

Research Article

Distance Learning Model of Mathematics During the Covid-19 Pandemic in Madrasah Ibtidaiyah

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Abstract.

The Covid-19 pandemic has prompted substantial changes in elementary schools, including Madrasah Ibtidaiyah, in adapting their learning methods. This situation has posed several challenges, particularly in implementing distance learning. The objective of this research is to analyze the distance learning model of mathematics in Madrasah Ibtidaiyah. Qualitative research methodology was employed for this study. This research was conducted in one of Madrasah Ibtidaiyah located in South Tangerang city, Banten Province, Indonesia. The participants included school principals, vice principals responsible for curriculum, and teachers conducting mathematics classes through online distance learning. Data collection utilized methods such as observation, interviews, and documentation. The data analysis comprised four steps: data collection, data reduction, data display, and data conclusion. The results showed that the distance learning model of mathematics is delineated through various aspects. These include the preparation of an emergency curriculum during an emergency curriculum during the Covid-19 pandemic, the implementation of online distance learning procedures involving teachers, students, and parents, the selection of online distance learning methods, the utilization of various online learning media, the utilization of student books as learning resources, and the evaluation program of learning to measure the achievement of mathematics learning objectives. These findings can serve as a reference for developing a distance learning model for mathematics that can be implemented in Madrasah Ibtidaiyah during the Covid-19 pandemic.

Keywords: covid-19 pandemic, distance learning model, madrasah ibtidaiyah, mathematics.

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1. INTRODUCTION

Education is one of the sectors which is affected and experiences various dynamics of changes during the pandemic of Covid-19 in Indonesia. The Covid-19 pandemic has limited community activities in public spaces, including the learning activities in schools. Responding to these conditions, the Ministry of Education and Culture Republic of Indonesia issued a distance learning policy for students and temporarily suspended face-to-face learning activities in schools. In line with this policy, the implementation of learning in schools during the pandemic was adjusted for teachers, students, and parents. Teachers are required to be able to present distance learning. Students are encouraged to be able to participate in distance learning with the support of various adequate facilities and devices. As for parents, they are required to be able to accompany students while studying from home.

Distance learning is the learning that is planned elsewhere or outside the place of teaching [1]. Moreover, distance learning is a learning concept where there is no direct contact in the form of face-to-face between students and teachers [2]. In the distance learning process, communication is two-way through the help of media such as television, computers, radio, telephone, video, internet and other media. There are various kinds of distance learning processes including, (a) independent learning, (b) guided or structured learning, (c) face-to-face tutorials, (d) electronic tutorials, and (e) learning with other assistance such as correspondence, telephone, and facsimile [3]. Various kinds of distance learning concepts can be chosen according to the conditions and needs of the school. It also needs to consider the readiness of schools in implementing distance learning, especially from the aspect of human resources and facilities.

The implementation of distance learning especially in Madrasah Ibtidaiyah basically still refers to the 2013 curriculum. The concept of learning is conducted by considering the conditions of the pandemic of Covid-19 in each regional area in Indonesia. However, this pandemic condition encourages significant changes in elementary schools such as Madrasah Ibtidaiyah for students, teachers, and parents in carrying out learning during the pandemic. Various problems arise along with the implementation of distance learning, especially through online learning. One of the obstacles of distance learning is the understanding of teachers and students who are not maximal about the use of distance learning applications [4]. Previous research has shown that some of the obstacles faced by teachers during online learning include the low level of understanding of students when obtaining online learning and the lack of device facilities that support students in online learning [5]. This condition causes learning outcomes to be less than optimal.

These various problems also have impacts for the implementation of distance learning regulation during the pandemic of Covid-19.

Mathematics is one of the components of subjects in Madrasah Ibtidaiyah which is learned using online learning during the policy of distance learning in school. Learning mathematics online has various challenges during the Covid-19 pandemic. Mathematics as an abstract science is certainly not easy for teachers to be presented properly through online learning. The previous research showed that the obstacles faced by teachers in implementing online mathematics learning in Madrasah Ibtidaiyah consists of the difficulty of teachers and students providing feedback quickly in learning, the lack of students' level of understanding of mathematics, teachers can only assess results without conducting a process assessment, limited facilities of online learning devices, as well as less stable internet connections [6]. Another previous research showed that the obstacles faced during online mathematics learning include the lack of reference material, students do not understand the material provided by the teacher, not all students have cellphones, spending increases to buy internet quotas [7]. In addition, the achievement of mathematics learning outcomes is also not optimal, the assessment can only focus on cognitive aspects [8]. Based on that problems, online mathematics learning also requires the appropriate strategies and models so that teachers can present learning well during the pandemic of Covid-19.

