



## Learning Mixed Arithmetic Operations Using WhatsApp Groups for Islamic Elementary School Students

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### ABSTRACT

The purpose of this study is to show whether WhatsApp groups can be one of the media for learning mixed arithmetic operations mathematics during the online learning process. This study uses a quantitative approach to the pre-experimental design method (one group pretest-posttest). The research subjects were 16 students of class VI Islamic elementary school. Students' knowledge of mixed arithmetic operations, when given a pretest, was 55.6%. After learning mixed arithmetic operations using the WhatsApp group, the post-test results increased to 57.5%. Based on these results, there was an increase in students' knowledge of 1.9%. This is because students understand learning using WhatsApp groups. So learning to use WhatsApp groups can slightly increase knowledge in mixed arithmetic operations.

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## 1. INTRODUCTION

Mathematics learning basically has abstract characteristics, as well as tiered concepts and principles. This causes many students to find it difficult to learn mathematics. The success of learning mathematics in elementary schools is shown by students mastering the material. Through online learning, students can interact with teachers using several applications such as google classroom, video conference, zoom, whatsapp or others (Wiryanto, 2020).

In an effort to support the continuity of the education and learning process, *WhatsApp* groups can be used as learning media, so that learning can take place without being limited by space and time. That is, learning continues to be carried out not only face-to-face in class, but learning can also be carried out outside of class hours (Pustikayasa, 2019).

Mathematics learning achievement in class VI semester 1 in Basic Competence of mixed integer arithmetic operations shows that students' ability to understand mixed arithmetic operations is still weak. In addition, students' understanding of the mixed integer arithmetic operation material is also still lacking because the teacher never asks students' difficulties, and every time there is an assignment, both homework and school assignments, there is no assessment from the teacher so that students feel it is not important to learn (Bandiyah, 2016).

The results of the study show that the learning media chosen by the teacher while online during the process of teaching and learning mathematics is using the *WhatsApp* application with *video features*, *voice notes*, and *video calls* (Laili et al., 2021). Research found that there is a positive influence between the effectiveness of *Google Meet*, effectiveness *WhatsApp Group* on learning outcomes in mathematics at islamic elementary school (Fatkhurrozi et al., 2021). Research found that students had good responses and interpretations with online learning innovations using this *WhatsApp*-based PBI learning model (Rosmiati & Lestari, 2021). Results of the study showed that the application of learning models of *Index Card Match* can improve kemampuan students in using the properties of a mixture of integer arithmetic operation indicated from the results of the evaluation tests in the second cycle (Bandiyay, 2016). The online learning process in mathematics is still not optimal due to various factors, namely the environment and the characteristics of students (Lestari, 2021).

But there has been no research on learning mixed arithmetic operations using the *WhatsApp* group for Islamic Elementary School Students. Based on the above background, the purpose of this study is to show whether *WhatsApp* groups can be one of the media for learning mathematics for mixed arithmetic operations during the online learning process. In addition, to find out the effectiveness of *WhatsApp* groups in improving numerical literacy of islamic elementary schoolstudents.

## 2. THEORITICAL FRAMEWORK

### 2.1. Math Learning

There are three principles of learning mathematics. First, namely attention and motivation as a driver of student learning activities. Second, namely activeness as a positive attitude and the driving force of students to take the initiative to carry out learning activities. Third, it is necessary to be directly involved and experienced so that children can build their own knowledge through existing activities. In order for the learning objectives to be achieved, the teacher chooses the right learning model, chooses or uses strategies with appropriate approaches, methods and techniques that involve students to be active and motivated in learning, both mentally, physically and socially, so that proficiency in mastering the material can be optimized. Learning mathematics must also be meaningful so that students do not have difficulty applying it in everyday life (Ummami, 2019).

## 2.2. Mixed Arithmetic Operations

Integer arithmetic operations are one of the materials studied in grade 6 elementary school semester 1, where the material discusses how to complete calculations consisting of multiplication, division, addition, and subtraction (Bandyah, 2016). The general competence or ability of learning mathematics in elementary schools is to perform arithmetic operations of addition, subtraction, multiplication, division, along with mixed operations, including those involving fractions (Oktari et al., 2019).

## 2.3. WhatsApp

*WhatsApp* as application messaging that can send and receive text messages, pictures, videos and more to others using any type of smartphone that help communication across the world community (Anwar & Riadi, 2017). *WhatsApp* groups are one of them that can be used to create groups (study groups) that function as learning media, where educators and students can exchange information, disseminate information, and can create a learning discussion forum about subject matter, assignments, or just give greetings by students. educators to students who can provide motivation to learn. Therefore, the teaching and learning process is not only carried out during class hours, but also at certain hours outside of face-to-face learning in accordance with the agreement of group participants in this case are educators and students (Pustikayasa, 2019).

