

# DIAGNOSTIC SKILL OF INTERNALIZATION- INTERCONNECTION QUR'ANI WITH SCIENCE IN THREE LEVELS OF MADRASAH

*Wirawan Fadly*

State Institute of Islamic Studies (IAIN) Ponorogo  
Email: wira1fadly@iainponorogo.ac.id

*Fatkul Jannah*

Institute of Research and Community Service (LPPM) of Wirawijaya, Mojokerto  
Email: fatkuljannah0907@gmail.com

*Omnia S. Ahmed*

Member of the Egyptian Minister's of Education Technical Office  
Email: omnia.salah@moe.edu.eg

*Diah Susanti*

Darul Falah Islamic Boarding Area Ponorogo, East Java  
Email: sdiah345@gmail.com

**Abstract:** The study diagnosed the skill of internalization-interconnection of the Qur'ani with science at the three levels of Madrasah (Islamic school). We used a mixed-method research methodology, which was started with a cross-sectional survey, then continued with phenomenology. With this combination of research, it is hoped that more comprehensive data results will be obtained. The number of participants involved in the survey was 116 people taken randomly at three levels of the madrasah, who were then purposively classified based on the highest score for in-depth interviews. The collected data were analyzed using quantitative descriptive, qualitative descriptive, and inferential statistics through multivariate tests. The results of the present study show that: 1) the theocentric approach had been implemented quite well since the MI (Islamic Elementary School) level; 2) MTs (Islamic Junior High School) is the best level for optimizing the planting of the skill to internalize-interconnect Qur'ani with science; 3) the profile of students' internalization skills in the MI is at the knowing level, MTs is in the responding level, and at the MA (Islamic Senior High School) in the organizing level, while the interconnection skill at the MI is in the understanding in textual level (textual), the MTs in the level of understanding contextually only on the initial experience of students (effective contextual) and MA in the level of understanding analyzes the relationship between science and other subjects as well as with the verses of the Qur'an in a structured manner (structured contextual).

**Abstrak:** Tujuan penelitian adalah untuk mendiagnosa kemampuan internalisasi-intekoneksi Qur'ani dengan IPA di tiga jenjang pendidikan madrasah. Penelitian dilakukan melalui *mix-method* atau metode kombinasi yang diawali dengan *cross sectional survey* kemudian dilanjutkan dengan fenomenologi. Dengan penelitian kombinasi ini diharapkan mendapatkan hasil data yang lebih komprehensif. Jumlah partisipan yang terlibat dalam *survey* sebanyak 116 orang diambil secara *random* di tiga jenjang madrasah, yang kemudian dikrucutkan secara *purposive* berdasarkan nilai tertinggi untuk diwawancarai secara mendalam. Data yang telah terkumpul kemudian dianalisa menggunakan deskriptif kuantitatif, deskriptif kualitatif, serta statistik inferensial melalui uji *multivariat*. Hasil penelitian menunjukkan bahwa: 1) pendekatan *theanthropocentris* telah dilaksanakan secara cukup baik sejak jenjang MI; 2) jenjang MTs merupakan jenjang paling baik untuk untuk optimalisasi penanaman kemampuan internalisasi-interkoneksi al-Qur'an dengan IPA; 3) Profil keterampilan internalisasi siswa di MI ada di tingkat mengetahui, MTs di tingkat menanggapi, dan di MA di tingkat pengorganisasian, sedangkan keterampilan interkoneksi di MI ada di tingkat pemahaman pada tataran tekstual (tekstual), MTs pada tataran pemahaman kontekstual hanya pada pengalaman awal peserta didik (kontekstual efektif) dan MA pada tataran pemahaman menganalisis hubungan IPA dengan mata pelajaran lain serta dengan ayat-ayat al-quran secara terstruktur (kontekstual terstruktur).

**Keywords:** diagnostic; mix method; internalized; interconnected; Qur'ani

## INTRODUCTION

As a Muslim, the Qur'an is a human guide to live in the world, and also as a source of law and knowledge. It makes the Qur'an occupy a leading position in the lives of Muslims.<sup>1</sup> Some science phenomena are often integrated with the verses of the Qur'an in several surahs. Many events in this world are written in the Qur'an; some are directly understandable (literal meaning), and some need to go through a process of deeper understanding to be understood (implicit meaning).<sup>2</sup> An example of the literal source of knowledge in the scientific phenomenon is in QS Yunus verse 5 which reads "*He is the One Who made the sun a radiant source and the moon a reflected light, with precisely ordained phases, so that you may know the number of years and calculation*". In this verse, AllahSWT explains the knowledge of astronomy, which can be seen from the word "*manazilahu*" or orbit and "*hisab*" or calculation of time. The relationship between the two words shows that the orbits of the sun and the moon have been

---

<sup>1</sup> W. Fadly and P. Rochmahwati, "Kauniah Verse-Based Science Learning: Reconstruction of the 21th Century Science Learning Program," *Journal of Physics: Conference Series* 1567, no. 4 (2020)

<sup>2</sup> B Saputro et al., "Developing Stages for the Scientific Cues Concept in the Integrated Science-Tafseer Learning Model," *Jurnal Pendidikan IPA Indonesia* 8, no. 1 (2019): 63-74.

set regularly so that with that regularity can be used as a basis in the calculation of time.

