

Harmony of Q.S Az-Zumar and Earth Rotational Movement Science Materials in Elementary Schools Supporting Independent Learning: An Analytical Study

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Abstract. This research explores Q.S. Az-Zumar and science in analyzing Earth Movement material in elementary school books. This study aims to investigate the suitability of the meaning contained in Q.S. Az-Zumar and the Earth's rotational movement Science material. This study uses a qualitative approach and content analysis method. The data collection technique used a checklist sheet. Data analysis followed the flow of Mestika Zed (2004), namely reading, classifying, coding, formulating hypotheses, and drawing conclusions. The results found that the concept of the earth's rotational movement in Elementary School Science materials aligned with the idea of Q.S. Az-Zumar. Science learning in elementary schools is in accordance with the curriculum, and its application does not conflict with the understanding and value of Islamic normativity. The recommendation is that educational practitioners can study more about the verses of the Qur'an to prove factually or contextually according to science.

Keywords: Harmonization, Q.S. Az-Zumar, Science, Primary School

Introduction

The Qur'an is a science based on revelations, hadiths of the prophet, and ijihad of scholars, while general science is based on the human mind based on empirical data through research. The Qur'an contains teachings that regulate relationships with God, fellow humans, and nature. The Qur'an is the leading guide in carrying out all activities of human life in totality. The Qur'an needs to be interpreted contextually, and its content can be applied in life factually.¹

In elementary school, material about the movement and rotation of the earth is discussed detail in learning. However, at the implementation stage of learning, the teachers did not link the concept of the Qur'an to science material. At the same time, the idea of science had long been explained in the Qur'an before science experts discovered this concept. Since the Qur'an serves as a guide for Muslims, combining its verses with science will create many lessons that can be applied in everyday life. Combining several disciplines of science and religious science simultaneously. An integrated method is to combine subjects by setting curriculum priorities and determining overlapping skills, concepts, and skills, concepts, and attitudes in some subjects.

In the reality of science learning in elementary schools, educational practitioners are more dominant in producing subject matter based on science's perspective than the Qur'an's perspective. One of the factors practitioners do not link the Qur'anic view in learning because of the lack of knowledge of practitioners in integrating the curriculum with the values of the Qur'an. Whereas in the learning process in class, practitioners or teachers are free to plan and design learning materials based on religious, social and local wisdom. (Zulkarnain, 2018). This will holistically broaden students' horizons and knowledge and make the learning process more meaningful. Science can be

¹ Daulay, M. R, *Studi Pendekatan AlQuran, Thariqah Ilmiah*, 2014.

proven through observation, experimentation, inference, and theory building. In addition, science can also be established using a laboratory, the scientific method when a material is taught to students. While the text of the Qur'an requires theoretical understanding, empirical understanding to prove the truth of the meaning of the text contained in the verse is done through scientific methods, such as the study of the text of Q.S Az-Zumar proving its truth is done through direct observation of the natural environment.

Applying Science learning in Elementary School can improve students' thinking process to understand, discover, analyze, and realize natural phenomena and symptoms through scientific investigation and proof. Students can uncover ideas and explanations of a natural phenomenon critically and creatively. This process can improve students' high-level thinking skills (HOTS) in accordance with the demands of 21st-century learning. The argumentation of science scientists becomes a reference for producing science content related to the nature of Science. In addition, students are also critical in understanding scientific symptoms by using suitable approaches and methods to produce a correct conclusion²

The combination of science and the Qur'an produces Islamic Science, which is interdisciplinary and contributes to the learning process that provides a deep understanding of science and correlation with religious values to produce critical and religious students. Ayu (2015) states that science learning in SD / MI requires capable and skilled students to apply Science values to everyday life³

Previous research conducted by Mukminah, M., & Wijaya, H. (2015) examines the Problematics of Integrating Islamic Values in Natural Science Learning (IPA) at the Elementary School Level. Investigating the effect of science learning combined with Islamic values significantly affects student learning outcomes compared to students taught with conventional learning (Purwati, N., Zubaidah, S., Corebima, A. D., & Mahanal, 2018). Development of Madrasah Ibtidaiyah science learning modules for students with visual impairments based on Islamic science integration that has specific characteristics. These three studies have yet to discuss the contradiction between the concept of science and the meaning of the Quranic letters.

Based on previous research and literature review of elementary school science books, it was found that they have not integrated al-Qur'an values in science materials; students are dominated by explanations from the perspective of Science alone, whereas the integration of al-Qur'an and Science can increase students' knowledge in an interdisciplinary manner. This condition is a reason for researchers to explore the harmony of al-Qur'an and Science in presenting science learning materials, especially for elementary schools in an integrated manner. This research has novelty in that this study has yet to focus on the relationship between al-Qur'an and Science in Elementary School Science textbooks.

