

Islamic Students Understanding about the Center of the Earth in Science and Islam Perspective

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Abstract. The center of the earth and the shape of the earth have a very close relationship, theories have been widely discussed about the concept of both things. Starting from the earth shapes are flat globe and elliptical, besides that the center of the earth in the North Pole, Mecca, the core of the earth even in the archipelago (Indonesia). This study used a qualitative research method was considered in helping the researcher to comprehend better the process of constructing meaning. The study used an interview and a written questionnaire. There are fifty participants in this study, the participants from Islamic student of Jagad Alimussirry Islamic boarding school. The result of this study shown that the majority of Islamic students have a strong understanding of the earth shape and the position of the earth center, which is viewed from the perspective of science and Islam. Most of respondents have an understanding that the shape of the earth is globe with its central position in the city of Mecca.

Keywords: *Islamic students, the center of the earth, science and Islam perspective*

INTRODUCTION

In the middle century, the knowledge that the Earth was round like a ball was acceptable. It's just that, as refuted by Galileo, Earth is still seen as the center of the solar system. Then in the middle 1800s, Samuel Rowbotham came up with another opinion. He announced that the Earth was flat. In fact, 1.5 centuries later, the Flat Earth Society (FES) was born on the internet [1].

The flat earth model is an archaic conception of the Earth's shape as a plane or disc. Some ancient cultures called flat Earth cosmography, which covered Greece to the classical era, civilizing the bronze era and the Iron era from the Near East to the Hellenistic period, India to the Gupta period (early AD), and China until the 17th century. The paradigm is also usually held in the cultures of the Native American people, and the statement

that the flat Earth is changed by the horizon in the form of a bowl is common in pre-scientific societies.

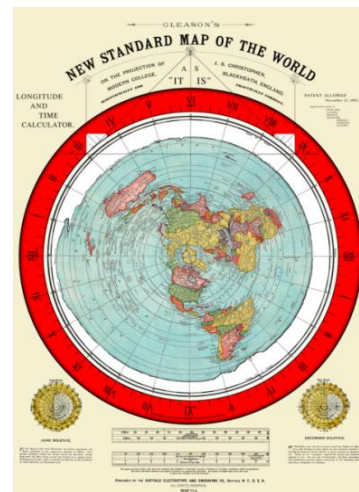


Figure 1. Flat Earth Map (New Standard Map of the World)

Modern flat earth theories, like those expressed by modern flat earth associations, are generally labeled as pseudoscience [2].

Besides flat earth theory, there is also a globe earth theory. Which is the concept of globe earth is back to the 6th century BC in ancient Greek philosophy and Indian philosophy. In Greece, this concept was put forward by Pythagoras [3]. In India, the concept of a round Earth is recognized in Shatapatha Brahmana and Aitareya Brahmana. This concept replaces the initial concept of a flat Earth.

The shape of the globe earth like a fast spheroid, a ball that is flat compressed along the axis from pole to pole so that there are protrusions around the equator [4]. This protrusion arises from the rotation of the Earth, which causes the equator's diameter 43 km (kilometers) greater than the polar diameter to the pole. Because of this, the farthest point on earth's surface from the center of the earth is Chimborazo Volcano in Ecuador, which is 6,384 kilometers from the center of Earth, or about 2 kilometers farther than Mount Everest [5].

From the earth crushing (rotation and revolution) has a center which is the core of the earth's axis. Based on the knowledge published by scientists states that the center of the earth is at the North Pole, where the North Pole is the northernmost point of the globe which is the only point traversed by the imaginary line 90 degrees North Latitude [6].

At the end of the 19th Century, an Egyptian Muslim scientist discovered a surprising fact, with the statement that Mecca was the center of the earth [7]. This is supported by an astronaut who sees a very bright beam of light on the earth, when enlarged it turns out that the light is in the city of Mecca. Besides that, various stories of Islamic history show that Mecca (Ka'bah) is a unique city and has its own charm.