Besides, there are verses in the Qur'an that arouse human curiosity by inviting them to think more deeply through scientific inquiry, as in QS Al Ghasiyah verses 17-20 which reads "Do they not ever reflect on camels—how they were [masterfully] created? And the sky—how it was raised [high]? And the mountains—how they were firmly set up? And the earth—how it was levelled out??" The verse guides humans by arousing curiosity through various questions that are not only observed or seen, but also need to do more in-depth research related to camels created (biological approach), sky elevated (cosmological approach), mountain erected (physics approach), the earth is spread out (geological approach). From these few explanations, it shows the uniqueness of the Qur'an as the source of all sources of knowledge that human beings must know.<sup>3</sup> Knowledge can be explored if human beings have a curiosity and a desire to investigate it through true rules (scientific).<sup>4</sup> The Qur'an serves as a source of knowledge about the greatness of God's creation and provides human guidance to know one of them through science.<sup>5</sup>

The integration of Qur'anic verses through internalization of spiritual values to students needs to be done massively. Because by integrating the verses of the Qur'an with science it will make it easier for students to appreciate and practice religious values to cultivate a spiritual and scientific soul in students.<sup>6</sup> Of course, it is hoped that it will be in line with Curriculum-2013 (K13) which tries to give equal attention to religious education and general education. Teachers, students, and schools must truly be able to support the integration of science values with the Qur'an. The concept of learning that supports the integration can be said to be *theoanthropocentris* which focuses on the process of learning integration that is oriented towards the divine and humanitarian approach. Operationally, this approach integrates God's revelation with the human senses.<sup>7</sup> God's revelation in the form of the Qur'an becomes the source of all sources of knowledge; then the human senses become the apparatus used to understand that knowledge.

---

<sup>3</sup> Afiful Ikhwan, "Development of Educational Resources," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 18, no. 1 (2020): 1-16.

<sup>4</sup> Jennifer L. Weible and Heather Toomey Zimmerman, "Science Curiosity in Learning Environments: Developing an Attitudinal Scale for Research in Schools, Homes, Museums, and the Community," *International Journal of Science Education* 38, no. 8 (2016): 1235-55.

<sup>5</sup> Novianti Muspiroh, "Integrasi Nilai-Nilai Islam Dalam Pembelajaran IPA Di Sekolah," *Jurnal Pendidikan Islam* 28, no. 3 (2013): 168-88.

<sup>6</sup> A Ahmadi, B Basuki, and E Irawan, "The Internalization of Attitude and Values: Comparison Study in PTKIN and PTKIS," *Cendekia: Jurnal ...* 18, no. 1 (2020): 17-32.

<sup>7</sup> Toto Suharto, "The Paradigm of Theo-Anthropo-Cosmocentrism: Reposition of the Cluster of Non-Islamic Studies in Indonesian State Islamic Universities," *Walisongo: Jurnal Penelitian Sosial Keagamaan* 23, no. 2 (2015): 251.

The integration of Qur'anic values in science will not reduce the level of knowledge of science itself, and it will make students able to appreciate the religious values contained in science.<sup>8</sup> Teachers must be able to direct learning that can stimulate students to have a curious character about the greatness of Allah SWT through the Qur'an in the learning process. This stimulation can be done through the integration of the Qur'an in science learning, that is, by emphasizing learning activities through the internalization of Qur'anic values in science learning, and the interconnection of knowledge about nature contained in the Qur'an with the material in science lessons in school.<sup>9</sup> The skill to internalize and interconnect has differences, where the skill to internalize is a form of an effort to appreciate the naturalistic values contained in the Qur'an, while the skill to interconnect is related to the effort to connect the naturalistic occurrence in Qur'anic verses with science products in the form of concepts, principles, theories and laws. Thus, in providing action in the classroom to stimulate the internalization-interconnection skill of the Qur'an, teachers must have an understanding of the extent of students' understanding of the verses of the Qur'an and science.

Diagnosing students' understanding of the verses of the Qur'an and science can be used as a reference for learning management actions in the classroom to be more appropriate, effective and controlled, but unfortunately, not much research has attempted to diagnose these skills. Research on the internalization and interconnection of the Qur'an with science is still limited to the development of products oriented to the internalization-interconnection of Islam and science, the study of the internalization-interconnection of science material and the Qur'an, science and the Qur'an in various perspectives. Although many, no research has been found that focuses on diagnosing the skill of Internalization-interconnection of the Qur'an with science, although such skill is important as a foundation for teachers in managing science learning in schools.

Based on this exposure, research will be conducted to diagnose the skill of internalization and interconnection, to be more focused and in accordance with the concept of education that prioritizes religious integration, then this research will be specific to the internalization-interconnection of the Qur'an in science subjects at three levels of education. This level of education will be limited only to the level of madrasah in the Islamic school (Madrasah) which includes Islamic Elementary School (MI), Islamic Junior High School (MTs) and Islamic Senior High School (MA) because the curriculum in the madrasah has a higher standard of religious integration, with the proportion of religious

---

<sup>8</sup> Fantika Puspitasari, "The Integration-Interconnection Discourse of Islamic Education and Science in Indonesia," *Tarbawi: Jurnal Pendidikan Islam* 2, no. 8 (2020): 153–62.