The distance learning model applied in schools is one of the supporting components for the implementation of online learning. During the pandemic of Covid-19, the appropriate learning model is needed to assist teachers in carrying out mathematics learning in schools. Through the use of the appropriate model, teachers and students can minimize the obstacles that may occur in the implementation of online learning. The use of distance learning model of mathematics is also a way to develop students' basic mathematical abilities, especially during a pandemic, students experience many difficulties in learning mathematics. The principles of implementing distance learning include clear objectives, relevant to needs, quality of education, efficiency and effectiveness of programs, equity and expansion of learning opportunities, independence, integration, and continuity [9].

Madrasah Ibtidaiyah as one of the basic education levels needs to prepare an appropriate mathematical distance learning model so that the learning process can be carried out properly. Moreover, the characteristics of Madrasah Ibtidaiyah students are also quite diverse. The cause of the online learning process in mathematics subjects is still not optimal are environmental factors and student characteristics, which are the development and understanding of students [10]. Teachers are required to be able to

accommodate all the needs of students in distance learning. In learning during the COVID-19 pandemic, teachers are required to be more creative and innovative [11].

Some of previous studies have been analyzing distance learning in Madrasah Ibtidaiyah [12–16]. However, these research is still focused on analyzing the barriers and obstacles experienced during distance learning. There is still a limited number of studies that specifically analyze the distance learning model used in mathematics learning, especially in Madrasah Ibtidaiyah. Therefore, it is important for teachers to be able to determine the appropriate distance learning model. So that, it is necessary to conduct research related to the analysis of mathematical distance learning models. The purpose of this study is to analyze the mathematical distance learning model at Madrasah Ibtidaiyah.

2. RESEARCH METHOD

The qualitative research was taken in this research. The researcher became the main instrument in this research. In this case, the researcher participated directly in the field to explore information related to the research focus through data collection technique. In qualitative research, researchers act as key instruments in collecting data [17]. This research was conducted in one of State Madrasah Ibtidaiyah located in South Tangerang city, Banten Province, Indonesia. The subjects were school principals, vice principals in the field of curriculum, and teachers who taught mathematics through online distance learning.

The data collection used observation, interviews, and documentation. The observation technique that was conducted is a non-participatory direct observation technique. By this observation technique, the researcher recorded every activity carried out by the research subject [18]. The observation aspects are the implementation of the mathematics distance learning process, the teacher activities in mathematics distance learning, and the student activities in mathematics distance learning.

Interviews were conducted with the aim of obtaining information and exploring in detail about the distance learning model of mathematics applied by the schools. This interview was conducted directly between the researcher and the research subject in a dialogical manner, question and answer, and discussion. The interview aspects consisted of 1) the dynamics of learning during the pandemic, 2) school and curriculum management, 3) methods of distance learning, 4) devices and applications used, 5) procedures of distance learning, 6) learning strategies, 7) learning method, 8) learning materials and resources, 9) evaluation of distance learning, and 10) coordination

procedures with parents. The documentation is used to describe the findings through distance learning documents. The data analysis consisted of four steps, involving data collection, data reduction, data display, and data conclusion [19].

3. result and discussion

The pandemic of Covid-19 has had a major impact on the education sector in Indonesia. One of them is the implementation of learning, especially mathematics in Madrasah Ibtidaiyah. At the beginning of the pandemic of Covid-19, this condition provides dynamics for school principals, teachers, students, and parents. Responding to the pandemic conditions, school principals set a policy for implementing learning by following policy directions from the regulation from the Mayor of South Tangerang and the Ministry of Religion, where learning in schools must be conducted through online learning. However, this condition also requires teachers to master various abilities in online teaching. At the beginning, some teachers were judged to have mastered technology and information, but some of them were still not proficient, so at the beginning of learning during the pandemic, teachers used a lot of simple media to carry out the learning process. According to the result, the mathematics distance learning model applied in Madrasah Ibtidaiyah can be described in Figure 1.

