The Urgency of Development of Cosmographic Material Based on Al Quran

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Abstract. Higher education aims to develop the potential of learners to become human beings who believe and be cautious to God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible. The noble goal can be realized if education is held thoroughly, not only to educate intellectual but spiritual students. This article aims to illustrate the importance of developing Al Qur'an-based cosmographic materials. This is because many verses of the Al-Qur'an describe the process of the occurrence of the universe. It is certainly very interesting to be integrated into cosmographic teaching materials. The findings of modern science today have much to prove the truth of the Al-Qur'an that was revealed 14 centuries ago. The study of cosmography by integrating the Al-Qur'an's content can make students as a person who glorifies God and thinks of most of the signs of God's greatness. This can be an alternative to reduce the "spiritual drought" in cosmographic learning in college so far.

1. Introduction
Teaching materials are used at all levels of education, from elementary to university levels [1]. Teaching materials play a major role in learning. Almost all lecturers use teaching materials in the form of diktat to support the implementation of learning in college. This is very helpful in achieving the learning objectives [2].

In developing good teaching materials, there should be at least three aspects, including: cognitive, skill, and attitude [3]. In the field of cognitive, teaching materials should be able to develop student intelligence while the field of attitude, teaching materials should be able to develop communication skills within social groups, and in terms of attitude, teaching materials should be able to develop an understanding of norms and values.

Nevertheless, in the current conditions, teaching materials developed by lecturers in college only touch the realm of cognitive and skill. Aspects of attitude seem to be overlooked. One of them is cosmographic teaching materials. Based on observations and interviews with lecturers and students of
geography education who took cosmographic courses in several public and private universities in Aceh Province, it is known that the cosmographic material currently available only touches the cognitive aspect.

This condition makes cosmographic learning in college less meaningful. The students' understanding of the process of the universe is limited to scientific theoretical studies. This makes learning in college unsuccessful in making the student as a person who glorifies God and piety to Him.

This is certainly contrary to the objectives of higher education who want to develop the potential of learners to become human beings who believe and cautious to God Almighty, have a noble character, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible [4]. This condition requires universities to produce graduates who not only have intellectual intelligence, but believe and cautious.

The noble goal can be realized if the learning is held thoroughly, not only to educate the intellectual but the student's personality. This is important because students are agents of change for the nation. In addition, universities have a great responsibility in producing graduates of character.

One effort that can be done to achieve the goal of higher education is to integrate cosmographic materials with content of Al-Qur'an. It aims to reinforce what God explains in the Al-Qur'an never contradicting scientific discoveries today. The truth of scientific content of Al-Qur'an can be a means to improve students' spiritual intelligence so that students as a person who knows God and piety to Him. In addition, cosmographic learning related to the study of the universe cannot be separated from the Al-Qur'an [5]. At least, there are 463 surah and verses in the Al-Qur'an that describe the earth and the universe [6]. This article aims to illustrate the importance of developing Al-Quran-based cosmographic materials in order to achieve the goal of higher education.

2. Methods

The writing of this article was using observation techniques, documentation studies, and literature studies. The authors make observations to see the condition of cosmographic materials used by lecturers and students in learning in the universities. Documentary studies were conducted to gain information into the importance of developing Al Quran-based cosmographic materials. While the study of literature is done by analyzing the scientific content in the Al Quran that related with cosmography learning so that it can be integrated into the teaching material.

3. Discussion

3.1. Cosmographic learning in the Al-Qur'an

Cosmography is a compulsory subject for students of geography education. Cosmographic studies include microcosms and macrocosms. Microcosms include small celestial bodies such as atoms and electrons. While the macrocosm includes large celestial bodies, for example: planets, stars, sun, moon, and galaxy [7]. In addition, cosmography also examines the influence of celestial bodily activity on life on earth.

Cosmographic learning has the goal that students have knowledge of the universe and its effects on human activity on the surface of the earth. In addition, students can realize the greatness of God who has made the universe and its contents. This objective is in line with the Semester Learning Plan (RPS) of cosmographic courses developed at various universities in Indonesia.

