Application of Online Learning by Using the Zoom Cloud Meeting Application with an Ethnomathematical-Based Inquiry Approach in the Subject of Basic Concepts of Geometry and Measurement

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Abstract. This study aims to describe an online ethnomathematical-based inquiry learning model by using the Zoom cloud meeting application in lectures on the basic concepts of geometry and measurement. The concepts about the perimeter and area of squares, rectangles and triangles. This study used action research method. Action research procedures are: (1) planning, (2) implementation, (3) observation, and (4) reflection. The study instruments were in the form of student comprehension test sheets and lecture activity observation sheets. Data were analyzed descriptively and qualitatively. The results showed that the lecture process went well. All indicators on the recovery observation sheet have appeared. The students has been also to be able to analyzed of ethnomathematics in their real life as a learning resource for the perimeter and circumference of squares, rectangles, and triangles. The ethnomathematics identified include a typical foods, traditional houses, and Tabut's building.

Keywords: ethnomathematical-based inquiry · geometry and meaasurement · perimeter and area of squares · rectangles and triangles

1 Introduction

All of regions on the Earth are currently experiencing a pandemic of COVID-19 virus. This condition has an impact on aspects of life, including education. One of the impacts of the COVID-19 virus was the closure of offline learning in schools and colleges. This was done to break the chain of the spread of the Covid-19 virus. One of the efforts that lectures could still run effectively was implementing online learning. There are many media for online lectures that can be used, one of which was using of the Zoom cloud meeting application.

Zoom cloud meeting is a communication application by using video. The application can be used on a variety of mobile devices, desktops and also room systems. Zoom cloud meetings can support online lectures because it can accommodate up to 1000 participants

in a conference. Zoom cloud meetings are also practical in online lectures because it are equipped with helpful features such as being able to display a kind of materials, videos, images, sounds, and others. This application can also to record of the online lectures process so that the students can study again at their home through the recording. The results of Mahabbah's research [1] showed that uses of the Zoom Cloud Meeting application made easier for teachers and students to do learning process. Thus, this application was very much needed in online lectures process, including for courses in the basic concepts of geometry and measurement.

Based on observations during the researcher was teaching the basic concepts of geometry and measurement, there were several problems that occurred. The learning process was less effective, the symptoms that arise were students rarely ask the questions, unwilling to discuss and learning resources were still not available. In addition, the students' ability to understand of the concepts was also still low. Some students who got test scores below 50. The students' motivation was also low caused by learning of the basic concepts of geometry and measurement that has not utilized the learning resources that exist in students' life to the fullest.

Based on the problems above, the researcher conducted discussions with peer colleagues who taught the basic concepts of geometry and measurement to find solutions of these problems. The results of the discussion were decided to try of apply online lectures by using the Zoom cloud meeting application with an ethnomathematical-based inquiry learning model. By using an ethnomathematics-based inquiry learning model, the lecturer would motivate students to be active in the learning process. It was in line with the statement of Anam [3] which stated that the inquiry learning model aims to encourage students to be more courageous and creative in imagining. The inquiry learning model was guided one of the effective learning models to improved critical thinking skills, including to increased critical thinking skills of the students.

Ethnomathematics [4] is a learning resource that can be used in lectures. The Students will easily learn mathematics through their culture. If the students have direct learning experiences, then the students will find it easier to understand of the learning material [5] so that it can affected of the student learning outcomes. Through ethnomathematics, the students can also develop problem solving skills [6]. Moreover, ethnomathematics is felt to be close of the students' life. So that, the ability of understand of the material will be better. In addition, teachers must be creative in designing and implementing of interest learning by linking ethnomathematics so that the students will be more interested and enthusiastic in learning [7].

Therefore, it is necessary to conduct of this study that examines how to apply the Application of Online Learning by using the Zoom Cloud Meeting Application with the Ethnomathematics-Based Inquiry Learning Model in the Basic Concepts of Geometry and Measurement in the PGSD Study Program of FKIP – University of Bengkulu, especially when the covid-19 virus has not subsided. Based on that learning becomes different and provides valuable memories or experiences for the students [2].

2   Method

This study used action research method (Action Research). This method was used to help solve problems and improved the learning process of Curriculum and Teaching process

in the classroom reflectively and collaboratively. The first step of this study model began with conducting preliminary of the research. The survey was conducted on PGSD's students. The findings were carried out by a joint reflection between the researchers of the lecturer team, to determine of the next activity steps until the research objectives were achieved. The study design was categorized in the form of education action research [4]. According to Suharsimi [8] there were 4 important stages in conducting classroom action research, namely: (1) planning, (2) implementation, (3) observation, and (4) reflection.

The place of this study was at PGSD Study Program of FKIP – University of Bengkulu, a place where the learning process was taken by the third semester of the 2021/2022 Academic Year. The subject of this study was the performance of lecturers and the students of 3rd Semester of PGSD Program Study, and then interactive processes that occurred between the lecturers and students, the students and students.

3   Result and Discussion

This study aimed to describe the application of an online ethnomathematical-based inquiry learning model by using the Zoom cloud meeting application in lectures on the basic concepts of geometry and measurement.