This fact is a stimulus for Muslim scholars throughout the world, not least in the

archipelago, namely Indonesia, which is predominantly Muslim. This discovery became an exciting discussion among Indonesian Muslim scholars who also included Islamic student (*santri*) in Islamic boarding schools. The lack of sources of literacy caused monotonous discussion about it, so there was no clearer continuation from the various discussions of these Muslim scholars.

Furthermore, this study has two research questions: (1) how about the understanding of the Jagad 'Alimussirry Islamic students towards the shape of the earth in the perspective of science and Islam? (2) What is the opinion of Jagad Alimussirry Islamic students on the center position of the earth in the science and Islam perspective?

METHOD

A qualitative research method was considered in helping the researcher to comprehend better the process of constructing meaning. The study used an interview and a written questionnaire. There are fifty participants in this study, the participants from the Islamic student of Jagad Alimussirry Islamic boarding school. The qualitative data from the results of semi-structured interviews were transcribed and analyzed by reading the responses to each interview question and questionnaires answer [8-10].

RESULT AND DISCUSSION

A. Result

In this section, we will present the results of the analysis and discussion of the research conducted at the Islamic student of Jagad Alimussirry Islamic boarding school, which consists of 50 respondents. This study uses questionnaires that have been validated by two validators. The results of the research obtained included the knowledge of the Islamic student about the shape of the earth, the location of the earth center, the source of information obtained and the confidence of the Islamic student in answering the questionnaire. The

following are the results of analyzing the research data.

1. *The Shape of the Earth*

The theories about the earth have long been discussed by scientists, ranging from the theory of flat earth, globe earth, Ellipse earth, and others. The following diagram results from the understanding of Islamic students on the shape of the earth.

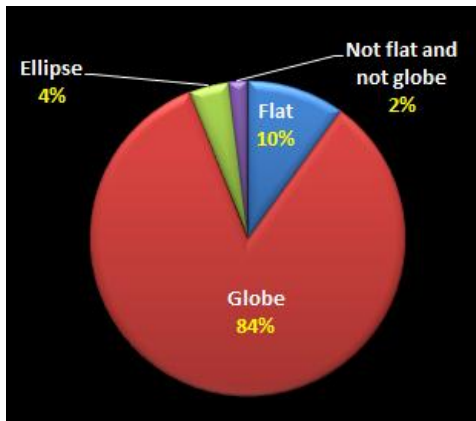


Figure 2. Chart of the Earth Shape

Based on Figure 2 shows that the majority of Islamic students understand the shape of the earth which is globe, the percentage is 84%, a small number of Islamic students understand the flat earth shape, with a percentage of 10%. In addition, there are also those who answer that the shape of the earth is not flat and not globe and the shape of the earth is an ellipse.

2. *Location of the Earth Center*

The lessons in school, it is generally stated that the center of the earth is the North Pole. But at the end of the 19th century, there was a scientist who claimed that the center of the earth was in Mecca. Based on this research, the following diagram illustrates of Islamic students' understanding about the location of the earth center.

Based on Figure 3, it is informed that 80% of Islamic students answered the city of Mecca as the center of the earth, and 14% of them answered the North Pole. In addition, there is also a different answer from the general answer, namely the location of the earth in the

archipelago (Indonesia) and the core of the earth with percentage are 2% and 4%.

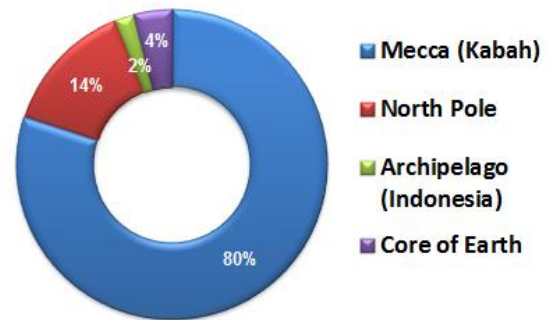


Figure 3. Center of the Earth

Most of the Islamic students understand that the location of the earth center is in the city of Mecca, with various evidence and phenomena that strengthen their understanding of the earth center.

3. *Information Sources*

As Islamic students who have a relatively high educational background (university student) certainly has a wider reference source. The following is a source of information which is the background of the Islamic students' understanding about the position of the center of the earth.