<sup>9</sup> Muspiroh, "Integrasi Nilai-Nilai Islam Dalam Pembelajaran IPA Di Sekolah."

learning and science almost balanced compared to the level of public schools. The problems in this research are formulated into three main points as follows: 1) whether the integrated learning approach is the antantococentris implemented at all levels of education in the madrasah?; 2) what is the level of internalization-interconnecting skill at each madrasah level?; 3) how is the profile of internalization-interconnecting skill at each level of madrasah?. This research is expected to be a reference for academics in managing learning that is oriented towards stimulating the skill of Internalization-interconnection of the Qur'an with science in madrasah.

## THEORETICAL REVIEW

### Internalization-Interconnection Skill

Al-Qur'an is a miracle that was given to the Prophet Muhammad Saw through the angel Jibril and as the holy book for guidance for the people of the Prophet Muhammad Saw. The Qur'an contains instructions, laws, advice, law, morals, science, and much more to live life and understand the rules in life.<sup>10</sup> So the Qur'an must be studied and studied its contents. The application of the Qur'an is very important because to achieve happiness in life in this world and the hereafter. So that the Qur'an is a guide for all aspects of life because the Qur'an and life are complete treasures that make human life more harmonious.<sup>11</sup> The Qur'an and for the environment has a relationship described in QS Al A'raf: 52, *"We have certainly brought them a Book (al-Qur'an) which We explained with knowledge—a guide and mercy for those who believe"*. From this little explanation, shows the Qur'an as the source of all sources of knowledge that human beings should know. Such knowledge can be explored if human beings have a curiosity and a desire to investigate it through true rules (scientific).<sup>12</sup> The verses in the Qur'an guide human beings by arousing curiosity through various questions that are not only observed or seen but also done deep thought and research. The Qur'an serves as a source of knowledge about the greatness of God's creation and provides human guidance to know it.

In the Islamic view, science is relevant to religious teachings. Islam contains multidisciplinary sciences, natural sciences, social sciences, and humanities.<sup>13</sup> Thus, it means that Islam has complete, integrated, and universal teachings. It

---

<sup>10</sup> Wirawan Fadly, "Optimalisasi Kemampuan Pedagogik Calon Guru IPA Melalui Program Perkuliahan Pimak (Pembelajaran IPA Muatan Ayat Kauniyah)," *Kodifikasia: Jurnal Penelitian Islam* 12, no. 2 (2018): 289-306.

<sup>11</sup> Fatkhul Mubin, "Pemikiran Filosofis Dan Teori Kontemporer Tentang Pendidikan" 1 (2020): 1-17.

<sup>12</sup> Weible and Zimmerman, "Science Curiosity in Learning Environments: Developing an Attitudinal Scale for Research in Schools, Homes, Museums, and the Community."

<sup>13</sup> Mubin, "Contemporary Philosophical Thought and Theory of Education."

is this equipment that makes Islam able to accommodate all questions and can follow the progress of knowledge and technology.<sup>14</sup> This relationship implies a sacred aspect for the pursuit of scientific knowledge by Muslims because science is seen in the Qur'an as a collection of signs pointing to the creation of Allah SWT. Normally, since the beginning of the revelation of the Qur'an through QS Al Alaq 1-5, it has been seen that the construction of knowledge in Islam is built on the values of monotheism. In that verse, there is a command to read not just read, but must understand, why, how, and what happened. Then also ordered to understand the creation of man from a blood clot. The more important thing is how the process of a blood clot becomes a whole human being. It is where science plays a role in revealing natural phenomena.<sup>15</sup> The cultivation of spiritual values in the Qur'an needs to be instilled in students, especially in integrating the verses of the Qur'an with science values.

Internalization is an interaction that can influence the acceptance or rejection of a value, personality, and is a function of evaluation.<sup>16</sup> In the process, internalization can be done through five stages, namely: (i) receiving a response; (ii) member values; (iii) organizing values; and (iv) characterizing of values. The process of internalization will achieve the goal if it reaches the level of organizing values. At this level, various values will be arranged in sync and coherence. So in the fifth stage, that is the characterization of values, one will begin to form relationships of several values and organized to unite. Environmental factors play a very important role because they can influence changes in student behavior as a result of the educational process.<sup>17</sup> Four strategies can be used to internalize aspects of attitudes and values<sup>18</sup>, namely: 1) exemplary; 2) intervention; 3) routines performed consistently; and 4) reinforcement. The process of internalization of aspects of attitudes and values can be done through the development and delivery of role models, through interventions in the learning and training process, through continuous habits that are implemented consistently and must be accompanied by high values.<sup>19</sup>

---

<sup>14</sup> Asep Sunarko, "Iptek Dalam Perspektif Al- Qur'an," *Manarul Qur'an* 14, no. 1 (2015): 1-14.

<sup>15</sup> Murtono, "Pendidikan Sains Dalam Al-Qur'an," *Jurnal Pendidikan Agama Islam* II, no. 02 (2005): 163-74.

<sup>16</sup> Muhadjir, *Ilmu Pendidikan Dan Perubahan Sosial* (Yogyakarta: Rake, 2000).