3.1   The Application of an Ethnomathematics-Based Inquiry Online Learning Model by Using the Zoom Cloud Meeting Application in Lectures on the Basic Concepts of Geometry and Measurement

This study was an action research in the lecture on the basic concepts of geometry and measurement. This study applied an ethnomathematical-based inquiry learning model which was carried out online by using the Zoom cloud meeting application. The lecture staged use an ethnomathematical-based inquiry model with the following steps: (1) Orientation (2) Formulate problems (3) Formulate hypotheses (4) Collect data (5) Test hypotheses (6) Formulate conclusions [9]. The focus material that used of this study was the circumference and area of a square, rectangle and triangle.

At the orientation stage, the lecturer asked students to identify of the ethnomathematics around of them. The ethnomathematics that could be used were various, for example traditional houses, historic buildings, ark buildings, and special foods. Furthermore, the students were asked to formulate a problem regarding whether the ethnomathematics contained of mathematical concepts, regarding the perimeter and area of squares, rectangles and triangles. Then, the students could formulate hypotheses based on the problem formulation that has been made. At the next stage of inquiry, namely collecting data, the students discussed the mathematical concepts in the ethnomathematics that they has been chosen. Then, the data that has been obtained was tested and verified for the final conclusion. The learning process was taken on online learning by using the Zoom cloud meeting application.

3.2 The Concept of Perimeter and Area of Square, Rectangle and Triangle in Ethnomathematical Variety

The variety of ethnomathematics that were identified by the students were traditional houses, historic buildings, ark buildings, and special foods. This following was an example that the application of ethnomathematics to the concepts of perimeter and area of squares, rectangles and triangles.

The first ethnomathematics is a typical cake of Bengkulu City, namely "bay tat" cake. These cakes are square, rectangular, and some are circular. This cake is a cake with pineapple jam on it. This cake is often used as a typical souvenir from Bengkulu City. This following is the shape of the Bay tat cake (Picture 1).

In ethnomathematics, It can be used as a source for studying of the perimeter and area of squares and also rectangles. It's because mathematics is a part of human activity[10], so that mathematical concepts can also be seen from the typical food of Bengkulu, namely The Bay Tat cake. Here's the explanation (Picture 2).

Other ethnomathematics that has been identified by the students were a traditional house buildings. Traditional houses were used as traditional symbols of each region. In the traditional house, there are many concepts of flat wake, especially rectangular. Ethnomathematics was a bridge between mathematical concepts and culture [11]. Thus, it is necessary to make changes in compiling mathematics learning tools so that the
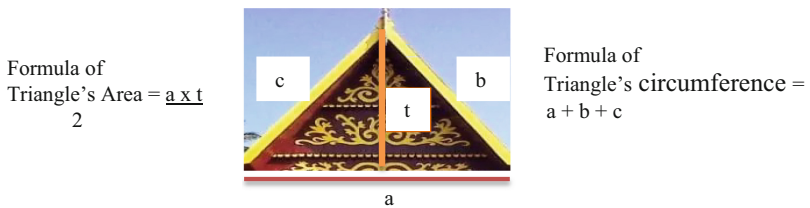

Picture 1. A Typical Cake of Bengkulu City, Indonesia "Bay Tat".

Picture 2. The Bay Tat Cake As Etnomatematika

Picture 3. The Traditional House of Bengkulu Province, Indonesia

Formula of
Triangle's Area = a x t
2

Formula of
Triangle's circumference =
a + b + c

Picture 4. Traditional house as triangular ethnomathematics

students will learn mathematics more meaningfully because it is close of their life and culture [12]. This following is a picture of a Bengkulu's traditional house (Picture 3).

The mathematical's concepts that exist in this traditional house building are very much like various flat of shapes, various shapes and measurements. This following will explain the shape of a triangle and rectangle. *After implementing of the ethnomathematics learning approach, the students are able to reach higher levels of thinking and are able to develop mature schemes. The student builds a thematic relationship between actions, processes, objects, and other schemes. That took the previous scheme. Students can solve problems encountered* [13] (Picture 4).

The next ethnomathematics from Bengkulu is Tabut. Tabut Festival was celebrated every year by the local community. The Tabut's building is a multi-storey building resembling a mosque. Here is a picture of the Tabut's building (Picture 5).

Tabut as ethnomathematics contains many mathematical's concepts. One of them is the concept of a rectangular flat shape [14]. This is a picture that one part of the surface from the Tabut's building in the form of rectangle (Picture 6).

In ethnomathematics of the Tabut is indeed rich in mathematical's concepts. The students can explore Tabut as a source of learning geometry such as various flat shapes and space shapes. The concept of circumference and area can also be found in the Tabut's building. Thus, the students will be interested in learning because they are familiar with this ethnomathematics. And they become happy because not only to studying culture, but also they can learn mathematics.

Picture 5. Tabut as a Bengkulu's Culture

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Picture 6. A part of the surface of the Tabut's Building

4 Conclusion

The conclusion of this study is that lectures on applying online learning by using the zoom cloud meeting application with an ethnomathematical-based inquiry approach in the basic concepts of geometry and measurement work well and effectively. The students were able to understand the concepts of perimeter and circumference of squares, rectangles and triangles through inquiry by linking ethnomathematics in their lives. The ethnomathematics used the form of a typical foods, traditional houses, and Tabut's building.

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