance in learning in form of text, example questions, pictures and voice on whatsapp groups to assist students in solving problems.

ACKNOWLEDGMENTS

This research is limited in nature, because it only reaches 119 student guardians or parents from the total number of students in Indonesia, of course it could be different if the researcher uses a wider range of respondents considering the different respondents in Indonesia.

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