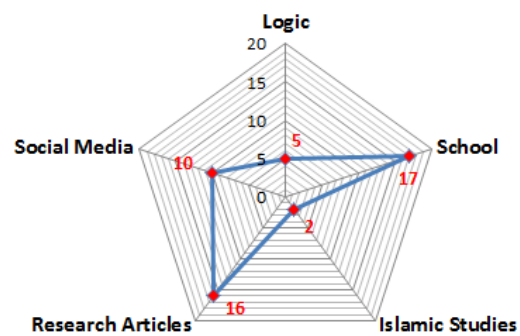


Figure 4. Information Resources

Based on Figure 4, shows that most of the Islamic students get information about the center of the earth from research articles and lessons in their time of school. In other hand, Islamic students also understand the location of the center of the earth based on social media, and there are also those that come from their logic and Islamic studies that they listen from Islamic forum.

B. Discussion

Based on data analysis the results of research on the understanding of Islamic student to the position of the earth center can be described as follows.

1. *The Shape of the Earth*

The globe concept of the Earth goes back to the 6th century BC in ancient Greek philosophy and Indian philosophy. In Greece, this concept was put forward by Pythagoras [3]. In India, the concept of a globe Earth is recognized in Shatapatha Brahmana and Aitareya Brahmana.

In the middle ages, the knowledge that the Earth was globe like a ball was acceptable. It's just that, as refuted by Galileo, Earth is still seen as the center of the solar system. Then in the middle 1800s, Samuel Rowbotham came up with another opinion. He announced that the Earth was flat. In fact, 1.5 centuries later, the Flat Earth Society (FES) was born on the Internet [5].

Following the development of science, various views began to be expressed. Likewise, with the Islamic student view of the earth shape, most state that the earth is globe, but there are 10% of respondents stating the shape of the earth is flat, based on Figure 2. Examining the reasons indicated that they were affected by the Flat Earth Society video, who visualizes a flat earth shape with the bases of the Qur'anic verses which are interpreted literally, without looking at other scientific perspectives. FES has published documentary videos that can influence the mindset of the audience, who was watching the video. Some of the Islamic students have watched the documentary video, and then some of them are affected and believe what is presented by the video.

Besides the opinion of globe and flat earth shapes, there are Islamic students have another answer of the earth shape, namely ellipses. This is viewed from the shape of the elliptical revolutionary trajectory of the earth by

ignoring the two fast poles of the earth, namely at the North Pole and the South Pole [11-12].

2. *Location of the Earth Center*

The characteristics of flat earth are the center of the circle is the North Pole, so the compass clock always points to the north. Position just below the North Star, where all stars rotate [2]. In addition, according to the globe earth theory, the location of the center of the earth is at the North Pole. Where the farthest point of the Earth's surface from the center of Earth is Chimborazo volcano in Ecuador, which is 6,384 kilometers from the center of Earth, or about 2 kilometers further compared to Mount Everest [5].

In addition, during elementary to high school, even in college, they still get information that the center of the earth is the North Pole, with a simple observation that is the compass needle which always goes north. based on several reasons stated by Islamic students, the percentage of respondents stated that the earth center at the North Pole is 14%.

Following the development of science, various Islamic scholars have contributed to the scientific development of science in determining the earth center. One of them is Dr. Husain stated that the center of the earth was in the city of Mecca. Dr. Husain found that from the point of view of geography (earth science) and geology (soil science), it was evident that Mecca was the center of the earth. Then in 2009, the scientific findings were re-published in a scientific conference entitled "Mecca as the Center of the Earth: Theory and Practice." The conference held at Dhoha, Qatar strengthened the findings that Mecca was the center of the earth [7].