In order to achieve the purpose of learning, of course many methods that can be done. For example, in the realm of cognitive and skill, Learning can be developed by applying inquiry learning model and Project Based Learning (PBL). Learning models are very effective to stimulate students to cognitive thinking critical and creative.

In addition, to achieve the learning objectives of the attitude aspect, the values contained in the Al-Quran are very effective to be integrated in teaching materials. This can encourage students to become a person who realizes God's greatness after studying the universe. This is because, many secrets have not been revealed about the universe.
In the Al-Qur'an is contained all aspects of human life, including the universe [6]. Many verses of the Al-Qur'an that describes the sky, stars, moons, and the balance of the universe, for example about the creation of the sky. In QS. Nuh/71:16-16 Allah says: "Do you not consider how Allah has created seven heavens in layers, and made the moon therein a [reflected] light and made the sun a burning lamp?" [8].

Then, in another surah, QS. An-Naba'/78:12-13, Allah says: "And constructed above you seven strong [heavens], And made [therein] a burning lamp " [8]. In QS. adh-Dhariyat/51:47, there is also a discussion of the heavens: "And the heaven We constructed with strength, and indeed, we are [its] expander" [8]. The expansion of the universe as described in the verse, has been proven by American astronomer Edwin Hubble. After making observations of galaxies that exist in this universe, Hubble concluded that the wavelength of galaxies in the universe continues to shift [9]. Finally, Hubble concludes that a galaxy away from its starting point. It can be said that the universe is not fixed but it expands [5]. The expansion of this universe will continue until the loss of gravity of the celestial bodies.

Then, the Al-Qur'an also describes the sun, moon, and stars. In Surah Al-Furqan Allah says: "Blessed is He who has placed in the sky great stars and placed therein a [burning] lamp and luminous moon " [8]. Moreover, in another surah Allah says:" And made the moon therein a [reflected] light and made the sun a burning lamp" [8].

The meaning of the lamp in the verse is the sun itself. While the moon is luminous, it means the moon does not emit itself. The moon looks glowing at night due to the reflection of sunlight on its surface [10]. Meanwhile, during the day, the moon does not look luminous, this is because the sun shines brighter, making the moonlight not visible [10].

Then, in QS. Yasin/36:39-40, more specifically the Al-Qur'an describes the phases of the moon: "And the moon - We have determined for it phases, until it returns [appearing] like the old date stalk. It is not allowable for the sun to reach the moon, nor does the night overtake the day, but each, in an orbit, is swimming" [8].

The verse describes specifically the phases of the moon that many modern day scientists describe: from the new moon phase, the crescent, the half, the full (full moon), the old sickle, and back again to the new moon or often called hilal [10]. Phases of the moon occurs because, when the moon around the sun there are differences reflected sunlight reflected on the surface of the moon. This causes the shape of the moon as if changed, whereas the moon does not change, it's just the reflection of the moon's changing light that caused the movement of the moon when it surrounds the sun.

Then, the Al Qur'an also mentions the time difference on earth with the other realms. In QS. Al Hajj/22:47, Allah says: "And indeed, a day with your Lord is like a thousand years of those which you count "[8]. In QS. As Sajadah/32:5, the Al-Qur'an explains "He arranges [each] matter from the heaven to the earth; it will ascend to Him in a Day, the extent of which is a thousand years of those which you count"[8].

Both verses explain there is a significant time difference between on earth and other nature. This is certainly a big question for mankind. However, with the advancement of modern science and technology, Albert Einstein has proven that. In his theory of relativity, Einstein argues that when the speed of an object increases, time will slow. He further stated that objects moving near the speed of light have longer time relativity [13]. This is what causes the astronauts who return from space missions, will be younger than the actual age.