METHOD

This research uses a qualitative approach and content analysis method. Content analysis research retrieves data or materials needed from libraries in the form of books, encyclopedias, dictionaries, journals, documents, and magazines.⁴ This research focuses on analyzing Q.S Az-Zumar and science materials. The author examines the relevance of the two sources. Data sources in this research include primary and secondary. Preliminary data is Al-Misbah interpretation by M. Quraish Shihab and Ibn Kathir interpretation. At the same time, the secondary data is the elementary school science textbook material.

² Eny Rahma Abdullah Aly, *Ilmu Alamiyah Dasar* (Jakarta: Bumi Aksara, 2011).

³ Ayu Nur Shawmi, "Pendidikan Kecakapan Hidup (Life Skill) Dalam Pembelajaran Sains Di SD/MI Terampil," *Jurnal Pendidikan Dan Pembelajaran Dasar* 249 (2015).

⁴ Nursapia Harahap, *Penelitian Kepustakaan*, *Iqra'* 8, no. 1 (2014), h. 68.

Data collection techniques include: (1) Editing; (2) Organizing and (3) Research Findings, (5) Editing.⁵ In the editing stage, the author checks the data obtained from the checklist results, clarity of meaning and coherence between the meanings of the two sources. Organizing, namely compiling data on the results of the review of Al-Misbah's interpretation by M. Quraish Shihab and Ibn Katsir's interpretation and elementary school textbook science material to obtain a data concept framework. Finding Research Results: further analyzing the results of the two data preparation to get conclusions to answer the problem formulation. Data analysis techniques include (1) reading, (2) classifying, (3) giving codes or signs, (4) categorizing data and formulating hypotheses, and (5) concluding.⁶

RESULT AND DISCUSSION

Relationship between Science Concepts and Q.S Azzumar About the Movement and Rotation of the Earth

The study aims to examine the harmonization between science concepts and Q.S Az-Zumar about the movement and rotation of the earth. Data were obtained by studying three textbooks used in science learning in Elementary School. The data presentation of the study of science concepts and Q.S Az-Zumar is explained as follows:

a) Science Book at Grade six of Elementary School et al, 2008.

In this book, the material of the earth's movement process is explained that "The rotation of the earth causes changes in day and night", then "two forms of combination, namely rotation and revolution of the earth, rotation is the activity of rotating the world on its axis, while the process is the rotation (circulation) of the earth around the sun. The movement of the earth causes things that are felt, such as the alternation between day and night, the change of seasons, the use of beautiful stars, changes in the shape of the moon, eclipses and even the phenomenon of the earth's motion."⁷

The material presented in this book integrates with the concept of al-Qur'an Surah Az-Zumar verse 5 about the process of Earth's movement as one of the planets with a solar system, as in the following text.:

خَلَقَ السَّمَوَاتِ وَالْأَرْضَ بِالْحَقِّ يُكَوِّرُ اللَّيْلَ عَلَى النَّهَارِ وَيُكَوِّرُ النَّهَارَ عَلَى اللَّيْلِ وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلٌّ يَجْرِي لِأَجَلٍ مُّسَمًّى ۗ أَلَا هُوَ الْعَزِيزُ الْغَفَّارُ

"He created the heavens and the earth for a righteous purpose; He covered the night with the day, and the day with the night; and He subjected the sun and the moon, each to its appointed time; remember He is the Mighty, the Forgiving."(QS. Az-Zummar:5).

Textually, Q.S Az-Zumar verse 5 above is then analyzed empirically using the tafsir method to find the contextual meaning contained in the text of the verse in detail using the Al-Misbah and Ibn Kathir tafsir methods per sentence as follows:

خَلَقَ السَّمَوَاتِ وَالْأَرْضَ بِالْحَقِّ

The sentence "khalaqas-samawati wal-arda" means "He (Allah) is the true creator who made the heavens and the earth." this sentence is proof that Allah and all human activities created the earth are under the control of Allah. The following text then reinforces this verse:

⁵ Mestika Zed, *Metodologi Penelitian Kepustakaan*, Jakarta: Yayasan Obor Indonesia, 2004. h. 23.

⁶ Burhan Bungin, *Metodologi Penelitian Kualitatif Aktualisasi Ragam Varian Kontemporer* (Jakarta: Raja Grafindo Persada, 2007). h. 87

⁷ Dwi Suhartanti, *Ilmu Pengetahuan Alam*, Jakarta: Pusat Perbukuan Departemen Pendidikan Nasional, 2008.

This verse explains explicitly the form of Allah's power that is created, namely the change of day and night.. The word *يُكَوِّرُ* *yukawwiru/* cover (present and future verb) is in the form of file *mhudari*'; the text aims to illustrate that it is seen very clearly at all times and in different circumstances. In tafsir al-Misbah, the word *yukawwira* means "to surround something over something that gathers it", like wrapping the head with a turban. This word indicates that the earth is round and constantly moving and rotating, which means the alternation of day and night will not occur simultaneously but takes place continuously and alternates indefinitely.