By using *WhatsApp* groups, educators are expected not only to carry out learning based on the curriculum alone, but also to be able to provide encouragement to arouse, stimulate and increase students' learning motivation, so that the objectives of learning can be achieved properly (Pustikayasa, 2019).

## 3. METHODS

The 2021 community service program activity will be held at islamic elementary school, from 26 August 2021 to 26 September. This study uses a quantitative approach to pre-experimental design method (one group pretest-posttest). The research subjects were 16 students with details of 8 boys and 8 girls at Islamic elementary school Panyocokan I, Indonesia. This research was conducted in 2 stages, namely pretest before the material was delivered and posttest after the material was delivered. Using a yes-no type of test instrument. Each test consists of 10 questions via google form. The data is processed until it is concluded.

## 4. RESULTS AND DISCUSSION

### 4.1. Student Demographics

This research was conducted at an islamic elementary school. After interviewing the principal, the number of students was 253. The subjects were 16 students with details of male as many as 50% (8 students) and female as many as 50% (8 students). Students have learned the operation of multiplying integers. The average student is still not fluent in multiplication of negative integers.

## 4.2. Phenomena in the Learning Process

The learning stages carried out are as follows:

- i. In the first session, students do the pretest. Students have a low level of understanding.
- ii. In the second session, students are given learning video material through WhatsApp groups. Then a question and answer discussion was held via the WhatsApp group. Students are active in participating in learning.
- iii. Evaluation of the level of student ability is given after the learning process.

## 4.3. Discussion of Results

Islamic elementary school student activities are carried out online. We distributed pretest and pretest questions online via google form. After the pretest then send the learning video to the WhatsApp group. Then conduct a question and answer discussion on mixed arithmetic operations with students through the WhatsApp group.

**Table 1** describes the results of the students' pretest and posttest. The pretest was distributed to sixth grade Islamic elementary school students to find out students' initial understanding of mixed arithmetic operations by filling out a 10-question test. After distributing the material, we conducted a post-test to determine students' understanding of the mixed arithmetic operation material.

Students' knowledge of mixed arithmetic operations when given a pretest was 55.6%. After learning mixed arithmetic operations using the WhatsApp group, the posttest results increased to 57.5%. Based on these results, there was an increase in students' knowledge of 1.9%. In question number 2 the results of the pretest are the same as the results of the posttest. In questions number 1, 3, 4, 5, 9, 10, the results from the pretest to the posttest rose because the students had understood. In questions number 6, 7, 8, the results of the pretest to the posttest fell because students were easily bored with online learning.

(1) the form of difficulty in learning mathematics in mixed arithmetic operations, namely students find it difficult to count when doing exercises, understand symbols; understand the concept and write the result of the addition of numbers. (2) the factors that cause difficulties in learning mathematics in mixed arithmetic operations, namely internal factors such as learning concentration does not last long, the ability to remember some students is low, students have difficulty understanding the meaning of the problem and difficulty in counting. External factors such as the teacher in providing understanding too quickly, not using the media and students who often talk when the teacher explains (Oktari *et al.*, 2019).

## 5. CONCLUSION

Students' knowledge of mixed arithmetic operations when given a pretest was 55.6%. After learning mixed arithmetic operations using the WhatsApp group, the posttest results increased to 57.5%. Based on these results, there was an increase in students' knowledge of 1.9%. This is because students understand learning using WhatsApp groups. So learning to use WhatsApp groups can slightly increase knowledge in mixed arithmetic operations.

**Table 1.** Students' pretest and posttest results.

No	Question	Pretest	Posttest	Gain
1	Is $14 \times 8 + 241 = 353$ ?	75.0%	87.5%	12.5%
2	Is $(153 - 195) \times 5 = -822$ ?	75.0%	75.0%	0.0%
3	Is $45 \times 4 - 80 : 5 = 20$ ?	37.5%	50.0%	12.5%
4	Is $25 \times (75 - 55) = 500$ ?	62.5%	68.8%	6.3%
5	Is $(115 : 5) + 28 \times 4 = 204$ ?	56.3%	62.5%	6.3%
6	Is $300 - 225 \times 2 = 150$ ?	25.0%	6.3%	-18.8%
7	Is $59 + 6 : 3 \times 10 = 79$ ?	56.3%	50.0%	-6.3%
8	Is $76 - 10 + 96 : 3 = 98$ ?	50.0%	43.8%	-6.3%
9	Titin bought 2 kg of eggs to make a cake. 1 kg contains 16 eggs. If 1 cake requires 8 eggs, can Titin make 4 cakes?	68.8%	75.0%	6.3%
10	In a warehouse there are 50 boxes. Each cardboard contains 20 pencils. Then 70 pencils are transported to the store. Are there 30 pencils left in the warehouse ?	50.0%	56.3%	6.3%

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## 7. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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