3.2. Urgency of cosmographic material development
Many verses of the Qur'an that describe the universe make cosmographic learning more interesting to develop. Nevertheless, the content of Al-Quran only explains in general about the universe. It aims to encourage humans to conduct further research in proving more specific matters [19].

Al-Quran advises people to think and use all knowledge and curiosity to reveal the secrets of the universe. This is as has been done by previous scientists. In addition, it is important to understand that, the Qur'an commands people to understand God's creation and to live it. In QS. Ali 'Imran/3:190-191 Allah says “Indeed, in the creation of the heavens and the earth and the alternation of the night and the
day are signs for those of understanding. Who remember Allah while standing or sitting or [lying] on their sides and give thought to the creation of the heavens and the earth, [saying], "Our Lord, you did not create this aimlessly; exalted are You [above such a thing]; then protect us from the punishment of the Fire" [20].

The verse above tells people to observe and appreciate how beautiful the universe is. This makes people believe there is a power of God Almighty so that the universe. Therefore, attempts to integrate the Qur'an verses into cosmographic material are essential. This aims, after studying cosmography students can be a person who glorify God, piety to God Almighty and characterized in accordance with the mandate of Law [4] and the purpose of cosmography learning.

4. Conclusions
Higher education aims to develop the potential of learners to become human beings who believe and cautious to God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible [4]. The noble goal can be realized if education is held thoroughly, not only educate intellectual but spiritual students.

As a living guide, the Al-Qur'an describes all aspects of life, including the universe. There are so many verses of the Qur'an that explain the occurrence of the universe [21]. It is certainly very interesting to be integrated into cosmographic teaching materials. Moreover, the verses that explain the universe have been widely verified by modern scientists today.

The development of cosmographic materials based on Al-Quran is very important to do. This is because, there are still few cosmographic teaching materials in universities that integrate the content of Al-Quran into teaching materials. In addition, Aceh as a region that runs Islamic law is very suitable to insert the content of Al-Quran into teaching materials.

Hope, the study of cosmography-based Al-Quran can be a student's reflection to his God. For, the Almighty God commands men to think of most of His signs of greatness through the creation of the heavens and the earth. Al Quran-based cosmographic teaching materials can be an alternative to reducing "spiritual drought" in cosmographic learning in college.

References
[1] Aksa FI 2016 Development Of Geography Teks Book Model Book World Geograph Jurnal Ilmiah Ilmu Sosial 2 11
[2] Lee J an Catling S 2016 What do geography textbook authors in England consider when they design content and select case studies? International Research in Geographical and Environmental Education 25 1747
[3] Seefeldt C 1993 Social Studies for Preschool-Primary Child (New York: Macmillan publishing Co)
[4] Indonesian Higher Education Law No 12 2012
[5] Al-Khader O A 2001 The Qur’an and the Universe: from Bing Bang to the Big Crunch (BeirutSaída: Al-Maktabah Al- A’šriyyah) pp: 282-283
[6] Abdushshamad M 2003 Mukjizat Ilmiah Dalam Al-Quran (Jakarta: Media Eka Sarana)
[7] Angelo J A 2006 Encyclopedia of Space and Astronomy (New York: Facts on File Inc)
[8] Al-Quran 2014 Departemen Agama RI Al-Quran Terjemah dan Tajwid (Jawa Barat: Sygma)
[9] Eicher D J and Filippenko A 2015 How large is the universe? The New Cosmos: Answering Astronomy's Big Questions (Cambridge: Cambridge University Press) p 157–70
[10] Eicher D J and Filippenko A 2015 How the Moon formed. The New Cosmos: Answering Astronomy's Big Questions (Cambridge: Cambridge University Press) p 47–60
[11] Einstein A 1923 The Meaning Of Relativity (Great Britain: Princeton University Press)
[12] Murtono 2015 Perspektif Al- Quran Tentang Astronomi Jurnal Kaunia 1 1 22-35
[13] Sani A 2015 Sains Berbasis Al-Quran (Jakarta: Bumi Aksara)