

CONCEPTION OF ISLAMIC RELIGIOUS EDUCATION (PAI) ON EVOLUTION CONCEPT

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Abstract

Evolution is one of the content that is considered controversial in science because many people do not agree with the theories of evolution. This study aims to investigate the perceptions of Islamic religious education students' regarding the concepts of evolution. This descriptive research was conducted through a survey method to 288 first-level students' at a private university in Tasikmalaya Regency, West Java. The findings show that most of the PAI students' have a wrong understanding of the concept of evolution. Based on the results of the interview, the fact is that this is due to the knowledge obtained at the previous level. This research indicates that there are still many misconceptions that occur in students', including science or biology teachers who teach evolutionary material at the secondary school level.

Keywords: misconception, evolution concept, Islamic religious education

A. INTRODUCTION

There is a consensus on the importance of the 'nature of science' (NOS) aspect for the development of science literacy (Bybee, 2002). Science literacy is a person's

ability to understand science, communicate science (oral and written), and apply science knowledge to solve problems so that they have a high attitude and sensitivity to themselves and their environment in making decisions based on science considerations (Toharudin, Hendrawati, and Rustaman, 2011). The dimensions of science literacy according to PISA 2003 are the content of science literacy, the process of science literacy, and the context of science literacy (Purwadi, 2006).

Evolution is one of the materials found at the secondary school level both junior high and high school (Ministry of Education and Culture, 2013). The position of evolution as a theory is certainly tentative. In renisich and krüger research (2018) which successfully revealed the conception of prospective biology teachers on theory and models in biology. It is known that the theory is used as in collo daily language and as a construction. Apart from a variety of theories in the field of biology, sources can only explicitly mention the theory of evolution. This study aims to investigate the conception of Islamic religious education students' about the concepts of evolution. The focus of the problem in this research is how pai students' conception of evolutionary concepts? This research contributes to uncovering the extent of understanding of students' who have been taught about evolution during high school (junior high and high school).

B. METHOD

The research method used is descriptive research. The population in this study was a first-level PAI students' at Cipasung Islamic Institute (IAIC) college, Tasikmalaya Regency. The participants involved were who had basic natural sciences courses as many as 288 people. Data collection is done using survey method through social media. The instrument used is a Likert-scale questionnaire. Polls used on an ordinal scale are strongly agreed, agreed, disagreed, and strongly disagreed. There are 12 statement items grouped into 6 concept indicators. Table 1 shows the concept indicators and statement items contained in the questionnaire.

Table 1. Indicators of Concepts and Questionnaires

| No | Concept Indicators | Questionnaire Item |
|----|--------------------------|--|
| 1 | Variations | 1. The cuttings of the stems of red rose plants will produce all the red roses, while if through natural pollination it could be that the color varies. 2. Kate's chicken is a type of chicken that is genatis-sized and will have dwarf offspring even if given good food and care. |
| 2 | Causes of Gene Variation | 3. Twins still have different characters or traits because in an organism with an abundant number of genes, there is a very large combination of genes. 4. People with Down Syndrom have relatively similar faces even though they come from different parents, this is due to gene changes(mutations). |
| 3 | Darwin | 5. Lotus flowers have thin and wide leaves in order to survive in |

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| No | Concept Indicators | Questionnaire Item |
|----|------------------------------------|--|
| | theory: Survival of the fittest | the water, even though the lotus flower in ancient times was not as wide as the lotus flower today. 6. No matter how fierce an outbreak, no matter how catastrophic, or as fierce as a war, it still leaves man as a habitat that perpetues life on earth. |
| 4 | Natural Selection | 7. In a bacterial colony, there is one bacteria that has genes that are resistant to antibiotics. When antibiotics are presented, bacteria that can not stand will die, while resistant bacteria will remain alive and multiply. 8. Blacksmiths can increase their strength and stamina throughout their lives by swinging heavy hammers, but this trait cannot change the genes passed on to their offspring. |
| 5 | Proof of Evolution | 9. A horse used to be the size of a rat but now it's a horse the size of a cow. Thus, it is predictable that the size of the horse in the future can be greater than the size of the current horse. 10. Women who have narrow hip cavities should not exist long ago if there is no cesarean surgery technology that can help the delivery process, because women who have small hip cavities can not give birth with normal labor. |
| 6 | The Concept of Kinship | 11. Whales and sharks belong to the same group, namely pisces group. There are many animals in the zoo, Indra observes ostriches, chickens, horses, zebras, and cows. Indra suspects that horses are more related to zebras compared to cows by looking at the characteristics that both have. |

The response of the entire partisipan is calculated and percentageized based on the scale on each poll item and obtained the percentage of each concept indicator. The percentage results are then interpreted and grouped into concepts that have been properly understood and concepts that have not been or are not understood. After data analysis, then conducted check with various literature.

C. RESULTS

There were 288 students'' involved in filling out the questionnaire. Polls are created and distributed through online media. The findings of the questionnaire can be seen in Table 2.