<sup>17</sup> Richard Arends, *Learning to Teach, Connect, Learn, Succeed CN - LB1025.3 .A74 2012*, 9th ed (Dubuque, Iowa: McGraw-Hill, 2012).

<sup>18</sup> Murtono, "Pendidikan Sains Dalam Al-Qur'an."

<sup>19</sup> Fakhrol Rijal, Tasnim Idris, and Darmiah Darmiah, "Internalisasi Nilai-Nilai Multikulturalisme Dalam Pembelajaran PAI Di Sekolah Dasar," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 17, no. 1 (2019): 99.

The interconnected paradigm assumes that to understand the complexities of life faced and experienced by human beings, all fields of science cannot stand alone whether social science, religion, economics, humanities or nature.<sup>20</sup> So basically all sciences need each other, complement each other, fill each other and have space to connect and help each other between one science and another.<sup>21</sup> Interconnection leads to a passion for the exploration and elaboration of the phenomena of the universe based on its basic premise directly from the revelation of verses of the Qur'an. Interconnection has three main bases according to Barbour and Holmes Rolston, namely:<sup>22</sup> 1) penetrating each other; that is, openness to open each other in communication between disciplines; 2) intersubjectivity, that is, the involvement of the entire community of scientists to provide interpretation and understanding of the data obtained by a researcher; 3) creative imagination, which is the activity of seeking and digging information related to new theories in the field of religion and science and then have the courage to combine or make slices between their relationships.

The interconnection of the Qur'an and science will produce reliable resources in applying the knowledge possessed by being strengthened by strong spirituality in the face of life.<sup>23</sup> Islam guides people to worship Allah SWT through the development and mastery of science. There are more than 800 verses in the Qur'an that emphasize the process of contemplation, thinking and observation of various natural symptoms, to be meditated and become a matter of remembrance (remember) to God. According to Agus Purwanto al-Qur'an is a science book or can be considered as a science encyclopedia.<sup>24</sup> In the Islamic sense, the intellect is not the brain, but the power of thought found in the human soul to acquire knowledge by observing the environment.

The nature of science is a body of knowledge (*a body of knowledge*) that studies understand and investigates natural events or phenomena (*natural world*) with all its aspects that are empirical by containing science process skills.<sup>25</sup> The presence of religion in science makes it have a broader perspective as well as there are principles that must have a limit. Similarly, the presence of science

---

<sup>20</sup> M. Amin Abdullah, "Religion, Science and Culture: An Integrated, Interconnected Paradigm of Science," *Al-Jami'ah* 52, no. 1 (2014): 175-203.

<sup>21</sup> Mubin, "Pemikiran Filosofis Dan Teori Kontemporer Tentang Pendidikan."

<sup>22</sup> Amin Abdullah, "Religion, Science and Culture: An Integrated, Interconnected Paradigm of Science."

<sup>23</sup> Fauzi Annur, *Integrasi-Interkoneksi Sains Dan Agama Pemikiran Agus Purwanto Dan Implikasinya Terhadap Pendidikan Agama Islam* (Salatiga: IAIN Salatiga, 2017).

<sup>24</sup> Agus Purwanto, *Ayat-Ayat Semesta: Sisi Al-Qur'an Yang Terlupakan* (Bandung: Mizan, 2008).

<sup>25</sup> Valarie L. Akerson et al., "Developing a Professional Identity as an Elementary Teacher of Nature of Science: A Self-Study of Becoming an Elementary Teacher," *International Journal of Science Education* 36, no. 12 (2014): 2055-82.

in religion makes it easier to understand empirically so that the internalization-interconnection of the verses of the Qur'an with science will make it easier for students in living and practising religious values.

## METHODS

The type of research was *mix-method*. These two methods produced more comprehensive facts because the researcher had the freedom to use all data collection tools according to the data required.<sup>26</sup> The participant selected were students from madrasah in three education levels, such as MI (age range 10 to 12 years), MTs (age range 12 to 14 years), and MA (age range from 15 to 17 years). Each participant was *randomly sampled* in grade 5 MI, grade 8 MTs, and grade 11 MA. The number of participants was 116 students with proportions at each level with the same comparison. Technically, this research was conducted quantitative research to explore the information of the learning integration approach along with the level of internalization-interconnecting skill of students at the three levels of education.

The design of quantitative research conducted was a *cross-sectional survey* by providing diagnostic tests on the skill of internalization and interconnection using the same instrument at each level.<sup>27</sup> The instrument used has been tested for reliability (result  $r = 0.836$ ) and its validity to ensure the steady and usable score items. The instrument was deliberately made in the same way to map the level of student ability. The instrument made refers to the indicators of the skill to internalize-interconnect the Qur'an in the science material as follows.

Table 1. Indicators of Internalization and Interconnection Skill

Indicators	Descriptors
<i>Internalization Skill</i>	Appreciating naturalistic values contained in the Qur'an
<i>Interconnection Skill</i>	Linking naturalistic occurrence in the verses of the Koran with the science product

Data obtained from the quantitative research is then analyzed descriptively using a histogram to determine the level of skill to internalize-interconnect the Qur'an at each level. Once the data are obtained, then the indicators on the research variables are used using *inferential statistics* through multiple comparison tests (*multivariate analysis*), to obtain a profile of the interconnection-internalization skill to the level of the madrasah.

