Implementation of Online Learning During the Covid 19 Pandemic in Mathematics with a Scientific Approach in SD Daarul Qur'an Kalibata City

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Abstract

This study aims to (1) find out online learning planning in mathematics subjects with a scientific approach at SD Daarul Qur'an Kalibata City, (2) find out the implementation of online learning of equivalent fractions in grade 4 SD Daarul Qur'an Kalibata City, (3) find out the results of online learning in mathematics with a scientific approach at Daarul Qur'an Elementary School Kalibata City. This research uses a qualitative approach with the type of case study research (case study). The location of this research is the 4th-grade students of SD Daarul Qur'an Kalibata City. Sources of data in this study were the principal, waka curriculum, mathematics teacher, and eight students. Data collection techniques used are observation, interviews, and documentation. The sampling technique in this study used primary and secondary data, using data analysis techniques, namely reduction, categorization, data presentation, and conclusion drawing. While checking the validity of the data using the degree of trust, transferability, dependence, and triangulation of sources. The results of the study revealed that: (1) online learning planning during the covid 19 pandemics in mathematics subjects with a scientific approach using the application zoom. Then for the curriculum using the 2013 curriculum and adjusted when in the field, (2) the implementation of online learning of equivalent fractions in grade 4 uses a scientific approach. The reason is that students are active in learning. Because so far online learning has only focused on monitors, (3) the results of online learning in mathematics with a scientific approach show that online learning in mathematics subjects with a scientific approach is quite difficult to apply online, then not many students can follow the steps. So, the scientific approach is not suitable if applied online.

Keywords: Online Learning; Mathematics Subject; Scientific Approach

Introduction

Dynamic is the nature of the times, which means that it continues to move towards a more perfect civilization. One indicator of changing times is the use of information technology. The development of information technology has a major influence on changes in every area of life (Handarini, 2018). Various
fields of life undergo a metamorphosis towards absolute renewal, such as education. Education is like a place to form intelligent citizens who can solve all life problems. Education is a product that is produced to achieve national goals (Nurgiansah et al., 2021). The national ideals of the Indonesian state are contained in the preamble of the 1945 Constitution which is to educate the nation's life, especially since our country has a vision of a golden generation in 2045 as a celebration of 100 Indonesia's independence year (Izzaty & Nurfitriani, 2021).

But over time, at the end of 2019 originating from Wuhan, China, a virus called corona or Covid-19 emerged which finally spread throughout the world uncontrollably which made it difficult for all countries, both developed and developing countries, including Indonesia, which in the end Covid 19 was designated as a pandemic outbreak by the World Health Organization (WHO) on March 12, 2020 (Kharisma et al., 2020). Covid-19 is a new type of disease that has never been previously identified in humans (Astini, Sari, 2020). This virus is different from previous viruses which also originating from China such as bird flu or swine flu whose transmission involves animals. The Indonesian government has issued a disaster emergency status from February 29-May 29 2020 related to this virus pandemic with a total time of 91 days (Nograhashy Widhi Koesmawardhani, 2020). Education Organization, The United Nations Scientific and Cultural Organization (UNESCO) mentions nearly 300 million students in the whole world are disturbed by their school activities, and their rights to education in the future are threatened (Achmad Yurianto, 2020). This affects changes and policy reforms to be implemented. The new policy also occurred in the world of education, changing the learning that must come to class, being enough at home. The government's recommendation to stay at home and physical and social distancing must be followed by a change in the face-to-face learning mode to online. Referring to the Circular of the Minister of Education and Culture regarding the implementation of education policies in the emergency period of the spread of COVID-19. So in practice the teaching and learning process at home, students, and teachers are assisted with online/online learning applications (rahmad, 2021).