Table 2. Percentage (%) Understanding of the Concept of Evolution

| No | Concept Indicators | Concept Understanding (%) | |
|---------|---|---------------------------|-------------|
| | | Right | Not exactly |
| 1 | Variations | 89,0 | 11,0 |
| 2 | Causes of Gene Variation | 87,2 | 12,8 |
| 3 | Darwin theory: <i>Survival of the fittest</i> | 67,8 | 32,2 |
| 4 | Natural Selection | 77,8 | 22,2 |
| 5 | Proof of Evolution | 32,2 | 67,8 |
| 6 | The Concept of Kinship | 56,1 | 43,9 |
| Average | | 68,3 | 31,7 |

Based on the results of analysis of students' response, it is known that as many as 68.3% of students' have a proper understanding of concepts about evolution. Sequentially, the concepts that students' have understood are about variation, the causes of variation, natural selection, and Darwin's theory of survival of the fittest. While 67.85% and 43.9% of students' had an incorrect understanding of the evidence of evolution and kinship.

D. DISCUSSION

There are six concept indicators to be discussed. The first concept indicator contained in the questionnaire is variation. In general (89%) students' already have a proper understanding of variation and a small fraction (11%) show an incorrect understanding. This illustrates that most students' have understood that the variations that each individual has can be passed down from parent to offspring through the process of reproduction. This type of reproduction will affect the phenotypes of individuals of the offspring. The concept of variation is part of Darwin's Theory which states that each individual of a population has a very varied character, there are not two equal individuals (Permana, et al. 2004).

The second concept indicator is about the cause of gene variation. In general (87.2%) students' showed proper understanding and as many as 12.8% still had an incorrect understanding. To be able to take a stand against the poll items number 3 and 4 that represent indicators of the concept of the causes of gene variation, students' must have a basic understanding of genetics. In various literatures (Permana, et al. 2004; Campbell, et al. 2011) stated that a population's genetic variation is caused by sexual mutation and recombination. Furthermore (Permana, et al. 2004) describes that mutation is a change in the DNA of an organism.

The third concept indicator is about Darwin Theory- survival of the fittest. A total of 67.8% of students' have shown an understanding of the right concept, while 32.2% still have an incorrect understanding of the concept. Evolution addresses the core of Darwinist theory and Neo-Darwinism. Survival of the fittest can be interpreted as a concept initiated by Darwin which states that beings who can adapt to their environment, they are the one who can be sustainable (Campbell, et al. 2011). Darwin based his theory on two fundamental ideas: random mutation and natural selection. Meanwhile, neo-Darwinism theory considers evolutionary variation as the result of random mutations then followed by natural selection (Capra, 2002).

A total of 77.8% of students' had a correct understanding of concepts related to the fourth concept indicator of natural selection, while 22.2% still had the wrong conception of natural selection. Natural selection is one of the fundamental ideas of

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Darwin theory. As for the concept indicators of proof of evolution and the concept of kinship, more students' do not understand (67.8% and 43.9%) compared to those who already understand the concept correctly (32.2% and 56.1%). This indicates that there are still problems in understanding the concept of evolution at both junior and high school level. The findings of this study hint at the need for reorientation of the correct evolutionary concept for prospective science teachers and prospective biology teachers who teach evolutionary materials.

According to experts as well as supported research (Nedelson et al., 2009) that to fully understand about evolution required early knowledge of the concepts of mutation, adaptation, and opportunity (Gould, 2002; Miller, 1999). Based on the research (Wulandaridan Widodo, 2019) a strategy is needed in preparing teaching materials that are tailored to the initial knowledge. This can be applied in a variety of materials including evolution To help improve conceptual knowledge, new content to be taught needs to be associated with the initial knowledge that the students' already know. Meaningful learning theory (Ausubel, 1968) and generative learning (Wittrock, 2010) describe meaningful learning as a process of assimilation. This process emphasizes the importance of initial knowledge to be associated with new content that will be taught to students'.

In a country with minimal educational standards and coupled with the frequency of misinformation about evolution, it can make the Muslim world (Countries that majority its population of Muslims) more fertile in its rejection of the theory of evolution, even though it has grown an influential Islamic creationist movement (Numbers, 2006). Evolutionary biology is found in the high school curriculum in some Muslim countries. However, the fact that the science foundations of the fourteen Muslim countries including Pakistan, Iran, Turkey, Indonesia and Egypt contain material on human evolution in learning at the secondary school level (Nedelson et al., 2009). In addition, the results of sociological research in various Muslim countries (Indonesia, Pakistan, Egypt, Malaysia, Turkey, and Kazakhstan) through surveys are known that evolution as a challenging material to study (Nedelson et al., 2009).

E. CONCLUSION

The conception of Islamic Religious Education students' about the concept of evolution is still superficial. The concept of kinship and the concept of evolutionary evidence have not been properly understood by students'. This indicates a mis concept in the evolutionary learning process at the secondary school level (junior high and high school). In-depth interviews are needed with science and biology teachers about how they teach evolutionary materials to prove the conception that teaching teachers have.

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