<sup>26</sup> Michael Bamberger, *Integrating Quantitative and Qualitative Research: Lessons from the Field Directions in Development*, World Bank, 2000.

<sup>27</sup> Norman E Wallen Jack R. Fraenkel, *How To Design And Evaluate Research In Education 8th Ed*, 2012.

Then continue with qualitative research to get more in-depth findings related to the perspective of student answers, so that it will be easier to identify in mapping internalization-interconnection skills. The participant was selected by *purposive sampling* at the three levels of madrasah education by considering data from previous quantitative research. The data collection techniques used were semi-structured interviews and documentation. In-depth interviews were conducted on each of the selected participants. The length of the interview process depends on the characteristics of the participant's answers. Each interview result is transcribed, then coded and adapted to the data characteristics. Once the data are collected, it is then analyzed using Milles and Huberman analysis techniques through the process of data reduction, data presentation, and inference.<sup>28</sup> The validity of the data used is the credibility test which includes the extension of observations, increased persistence, and triangulation of data.

## FINDINGS AND DISCUSSION

### Findings

Al-Qur'an has many implied meanings, the description of the content or meaning in the Al-Qur'an can be dissected or interpreted in other scientific studies, so studying the Qur'an needs to be connected with other sciences to facilitate in understanding the context of the Qur'anic contents. The Qur'an was revealed not only to be read but also to be studied so that the Qur'an has always lived in the hearts of the believers. Understanding the internalization-interconnecting values of the Qur'an is important for madrasah students, understanding the spiritual values contained in the Qur'an and naturalistic understanding can be taught through learning habits oriented to internalization-interconnecting skills adapted to the characteristics of students in each level. Comparison of internalization-interconnection skill at each level is as follows.

Table 2. Multivariate Analysis of Internal-Interconnected skill of the Qur'an at Each Level

Dependent Variable	(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Internalization-Interconnection	MI	MTs	-1.8336386*	.24827239	.004	-2.7184787	-.9487985
		MA	-2.0978672*	.22664065	.002	-2.9056120	-1.2901224
	MTs	MI	1.8336386*	.24827239	.004	.9487985	2.7184787
		MA	-.2642286	.22664065	.530	-1.0719734	.5435162
	MA	MI	2.0978672*	.22664065	.002	1.2901224	2.9056120
		MTs	.2642286	.22664065	.530	-.5435162	1.0719734

<sup>28</sup> Jack R. Fraenkel.

Table 2 shows that the significance value of the internalization skill in MI and MTs is still below  $\alpha = 0.005$ , meaning that the value of internalization-interconnecting skill at the MI level is different from the MTs level, as well as between MI and MA with a significance value of  $0.002 \leq \alpha$  which means that the value at MI and MA is also different. On the other hand, at the MTs and MA levels, which are almost the same with a significance value of  $0.539 \geq \alpha$ . The skill of internalization-interconnection of the Qur'an with science at each level of madrasah if analyzed from the data shows that the aspect of internalization-interconnection has the same level of development, which both aspects at the MI level differ from MTs and MA, but between MTs and The MA is the same; this indicates that the internalization-interconnection is different at each level, in particular, there is a significant change starting from the MTs level. The results obtained, can be explained more operationally also through the following classification of internalization-interconnection skill classification.

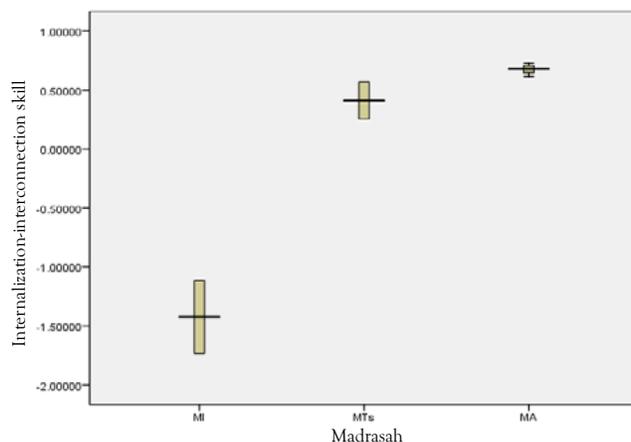


Figure 1. The skill to Internalize-interconnect the Qur'an at each Level

Based on Figure 1 can be seen the classification trend at each level, showing that the skill to internalize-interconnect students has a gradual increase in skill according to their level of the madrasah. The MI level is still in the curious level area at the initial level; there is an increase in scores in MTs and the highest in MA. From this trend, what is interesting is that there is a significant increase from the level of MI to MTs compared to the increase in MTs towards MA. This statement is supported by the absence of conflicting values between the levels of MI and MTs, making it practical that students' skills as a whole develop significantly. From the results of observations on the length of the histogram at each level shows that the internalization-interconnection skill has the longest histogram, that is at the MI level, so it can be said that the MI level distribution of internalization-interconnection skill varies more than other levels. When

comparing the length of the histogram at the level of MTs and MA, there is a difference, where the score of internalization-interconnecting skill is more varied at the level of MTs. It indicates that internalization-interconnection can be optimized since the MTs level.