Online itself is an acronym from within the network which means exchanging information with media connected via the internet. According to Isman (Dewi, 2020), online learning is a process of learning interaction using computers and internet access. Online learning is an implementation of the teaching and learning process by exchanging information using the internet network to get a more massive target (Bilfaqih & Qomarudin, 2015). During the pandemic, various alternative offers for online learning applications are increasingly selling (Dewantara & Nurgiansah, 2020). Online or online learning (on the network) is carried out through various applications (Suhada et al., 2020). A wide selection of applications for online learning including zoom, google classroom, WhatsApp, email, etc (Setiawan & Widayat, 2020).

(Lestari, 2021) states that educational innovation with online learning using various applications is an effort made to answer the challenge of the availability of varied learning resources. As it is known that online learning includes formal educational activities organized by elementary schools, where a teacher is an instructor to guide students so that the learning process is carried out in separate locations so that interactive media are needed so that they can be connected, one of which is in mathematics. In elementary school. Some problems occur that mathematics is a difficult and unattractive subject for students, this happens because as based on Piaget's theory of cognitive development (knowledge) elementary school students are in the concrete operational stage aged 7-12 years, Piaget argues that in general, elementary school students find it difficult to understand abstract mathematics. (W. I. Lestari & Putra, 2020). (Auliya, 2016) states that mathematics is considered difficult because the characteristics of mathematics are abstract, logical, systematic, there are symbols/symbols and formulas that confuse students. Seeing these conditions, it is necessary to make changes in learning mathematics while online is running. Therefore, teachers have a very important role to be creative in developing learning, especially the application of online learning systems that can use fun models, methods, strategies and relate mathematical material to the real-world context so that it can be understood well by students. According
to (Setiawan, 2021) in his research that the problem in learning mathematics in elementary schools is that abstract mathematical concepts often make it difficult for teachers to explain the material to students virtually. According to Winarno (2012: 4), one of the factors supporting the success of education is curriculum design.

The results of national curriculum changes with field conditions that occur in SD Daarul Qur'an Kalibata City are still gaps. The 2013 curriculum which was revised in 2016 expects learning to be more student-centered and requires teachers to be creative in conducting virtual learning. However, the reality is that at SD Daarul Qur'an the learning orientation presented by the teacher is generally still assignment-oriented. This means that online learning is not oriented towards meaningful learning or does not apply a scientific approach (Oktafikrani, 2020).

Based on the description and explanation above, the researcher is interested in knowing how the school carries out the teaching and learning process during a pandemic, and one of the basic education levels that implement online learning in Pancoran District is SD Daarul Qur'an Kalibata city, this is what researchers use as an excuse to examine the process. implementation of online learning in mathematics with a scientific approach. Therefore, the researchers formulated the title of the study as follows: Implementation of Online Learning During the Covid 19 Pandemic in Mathematics Subjects with a Scientific Approach at Daarul Qur'an Elementary School, Kalibata City.

**Methodology**

This research is descriptive qualitative research. The qualitative research method is a research method based on the philosophy of postpositivism, used to examine the condition of natural objects, where the researcher is the key instrument, the sampling of data sources is carried out purposively. This is done by collecting triangulation (combined), data analysis is inductive/qualitative, and qualitative research results emphasize meaning rather than generalization (Sugiyono, 2011). Based on the description above, this research studies actions and words to describe the phenomena experienced by research subjects as a whole to obtain information about how online learning in mathematics subjects with a scientific approach. The information is extracted through recording and recording based on the results of observations, interviews, and documentation. In selecting respondents, researchers used structured interview techniques, while data collection techniques used interviews and documentation. In the validity of the data, the researcher used source triangulation, namely comparing the results of interviews between primary and secondary sources so that in the end a final and valid conclusion was obtained.

The place for this research is SD Daarul Qur'an Kalibata City, Kec. Pancoran, South Jakarta City. Geographically, the school is located within the Kalibata City apartment environment. The school is an integrated Islamic elementary school. The reason the researchers chose the school was that SD Daarul Qur'an is a private school that has implemented an online learning system since the beginning of the pandemic until now. The number of students in the SD is at most 20 people and at least 7 people. Another reason is that learning mathematics while telling stories and connecting in everyday life, using video assistance, and taking a personal approach if students do not understand. Finally, the researcher only needs to know the situation and condition of SD Daarul Qur'an. This research was carried out starting from research planning, research implementation, to making research reports. This research was carried out from the end of July to early August 2021.