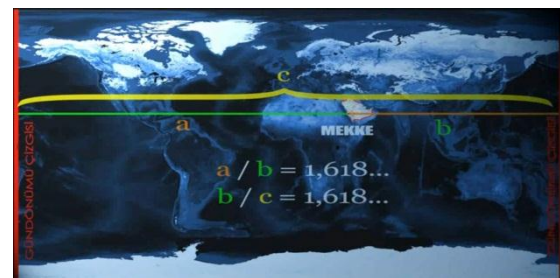


Figure 5. Map of the earth with Mecca as its center

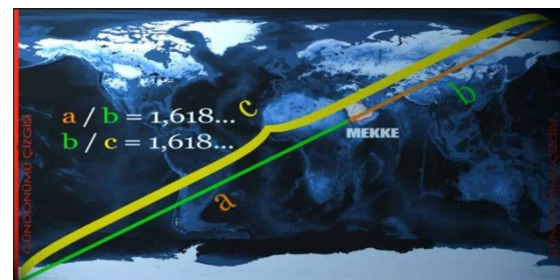
Know information about Mecca as the center of the earth, causing Muslim scholars to be interested in learning it. Likewise the Islamic students, 80% of the respondents stated that the center of the earth was in Mecca. There are four strong reasons expressed by the Islamic students to explain that the center of the earth is Mecca (Kaaba): (1) In the Qur'an the Mecca is called "Ummul Qura" (mother of cities) surrounded by other countries called "Ma haulahaa", (2) an astronaut who sees a very bright spot on the surface of the earth, where that point is in the city of Mecca. this indicates that the great energy emitted from the city of Mecca, which comes from activities in the Kaaba, (4) round one-time of tawaf compared to one time the rotation of the earth to the North Pole is faster to around the Kaaba (Mecca city). Based on science (physics) with the same conditions, the faster rotation, have the greater of energy produced, (4) the results of Prof. Husain Kamel research, who drew inter-continental lines on the map with careful mathematical calculations, found that Mecca was the center of the earth (Faruq, 2015). In addition, Macca as the center of the earth can be proof by mathematics, with a spectacular ratio of the distance from Mecca to north and South Pole, from the east to west and latitude is 1.618... [13].



(a) Distance from mecca to north and south pole



(b) Distance from mecca to west and east



(c) Latitude

Figure 6. Spectacular mathematic ratio

Besides that, the Islamic students also answered that the earth center is in the core of the earth, as well as the core of a charge, where the center is inside or underground. The archipelago (Indonesia) does not escape the understanding of the Islamic students towards the earth center. Although only 2% of the students answered the archipelago (Indonesia) as the center of the earth, they gave three statements that strengthen their opinion: (1) very fertile conditions, like heaven falling to earth, (2) extraordinary civilization, the center of attention of the whole world, (3) polite and friendly towards nature and fellow beings who

are characteristic of the archipelago, that brings closer to their Rabb.

3. Information Sources

As Islamic students in the Islamic boarding school of Jagad Alimussirry, the number of Islamic students also students university, that makes their opinions have a foundation as a measure of their intellectual property. In this study, nearly half of the total respondents answered questioner, they had an initial knowledge about the center of the earth from scientific articles/research. The respondents, not only have friends are religious people to discuss, but also have friends of scholars who follow the development of world knowledge. This is proven by the source of the information comes from scientific/research articles with 16 respondents.

Besides that, information that they have, from elementary school to college still remembered. This shows that information that is often given to someone will be easy to remember for a long time. It is evidenced by the most answer of respondents about sources of information obtained from schools with a total of 17 respondents.

In other hands, social media will not be separated from the grasp of the students to interact in cyberspace, which is one of the benefits of being a source of knowledge, through status, comments or exposure in social media. Apart from that, their knowledge when they were attending elementary to high school, which was recorded until now has become the basis of their understanding of the position of the center of the earth.

The studies are also a source of their information about where the center of the earth is. However, a small number of students who answer the source of information in answering questionnaires come from Islamic studies. Because in general, every divorce that fills the study has a strong foundation of opinion before it is expressed to the general public.

Certainly, each statement is given the source and reinforcement of who the statement is.

CONCLUSION

Based on the analysis of the research data it can be concluded that the majority of the Islamic students in Islamic boarding school of Jagad Alimussirry have a strong understanding of the earth shape and the position of the earth center, which is viewed from the perspective of science and Islam. Most of respondents have an understanding that the shape of the earth is globe with its central position in the city of Mecca.

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