The results of internalization-interconnecting skills in quantitative research are also more detailed from the perspective of how students answer questions; this is because the initial questions given are the same, making it easier to explore each participant's response. To be more detailed in diagnosing the skill of internalization-interconnection, then analyze each of the indicators, namely internalization indicators and interconnection indicators. First, it is research on the internalization or appreciation of the Qur'an with science. In this research, basic questions are asked about the process of human creation from a blood clot in QS Al Alaq verse 2 and in QS Al Mukminun verse 12 which explains that human beings were created from earth. From these two verses, the participant is asked to explain their understanding of internalization. The following will explain each participant's answer from different levels.

*MI A Student:* "So the man was created there are two, namely from soil and blood."

*MI B Student:* "I do not know."

*MTs A Student:* "Man created from the essence of the land is the Prophet Adam (peace be upon him) if a man is created from a blood clot it is human after him."

*MTs B student:* "If a human being by science without associating religion is a human being from a blood clot, he is a human being who is now because he is a human being from a fetus. If from the essence of the earth, it may be the first human being."

*MA A Student:* "Man was created from the essence of the land specifically for the Prophet Adam because the first man while the air was created from his ribs. A man was created from a blood clot that is human after Prophet Adam or human after him. "

*MA B Student:* "Man from that land Prophet Adam was created from the soil where the soil is taken from different types so that there is a difference in skin color. A man was created from a blood clot, and a man from the earth has its reasons but forgets. Man, if from that land we will be buried again in the ground and initially it is from a blood clot."

Students' answers at the MI level, indicate that students internalize through the conclusion process only, without giving an interpretation of the questions asked. It can be seen from the two premises presented by the researcher, where

the first premise explains the creation of a blood clot while the second premise is from the soil. Students directly take the syllogism that man was created of blood and soil, without associating it with other verses.<sup>29</sup> The pattern of adoption of a syllogism in the form of decisions from these presented statements shows that students' internalized understanding is still limited from what is known (concrete), regardless of factors outside the context of the question.<sup>30</sup> The answer is the most interesting answer of the other sample answers at the other MI level because at the other MI level only the answer is not known.

At the MTs level, students' answers are more developed, as they not only make conclusions from what information is asked but also connect with the initial knowledge, have the skill to compare and consider several factors according to the content of the question. It can be seen from the association of initial knowledge that explains the fetus with a blood clot. The term "fetus" is a special term that is only known if a person has studied the reproductive system from school. The skill to compare and consider factors outside the content of the question has also been demonstrated by explaining between the events of Adam's creation of the essence of the soil and the process of fetal development that begins with blood clots. From these answers, it is shown that the skill to internalize students at the MTs level is more developed than MI which can be shown from the pattern of answers that emphasize on not only concrete activities, but already leading to abstracts through comparative efforts, and considering multifactors.

From the statement of the participant at the MA level, the answer shows that the participant believes that man created from the earth is the Prophet Adam as while Eve Eve was created from the ribs of the Prophet Adam. While the human being created from a blood clot is a human being after the Prophet Adam and Siti Hawa. What makes this statement interesting is that participant can say that human beings are not only created from the ground and also from a blood clot, but there are also human beings created from the ribs of the Prophet Adam. From the above explanation, it is known that the participant can analyze the understanding of remembering the human creation described in the Qur'an. Another answer shows that the human being created from the soil is the Prophet Adam as and taken from different types of soil so that the color difference of human skin is created. Then man created from the soil has the meaning that man will later be returned to the earth when he has died and when human life

---

<sup>29</sup> Aldo Redho Syam, "Democratic Leadership and Decisions Making on Education in Islamic Perspective," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 18, no. 1 (2020): 33-47.

<sup>30</sup> Resmin Sihotang, "Hubungan Antara Komunikasi Dan Pengambilan Keputusan Dengan Kinerja Kepala Sekolah Dasar Negeri Di Wilayah Jakarta Timur," *Jurnal Manajemen Pendidikan* 3, no. 2 (May 2, 2012).

is created from a clot of blood. What makes this statement interesting because the participant is one of the reasons for the difference in skin color is because of the Prophet Adam as created from different types of soil. Also, the participant revealed the reason humans were created from the ground because humans will be returned to the soil. So that in this case, man can connect or relate the process of human creation and the return of man after death. From the above explanation shows that the participant can explore the explanation of soil and humans created from blood clots, through the pattern of analysis, which is shown from the answer of skin color and soil color.

In addition to internalization, research is also done on interconnecting or seeing the relationship of understanding of the Qur'an with science. In the study, questions were asked about the perspective of understanding multidisciplinary interconnection about the heart. The question given is about the relationship between the heart described in the Qur'an, which is associated with the multidisciplinary view of the heart with the psychological, physical, and spiritual review. The following will explain each participant's answer from different levels.