Sources of data in qualitative research are all information that has been obtained from the principal, mathematics teacher, and grade 4 students. The data sources in this study are: First, primary data is a data source that directly provides data to data collectors (Sugiyono, 2011). Meanwhile, according to (Sekaran, 2017). In this study, the main sources of data were the principal, the head of the curriculum,
and the mathematics teacher. Both secondary data are sources that do not directly provide data to data collectors, for example through other people or documents (Sugiyono, 2011). Written sources of this research include official documents in the form of RPP (Learning Implementation Plan) documents, subject matter, student data, and final grades of 4th-grade students of SD Daarul Qur'an Kalibata City and so on.

Result and Discussion

The things that will be analyzed are, online learning planning in mathematics subjects with a scientific approach at SD Daarul Qur'an Kalibata City, the implementation of online learning for fractions material in grade 4 at SD Daarul Qur'an Kalibata City, and the results of online learning in the subject matter. Mathematics lessons with a scientific approach at SD Daarul Qur'an Kalibata City. Planning online learning in mathematics with a scientific approach at SD Daarul Qur'an Kalibata City. Implementation is the implementation of actions by individuals, officials, government agencies, and private groups to achieve the goals that have been outlined in certain decisions. In the journal, the implementation of online learning shows that online learning has an impact on increasing teacher skills and knowledge, mastery of technology, independence, creativity, independence, increasing student knowledge, and skills, learning processes, and readiness of resources such as teacher facilities and preparation. This online learning can facilitate the learning process wherever students are not limited to classrooms and available books.

Based on the findings that the researchers have described, online learning planning during the COVID-19 pandemic in mathematics subjects with a scientific approach at Daarul Qur'an Elementary School. With the COVID-19 pandemic, the education sector has changed 180 degrees. Usually, face-to-face learning has now turned into online learning. In planning online learning, of course, the implementation of the curriculum also changes, starting with more time-efficient class hours, then the learning load per week is reduced. The achievement of curriculum objectives cannot be separated from the role of a teacher who has the main task of teaching.

Teaching is the task of regulating the course of the learning process. Thus, every teacher needs to make a learning plan, namely the Learning Implementation Plan (RPP), so that he can use the available time effectively and efficiently. Then the implementation of learning is adjusted to the time in the field. This is done because students are easily bored and bored when studying online, then studying too long in front of a laptop makes the eyes less healthy.

The online learning application used by SD Daarul Qur'an is zoom, this is under the principal's direction to use the application. The reason for using the zoom application is because it is easy to use, can record, share screens, draw, change the background, and much more. The use of the zoom application has been used since the beginning of online learning until now. It means that it can be said that the zoom application has been used for more than two years for online learning, meaning that the zoom is already comfortable to use by teachers and students in teaching and learning.

Based on the findings, the researcher was able to analyze that the planning for the implementation of online learning during the covid 19 pandemics in mathematics subjects with a scientific approach at Daarul Qur'an Elementary School Kalibata City. Learning runs according to school policy as a form of independent learning, namely learning is done online. In the 2013 curriculum learning planning, it is still used, only to adjust it during the pandemic. For example, the learning load is reduced and the length of study is also reduced, but the learning objectives remain under the curriculum. The things that will be analyzed are, online learning planning in mathematics subjects with a scientific approach at SD Daarul Qur'an Kalibata City, the implementation of online learning for fractions material in grade 4 at SD Daarul
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a. Opening Lessons

The activity of opening lessons is an activity carried out by the teacher to create a learning atmosphere that allows students to be mentally prepared to take part in learning activities. Pay attention and meet the needs of students and show a great concern for the existence of students.