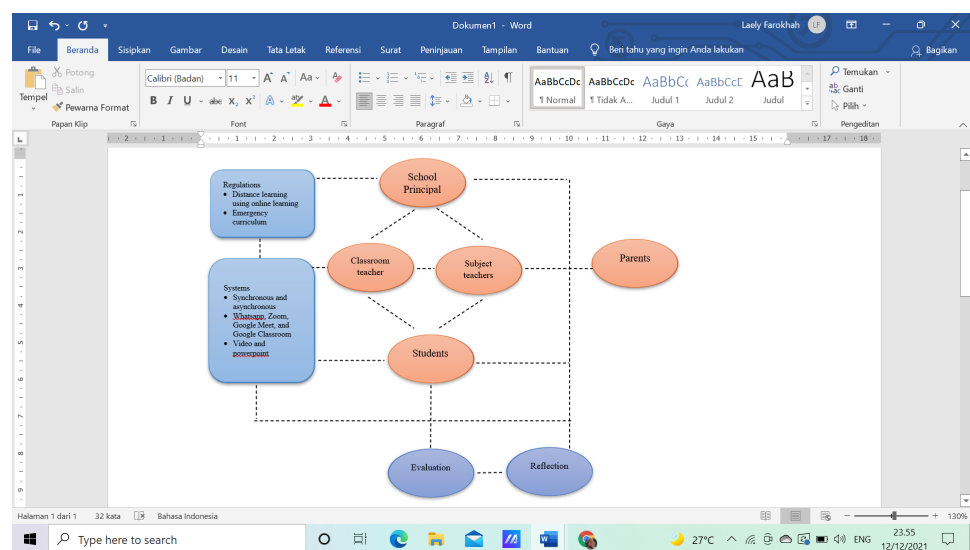


Figure 1: Distance learning model of mathematics in Madrasah Ibtidaiyah.

The following explains more clearly the distance learning model of mathematics applied at Madrasah Ibtidaiyah.

3.1. School Curriculum During the Pandemic of Covid-19

The curriculum is one of the important things in the implementation of learning in schools. The principal with the teachers independently developed an emergency curriculum for the implementation of learning during the pandemic of Covid-19. The interview result between the interviewer (I) and the school principal (SP) can be seen below.

I : How about the mathematics curriculum that is used in this school responding the pandemic of Covid-19?

SP : Actually, the mathematics curriculum used the emergency curriculum. To respond the pandemic, the learning process should be adjusted with the situation, so that it needs the emergency curriculum to design learning process in Madrasah Ibtidaiyah.

Based on the interview result, the emergency curriculum is prepared as a guide for implementing learning for teachers during the pandemic, which is certainly different from the learning conditions before the pandemic. During the Covid-19 pandemic, students as individuals must remain the focus of any curriculum development [20]. In its implementation, the emergency curriculum is still presented through thematic learning in schools. In mathematics learning, the emergency curriculum regulates the main topics taught during the pandemic. The implementation of learning using the emergency curriculum takes place from 07.00 to 12.00 WIB for every day. Learning using an emergency curriculum is adjusted to the needs during the pandemic. This is in line with the results of the previous research which shows that the emergency curriculum has high flexibility where educational units are given ample space to design curriculum structures during the pandemic [21].

3.2. Learning Procedure

Generally, the distance learning in Madrasah Ibtidaiyah is carried out using an online system. The interview result between the interviewer (I) and the mathematics teacher (MT) can be seen below.

I : In the pandemic of Covid-19 situation, what procedure are implemented in mathematics learning?

MT : In line with the regulation from the government and school principal, the distance learning use online

System at the beginning. Students learn from home. Teachers provide some of materials for online learning that is supported by school.

Based on the interview result, at the beginning of the pandemic, schools had implemented a student learning system from home. Meanwhile, teachers continue to go to school using the work from home (WFH) and work from office (WFO) systems. After the implementation of the online system, the teacher conducts online learning synchronously and asynchronously. Teachers in compiling media such as learning videos are carried out by team teaching. The daily learning schedule is arranged by the teacher so that learning continues even during the pandemic. Students virtually learn with teachers online.

The coordination with parents of students is carried out by teachers and school principals through virtual communication, both via cellular telephones and WhatsApp facilities. The role of parental supervision and attention in the online learning process is very important for reaching the optimal learning outcomes [22]. Besides the classical online learning in class, in mathematics learning, the teacher facilitates individual video calls for students who have difficulty learning online. Therefore, this online learning procedure involves all participants, including schools, students, and parents. In line with the previous research that showed online learning in Indonesia can be successful through curriculum support and collaboration between teachers, schools, government, parents and the community [23].

3.3. Learning Methods and Media

At the beginning of the pandemic, this school followed the regulations of the mayor and the Ministry of Religion to carry out distance learning. Likewise, the learning process at this school applies online learning methods. The interview result between the interviewer (I) and the Mathematics Teacher (MT) can be seen below.

I : How about the methods and media of mathematics learning that is used in this school responding the pandemic of Covid-19?

MT : The methods use online learning. The media use various media such as whatsapp, google meet, zoom, and google classroom.