*MI A student: "do not know."*

*MI A student: "do not know."*

*MTs A student: "The heart psychologically affects stress, stress, fear of failure. The heart in the physical sense is exhaustion or self-imposed. If the heart is spiritual, the heart of the believer beats healthier and calmer, the infidel's heart beats black or bad, and the hypocrite is hard-hearted."*

*MTs B students: "The heart in the sense of the psychologist is affected by what it feels, for example, nervous then the heart rate will be as fast as when exercising. The heart is physically the site of the circulatory system. Then the heart spiritually is the heart of believers, infidels and hypocrites. The heart of the unbeliever does not believe in God if the heart of the believer glorifies indirectly, it is never explained that all the organs of the body; all the plants glorify God. While the heart of the hypocrite denies."*

*MA A student: "The heart in the sense of the psychologist is affected by what it feels, for example, nervous then the heart rate will be as fast as when exercising. The heart is physically the site of the circulatory system. Then the heart spiritually is the heart of believers, infidels and hypocrites. The heart of the unbeliever does not believe in God if the heart of the believer glorifies indirectly, it is never explained that all the organs of the body;*

*all the plants glorify God. While the heart of the hypocrite denies.”*

*MA B student: “The heart in the sense of psychological affects our mental, for example, when fear or nervous is different. The heart is physically the circulatory system for circulating blood. Spiritually, the heart of the believer is good, do many good deeds and believe so that the blood brought is clean because the food is also halal. The heart of the infidel is because the food eaten is forbidden, so the blood that flows is dirty so that his heart is difficult to accept the command of God.”*

From some of these answers, the MI level, in general, has not understood the interconnection, which can be seen from not being able to answer the given questions. It may be due to the learning at the basic level, thematic where the learning is integrated between disciplines, not separately so that it is possible if they do not know much about the differences between the fields of science that ultimately have implications for how to answer them. Meanwhile, at the MTs level, students have begun to be introduced to a variety of subjects with different reviews, so they are more able to answer with different perspectives than MI students.

At the MTs level, students' answers about the heart have diversity. Psychologically the heart affects stress, fear of failure and stress. While physically, the heart is tired or self-imposed. The spiritual heart is the heart of the believer will be healthier and calmer, the heart of the unbeliever will be black or bad, and the heart of the hypocrite will be hard. What makes this statement unique when participant conveys the meaning of the heart psychologically is the presence of pressure that affects the heartbeat, according to the previously stated statement, although the heart in the physical and spiritual sense is still not appropriate.

Students' answers at other MTs levels show that the heart in the sense of a psychologist is affected by what is felt so that the heartbeat will be faster. The heart is physically used as a circulatory system. The heart of the believer always glorifies Allah SWT, and even the plants glorify Him. The heart of the unbeliever does not believe in Allah SWT, while the hypocrite's heart disbelieves in command of Allah SWT. What makes this statement interesting are because the participant conveys the message that all the organs of the body and even all living beings glorify Allah SWT, then the hearts of infidels and hypocrites are described as the hearts of people who do not believe and disobey Allah SWT. From the above explanation shows that the participant can describe the condition of the heart of the believer who always praises Allah SWT is different from the heart of the infidels and hypocrites. So that participant can explain

natural events in the body scientifically. In general, the answers of these MTs students show an understanding of interconnection that is appropriate to their respective fields of study, but in interpreting the meaning of the heart physically and spiritually, some meanings do not fit the theory.

Students' answers at the MA level show that the heart in the sense of a psychological affects the mental such as fear or nervousness. The heart in the physical sense is to circulate blood. The heart of a believer is described as having a good heart condition, doing many good deeds, believing, and eating halal food so that the flowing blood will bring clean blood in the body. However, the heart of the unbeliever is described as a state of turning with the believer. What makes this statement interesting is that the hearts of believers and infidels are likened to a heart that carries clean blood and dirty blood in accordance with the food eaten so that the food essence will be carried by the blood and flow throughout the body. From the above explanation shows that the participant is able to connect the heart condition of believers and infidels quite interestingly. The parable of the heart of the unbeliever and the believer is connected with the food eaten and will later be carried by the blood so that it will affect the heart of the believer and the heart of the unbeliever in carrying out God's command.

Another statement also presented by participant VII.

*"The Qur'an was revealed to man as a miracle, then" dam "or blood is one of the human origins of a blood clot, so the blood is in the process of meeting human beings and then the Qur'an was revealed to mankind so that they are interconnected."*

From the participant's statement, it shows that the Qur'an is a miracle while "dam" or one of the human origins of a blood clot. So the blood is in the process of meeting human beings, and then the Qur'an was revealed to humankind so that it is interconnected. The thing that makes this statement interesting is that because the Qur'an and blood are a related thing. However, the participant has not explained in detail the relationship between the Qur'an and blood. From the above explanation shows that the participant can appreciate the values of science in the Qur'an and connect the Arabic word phrases meaning blood words in the Qur'an and combine them with the questions presented even though they have not been presented clearly and in detail. Students' answers at the MA level show a more advanced level of interconnection than at the MTs level, where students at this level of MTs have been able to provide statement attributes in each of their interpretation activities in support of previous statements so that this level can be said to have more systematic and exploratory interconnecting skills.

## Discussion

The ability to internalize-interconnect the Qur'an with science material in the madrasah shows that students at various levels have a good skill in living and connecting science material with the value of the Qur'an. One of the reasons is that the capital of religious knowledge given in madrasah is more complex than in public schools, without reducing the quantity of public education itself in madrasah. It is in accordance with the epistemology of Islamic education itself, which is inseparable from the study of *theoanthropocentris*, the appreciation of empirical and sensory truth, logical, ethical and metaphysical.<sup>31</sup> From this epistemology, it can be said that the uniqueness of education in madrasah is a more approach *theoanthropocentris* that builds the concept of education centred on the divine and humanitarian approach.