The math teacher at Daarul Qur'an Elementary School in opening mathematics online learning, the teacher first greeted the students, then asked how they were doing, asked about morning habits, motivated students, ice breaking, taking attendance, and opening the lesson by praying. Furthermore, the teacher distributes learning materials in the form of soft files in the form of PowerPoint, pdf, or word through the zoom application.
The material taught at the time of the study was the material on the properties of fractions. In delivering mathematics learning, the teacher uses a scientific approach. The application of the scientific approach when learning online is quite challenging because learning remotely the teacher cannot fully control student activities, the first way to apply it is the observing stage, the teacher gives direction to students to observe the material to be taught, namely the material properties of fractions, after that the questioning stage, at this stage students are guided by the teacher to collect questions about the material being taught, the teacher guides so that students actively ask about the material. The next stage is collecting information, at this stage, students are motivated to collect information from sources, books, the internet, or others to answer questions about the material. Usually, the teacher asks students to look at the textbook. The next stage is associating, which is the stage where students are motivated to process the information, they have obtained about the material they are discussing. The last stage is communicating, where students are guided to convey the results or information they have obtained, either through reports or presenting the results. In this case, the teacher asks students and students to explain briefly what they remember about the material.

Based on the observations of the researchers, it was found that this sharing activity was carried out after the discussion of the material was finished. Followed by sharing done in learning mathematics. This activity is related to problems or obstacles faced by students in learning mathematics.

Sharing activities can at least help students in dealing with their problems in learning mathematics. Especially with the help of the math teacher himself. Indirectly, mathematics teachers can find out how the situation and conditions of their students are in attending school at Daarul Qur'an Elementary School in Kalibata City. So that assistance in the form of motivation and support is always provided by the mathematics teacher.

In online learning mathematics, some of the material being studied is still "abstract" or is something that is still new to learn. In any situation and condition, the material should still reach the students. The method used by mathematics teachers at Daarul Qur'an Elementary School in providing a deeper understanding of concepts to students is how teachers reinforce the form of displayed media such as share screens, power points, videos, etc. So that students can see an overview of the abstract concept. Then provide notes and open opportunities for students to consult via private chat.

The material notes provided are under the teacher's creativity, for example by providing sample images, how to solve problems, and so on. If the students in the group still cannot understand the material, the teacher allows students to ask questions directly through private messages so that the material referred to by the mathematics teacher is in line with the understanding that students have learned.

Sometimes in online learning students feel bored and bored, especially learning mathematics which requires energy and thinking that is ready to deal with it. The way that mathematics teachers do is to motivate students to always do assignments even though learning turns to online, always communicate and provide understanding to students that the spirit of learning must be carried out in any situation and condition. Do not forget the teacher always greets in the zoom application so that students feel that there is learning even though they have to study from home during the Covid-19 pandemic. The teacher also greets students through WhatsApp groups so that students' closeness to the teacher is not stiff even though learning is done online. Not only that, but the teacher also greeted the group of parents/guardians to monitor and facilitate communication between teachers and guardians regarding the progress of learning while at home.

Although the use of the zoom application is carried out under the policies of the principal, mathematics teachers also develop their teaching creativity by combining other applications in online
learning mathematics. Mathematics teachers in addition to using the google form application in giving assignments, also combine the youtube application in online learning mathematics. Over time, in learning, teachers and students sometimes encounter several obstacles. Constraints are Based on the results of verbatim interviews and documentation that researchers received from informants, then it will be analyzed how the obstacles experienced by mathematics teachers in implementing online learning in mathematics subjects with a scientific approach at SD Daarul Qur'an. The following are the obstacles experienced by mathematics teachers in implementing online learning in mathematics subjects with a scientific approach at Daarul Qur'an Elementary School:

b. The Difficulty Is with the Students

The problem is that it is more student-centered. The difficulty of access to monitor students is due to the difficulty of signaling from the student's residence, the absence of a quota, as well as cellphones that are still dependent on parents so that children can only work after their parents finish work.