Whereas the perspective of interpretation Ibnu Katsir, the verse explains in detail the signs of the day, namely the appearance of the day is bright, bright, and luminous. The signs of the night are in the form of dark displays. This becomes reinforcing data that Allah moves the earth and its rotation with changes in time and signs that are different and continue until the Day of Judgment.

This proves that there is no conceptual debate between science and the concept of the meaning of surah Az-Zumar. Flexibility can be used to develop verse-based teaching materials to support the students' understanding of science concepts. In addition to students understanding science concepts, they also appreciate religious concepts in science learning. The principles of the Merdeka curriculum support this development. The Independent Curriculum strengthens Pancasila values as a pillar of education and 21st-century learning requirements. The combination of the two concepts provides training on local community wisdom and ethical behavior and human values in carrying out tasks based on religion, morals, and ethics (Mariati, M. (2021, August) and revitalize local wisdom in the curriculum, such as race, ethnicity, culture, tradition, and religion (Tohri, Syamsiar, Rasyad, Hafiz & Rizkah (2022).

b) IPAS Book for Grade sixth of Elementary School by Amalia Fitri et al. 2022.

The second book explains that "the movement and rotation of the earth has a satellite moon, the only large satellite of the planet earth in the solar system". And "The rotational motion of the earth and planets causes the exchange of day and night". "The rotational motion of the planets is counterclockwise or from east to west".⁸

The connection of science material above is contained in the following verse of Q.S Az-Zumar:

وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ

Text The phrase *wa sakhkharasy-syamsa wal-qamar* means "he who subdues the sun and the moon". Kata (*سَخَّرَ*) *sakhkharah/ menundukkan* This is a sign that this event has been happening for a long time and has yet to undergo the slightest change. So, the commentator presents the movement and rotation of the earth through changes in the motion of the sun, moon, stars, and heavenly bodies that rise from the east and set in the west. The earth and the moon rotate according to the decree of Allah SWT and occur from the first until the Day of Judgment. While circling the sun, the earth's axis is always tilted 23.50 against the ecliptic line. Furthermore, based on this truth, scientists produced findings where the revolution takes 365¼ hours to circle the sun. The earth's circulation around its axis or axis lasts 23 hours 56 minutes 4 seconds (called one day).⁹ The earth's rotation inclines the equator of about 230 around the earth's orbit.

The meaning in the text of Q.S Az-Zumar verse 5 aligns with science teaching materials. Integrating the text concept of Q.S Az-Zumar creates applicable learning. It formulates critical thinking, creates new ideas through learning experiences and leads students to understand the secrets behind the knowledge contained in the Qur'an (Hidayat, 2022). The impact of integrating

⁸ Amalia Fitri dkk, *Ilmu Pengetahuan Alama Kelas VI SD* (Jakarta: Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi), 2022. h. 145.

⁹ Julianto dkk, *Konsep Dasar IPA 3*, (Surabaya: Unesa University Press, 2010)

the two concepts realizes students who are critical, creative, and socially collaborative. This is in line with the realization of the Merdeka learning curriculum.

c) Science Textbook for Elementary School Grade VI by Ari Pitoyo (2020)

This third book explains that the phenomenon of the earth's motion has a relationship with the planetary system. Planet Earth takes 24 hours to rotate around the Earth¹⁰ The rotation process results in the alternation of day and night. Then, the earth's rotation process leads from West to East and evolves counterclockwise¹¹ Peredaran bumi mengelilingi sumbu atau porosnya berlangsung selama 23 jam 56 menit 4 detik (disebut satu hari).¹² Perputaran rotasi bumi memiliki kemiringan garis katulistiwa sekitar 23° sekitar terhadap orbit bumi. Dikarenakan kemiringan ini maka terjadilah kemiringan siklus tahunan.¹³ The earth rotation process is made in the form of experiments through objects presented by science experts to be felt by students. Furthermore, the Earth's revolution is its motion in its orbit around the sun. While circling the sun, the Earth's axis is always tilted 23.50 against the ecliptic line. The revolution process takes 365¼ hours to go around the sun¹⁴

The material on the movement and rotation of the earth contained in the third Teaching Book is in line with the meaning contained in surah Az-Zumar verse 5 in the following text.

كُلٌّ يَجْرِي لِأَجَلٍ مُّسَمًّى ۖ

In the passage kulluy yajrī li'ajalim musammā "Each circulates according to its appointed time", it is evident that the Qur'an explains the movement and rotation of the earth which is shown through the tragedy of day and night, running according to an appointed time and the rotation of the earth is on its axis or circular line respectively.¹⁵ Pergerakan bumi ini merupakan ketetapan Allah Swt yang maha kuasa dan Its laws are fixed. Likewise, the sun and moon move in their respective orbits. Both move at the command of Allah SWT.