Based on the interview result, at the beginning, online learning was conducted using Whatsapp media. Whatsapp groups are used as virtual classrooms for students and teachers. During the pandemic, the implementation of online learning has developed using Google Meet, Zoom, and Google Classroom. Online learning classes and video conferencing facilitate someone to share information without being limited by space and time [24].

Google meet and zoom are used to carry out face-to-face meetings synchronously. The google classroom is used as a virtual class asynchronously. This school also utilizes a learning account from the Ministry of Religion where each student and teacher has their own account. This is in line with the research results which state that there are four digital platforms that are often used in online learning, namely whatsapp groups, google facilities (google classroom, google form, google meet), and zoom cloud meetings [25].

Zoom is a platform that is often used when learning mathematics online. Notification of learning implementation via zoom is generally carried out a maximum of 1 day in advance. The teacher is not allowed to suddenly give zoom information to students. This is based on students needing the preparation of facilities to follow the zoom. In practice, this school holds meetings using zoom in a day at least there is 1 zoom meeting. When teaching using zoom, the teacher uses a demonstration method using powerpoint media and learning videos. The learning videos used are produced by the teachers themselves and some also use videos from YouTube.

Teachers also use many media such as folio paper to explain certain mathematical material such as fractions. The meeting via zoom is expected to discuss the material that has been delivered asynchronously. Meetings via zoom are the teacher's opportunity for communication with students. For grades 4, 5, 6, mathematics should be taught separately by the specific mathematics teacher, but in this school mathematics is still taught by the classroom teacher. Only in grade 4 mathematics is taught by the mathematics teacher.

3.4. Learning Resources

In the online learning process, the learning resources used by students are math books for students that each student has. The interview result between the interviewer (I) and the mathematics teacher (MT) can be seen below.

I : How about the learning resources that is used in this school in the situation of pandemic of Covid-19?

MT : Actually, the main resources use books.

Based on the interview result, books are a form of learning resource that tends to be used in learning [26]. Teachers carry out learning by using this book to convey material and provide exercises for math problems. This school also provides other books that students can borrow by picking up directly at the school using the drive thru system. Even though source books are available, students' interest in reading still needs to be encouraged by the teacher, so that these books can help students learn from home.

3.5. Learning Evaluation

Evaluation is carried out in schools which consists of mid-semester assessment and end-semester assessment. The interview result between the interviewer (I) and the mathematics teacher (MT) can be seen below.

I : How about the learning evaluation that is used in this school in the situation of pandemic of Covid-19?

MT : The learning evaluation is done through online system such as google form to deliver the test to students.

Based on the interview result, the online evaluation technique utilizes the google form feature which is compiled as a virtual exam sheet. The teacher then distributes the google form link so that students can fill it out. The evaluation is still regulated by the committee but it is carried out online. In addition, teachers are required to send daily performance reports at the beginning of each month so that the principal can monitor the implementation of learning regularly.

Online learning is not only focused on grades, but also the character building of students during the pandemic. Based on the evaluation of online learning that has been carried out, many findings have become the focus of improving the learning system during the pandemic. The results of the evaluation show that during learning from home, the competence of students is less monitored, especially in learning mathematics which is still considered difficult by most students. The character of students is also less visible because of the limitations of online learning. This is inseparable from the role of parents at home. Some parents provide guidance to their children, but some parents do not accompany their children so it is found that these children have scores below the minimum standard of competency.

Before the pandemic of Covid-19, learning in the classroom was more closely monitored by the teacher so that the achievement of student understanding could be seen. Unlike during the pandemic of Covid-19, learning is less monitored. However, through online learning, parents are more aware of their child's learning process while at home. Parents can also assess the ability of good teachers who are still lacking in teaching. Therefore, it is often found that parents criticize teachers who are not appropriate in teaching. During the Covid-19 pandemic, assessment was an important component to be well designed as part of curriculum development [27]. Through assessment, it will provide information regarding the next improvement in student learning. The results of previous research showed that teachers need to improve the quality of the material

provided to students during online learning. This is certainly an input for improving the quality of online learning at this school [28].

4. CONCLUSION

The pandemic of Covid-19 has had a major impact on the education sector in Indonesia, especially in the implementation of learning in Madrasah Ibtidaiyah. The distance learning model of mathematics in Madrasah Ibtidaiyah is generally mapped through several aspects, consisted of the preparation of an emergency curriculum, the implementation of online distance learning procedures involving teachers, students, and parents, the selection of online distance learning methods and the use of online distance learning methods, various online learning media, the use of student books as learning resources, and programmatic evaluation of learning to measure the achievement of mathematics learning objectives. The results of this research can be a reference in the development of distance learning models of mathematics, especially for Madrasah Ibtidaiyah.

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