c. Student Boredom

The boredom experienced by students while studying at home has an impact on feeling lazy to work. So, the teacher must increase the working time at home to control students and reply to student messages regarding difficulties in understanding the material and assignments.

d. Invalid Student Identity Filling

Often students fill in an incorrect identity, making it difficult for the teacher to correct the results of the assignment. The results of online learning in mathematics with a scientific approach at SD Daarul Qur'an Kalibata City. The evaluation system used in mathematics subjects refers to the evaluation system that has been determined by the curriculum. The measuring instrument for students' completeness scores in learning mathematics refers to the KKM that has been determined by the school. The results that students want to achieve after the evaluation will be submitted to each teacher, including the mathematics teacher. According to an interview with a math teacher. Daily test activities to determine whether students' competencies have been achieved or not, will usually be carried out outside the classroom. But still under the supervision of a math teacher. This is according to the mathematics teacher. So, the implementation of daily tests uses a flexible space. Can work with longer hours as determined by the teacher.

Based on interviews with mathematics teachers, it is known that UTS, UAS, and UKK activities are still carried out online using the google form. In terms of time, it is also determined according to offline so that students can be disciplined in working on questions. The following is an explanation from the math teacher. In addition, remedial mathematics activities are also available. That is, for students who do not complete the exam, the mathematics teacher provides remedial outside formal study hours. This is so that students can meet the KKM that has been determined. this information is according to the mathematics teacher.

Entering the evaluation of learning outcomes carried out, there are 3 areas that students need to achieve. Namely the cognitive, affective, and psychomotor domains. Based on the results of group learning of mathematics subjects, it is carried out through 1) observing changes in behavior and attitudes to assess the development of affection and personality of students, and 2) examinations, tests, and assignments to measure the cognitive aspects of students.

When distributing report cards, it is done online. The teacher hands the grades to the homeroom teacher, then the homeroom teacher makes a report card using the application, then prints and scans it and
makes a PDF. After that, the homeroom teacher conducts an online consultation with parents via the zoom application. This is done so that parents know the progress of their children during online learning. Furthermore, the results of online learning in mathematics subjects with a scientific approach show that online learning in mathematics subjects with a scientific approach is quite difficult to apply online, then not many students can follow the steps. So, the scientific approach is not suitable if applied online.

**Conclusion**

Based on the results of qualitative research using observation, interview, and documentation techniques carried out at SD Daarul Qur'an Kalibata City, regarding the implementation of online learning during the COVID-19 pandemic in mathematics subjects with a scientific approach. The academic year 2021/2022 can be concluded. The conclusions are presented as follows: First, online learning planning during the COVID-19 pandemic in mathematics subjects with a scientific approach at Daarul Qur'an Elementary School related to the curriculum, syllabus, and lesson plans used by teachers in planning learning carried out online. The learning process uses the zoom application. The process of implementing the use of this application is very useful in online learning mathematics because it provides convenience in the implementation of learning that still refers to the Learning Implementation Plan (RPP). Preparation is done by preparing mature material, the implementation by providing easy-to-understand material. Second, the process of implementing online learning in mathematics with a scientific approach runs smoothly. Even if there are obstacles, they can be solved. When learning begins, the teacher begins to display material in the form of power points, PDFs, images, or videos. When giving the material the teacher helps students understand by giving notes, video appearances, pictures, or others. The teacher always shares when the learning is finished so that students can express things they don't understand. The obstacles faced by teachers are the difficulty of communicating with students, internet networks, quotas, infrastructure, and so on. Third, the evaluation carried out by the teacher is with daily tests, UTS, UAS, and UKK. All of that using the Google Forms application. After the students have completed the questions, the teacher then checks them and deposits the value to walas. Furthermore, walas did an online consultation with the zoom application. So that parents know the daily assessment of their children.

**References**


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