In addition, the phrase "kulluy yajrī li'ajalim musammā" reinforces the concept that the earth's movement and rotation occur daily and will end by the end of the world. However, according to astronomers, one day, the sun will eventually burn its atomic fuel of hydrogen and turn it into helium. At that time, it was predicted that there would be a great catastrophe in this universe.

Based on this context, the truth of Q.S Az-Zumar in revealing the theory of earth movement and rotation is a harmonious concept if presented in the learning process. Allah explicitly explains that the earth is round, and the reality of the difference between day and night alternately becomes evidence of the truth of the revelation contained in the Qur'an about the theory of the movement of the earth and its rotation.

أَلَا هُوَ الْعَزِيزُ الْعَفَّارُ

Then, in the last verse of Q.S Az-Zumar alā huwal-'azīzul-gaffār, meaning "Remember! He is the Glorified, the Forgiving". The الْعَفَّارُ/ remember to emphasize and reinforce that the earth's movement and rotation are proof of Allah's majesty and greatness. So, for those who deny this truth, Allah will still forgive them because of His noble and forgiving nature for His servants.

¹¹ Ari Pitoyo dkk, *Ilmu Pengetahuan Alam*, (Jakarta: Kementerian Pendidikan Nasional , 2020).

¹² Julianto dkk, *Konsep Dasar IPA 3*, (Surabaya: Unesa University Press, 2010)

¹³ Harfa, A, *Keseimbangan Penciptaan Bumi Menurut Al-Qur'an Dan Sains*, (2011)

¹⁴ Rachman, H. B, *Planet Bumi* (1), h. 8.

¹⁵ Al-Mubarakfuri, *Tafsir Ibnu Katsir*, Jilid 7.

The explanation of the pieces of sentences in Q.S Az-Zumar above, which is analyzed using the method of tafsir al-Misbah and Ibn Katsiir above, explicitly proves that the material on the movement of the earth and its rotation taught in Elementary School Student Science is found in the Qur'an long before science experts discovered this theory through their observations. Teachers or educational practitioners do not expose this knowledge by presenting it in Elementary School Science textbooks, so students predominantly use the Science perspective in processing learning.

The movement of the earth and the moon realize the differences in time and seasons and the effects humans can feel in everyday life. In line with the opinion of Quraish Shihab in the interpretation of Al-Misbah, if only the earth is not round and flat, then the tragedy of day and night will be seen simultaneously. Still, authentic evidence is found on earth that day and night occur alternately.¹⁶

However, the learning stage, this condition must be explored by the teacher to students through direct experiments by seeing nature in real life, students can feel His creation and regulation of this universe. They will think of it as authentic evidence that the earth does move, and rotation occurs continuously. It will strengthen the religiosity of students who are expected to become individuals who accept proof showing God's existence and His oneness.

Even though, the Qur'ān is not a science book, however, many scientific facts were discovered with 20th century technology after a deep dive into the verses. Alqur'an is a guidebook, and its mission, as has been repeatedly stated, is the guidance of mankind. The two concepts support each other in explaining the material movement and rotation of the earth. Combining the two concepts of science can strengthen the truth of the concept of science, which is supported by the meaning contained in Q.S Az-Zumar. Students can discover for themselves the truth, or a deeper understanding of a concept will strengthen students' memory of the material and foster an interest in learning so that it will have an impact on religious practice in daily life and students shed a sense of responsibility towards environmental care and good relations with God, humans, and nature.

Therefore, it is necessary to develop teaching materials that link the concept of science with Qur'anic texts to make students critically personal, not only understand the field of science but also understand the realization of science learning and strengthen students' confidence in the Qur'an as a source of knowledge. Knowledge can be acquired by students by engaging content and skills as closely interrelated devices (Bates, 2015, Fraillon et al., 2014). Content here means a collection of interrelated components such as details of procedures and processes, principles, evidence, and ideas obtained from various sources.

CONCLUSION

Based on a content analysis study on elementary school students' science textbooks, the perspectives of science and al-Qur'an experts on the concept of earth movement and rotation, it is obtained that the process of analyzing the movement of the earth in Elementary School Science materials based on the concepts of Science and Religion (al-Qur'an) experts have harmony with the proof of non-contradictory opinions; Elementary School Science subjects can be taught by integrating the texts of the Qur'an as a source of Islamic law; (3) the integration of Science and the Qur'an in learning can foster a sense of majesty of students with God's creation; holistic learning as a realization of both perspectives of Science and the Qur'an.

¹⁶ Wedra Aprison, *Pandangan M. Quraish Shihab Tentang Posisi Al-Qur'an Dalam Pengembangan Ilmu*, (Madania Vol. 21 No. 2, Desember 2017), H. 185.

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