Students at all levels of madrasah have memorized and understood the contents of QS Al Alaq verses 1-5, which is the first verse revealed by Allah SWT during research. When asked the value question contained in verse, most students answered the value content about the importance of human beings to read and learn. The answer indicates that students in the madrasah from the most basic level in MI already have an internalized view that comes from the Divine signal. Also, when asked questions to mention verses and letters that explain the concept of science which is blood, almost all students answered in QS Al Alaq. The skill to connect between the concept of blood and the verses of the Qur'an shows that in addition to internalization, students also understand interconnection. The basic skill of the internalization-interconnection found indicates that the approach *theoanthropocentris* has been well implemented in the madrasah, even starting at the earliest level of MI. Approach *According Buseri theoanthropocentris applied to*, the throughout the madrasah level proves that an education in the madrasah can instil divine signals sourced from the Qur'an and Sunnah in every idea/view/norm/value/ethics associated with human beings as caliphs.<sup>32</sup>

The development of the skill of internalization-interconnection of the Qur'an with science occurs gradually at each level, in particular, there is a significant increase from the level of MI to MTs compared to the increase in MTs to MA. This statement is supported by the absence of conflicting values between the levels of MI and MTs. In addition to the variety of the answers, it shows that the level of MTs diversity of answers is more, meaning that at the level of MTs students tend to be more expressive and bold in expressing ideas than they already know.

---

<sup>31</sup> Amin Abdullah, "Religion, Science and Culture: An Integrated, Interconnected Paradigm of Science."

<sup>32</sup> Kamrani Buseri, *Dasar, Asas Dan Prinsip Pendidikan Islam* (Banjarmasin: IAIN Antasari, 2014).

At the MTs level or precisely the age of 12 to 15 years cognitively the child begins to enter the formal operational stage, which is to enter the stage of abstract and logical thinking by developing thinking *hipothetico deduktive-inductive* or mindset that can interpret and analyze things in combination.<sup>33</sup> Besides effectively enter into mental maturity, where his views and thoughts about the surrounding environment have developed.<sup>34</sup> At the age of MTs, students have learned about religion and society that can be compared to the experiences they have had. It can be said that the age of MTs that is between 12 to 15 years is the golden age for optimizing the cultivation of internalization-interconnection skills, but it should also be supported by the synergy and optimization of the approach of integration between the sciences in the curriculum at the MTs level.

In the first indicator that is the internalization or appreciation of values shows that students from the level of MTs and MA can appreciate the values of science in the Qur'an and vice versa, while at the level of MI students are still not able to appreciate and find the value of science in the Qur'an. It may be influenced by factors in the environment as well as self and family that affect the skill to appreciate the values of science in the Qur'an. The skill of students in the internalization of science with the Qur'an at each level is obtained as a result of that at the MI level, the level of appreciation or cultivation of the value of the Qur'an the tendency of new students to know the science material that is separate from the Qur'an. Meanwhile, at the MTs level, students have begun to know and understand the existence of science material contained in the Qur'an and can imitate the attitude in accordance with the discovery of science values in the Qur'an. Meanwhile, at the MA level, students are already at the level *organizing* where students can instil science values in the Qur'an to imitate and even invite others to instil science values contained in the Qur'an as instructions for forming characteristic of spiritual attitude as well as scientific attitude in himself. Habits are a practical way of forming a particular habit or behavior for a child.<sup>35</sup> And according to its characteristics, the more accurate internalization of values is with familiarity and example because the child learns by seeing, hearing and imitating.

In the indicator of interconnection or connecting science material with the Qur'an, students are able. Still, the scores obtained from various levels show the lowest score at the MI level. In contrast, the level of MTs is quite

---

<sup>33</sup> M. Fadiana et al., "Assessment of Seventh Grade Students' Capacity of Logical Thinking," *Jurnal Pendidikan IPA Indonesia* 8, no. 1 (2019): 75–80.

<sup>34</sup> Robert E Slavin, *Educational Psychology: Theory and Practice* (Boston: Allyn and Bacon, 2019)

<sup>35</sup> Eka Sapti Cahyaningrum, Sudaryanti Sudaryanti, and Nurtanio Agus Purwanto, "Pengembangan Nilai-Nilai Karakter Anak Usia Dini Melalui Pembiasaan Dan Keteladanan," *Jurnal Pendidikan Anak* 6, no. 2 (2017): 203–13.

good in understanding the relationship of science material with the Qur'an. At the MA level, students are capable of connecting science material with the Qur'an. It can be influenced by environmental conditions that should support the process of understanding in relating a field of science to other sciences. In the understanding of the interconnection of science material with the Qur'an, students at each level have different understandings. At the MI level, the understanding of the relevance of science material in the Qur'an still tends to be in the textual dimension that is just knowing what is in the text presented in the science in the Qur'an that is closely related to the content of the text as a whole. The understanding of the interconnection of science material with the Qur'an is in the contextual dimension at the level of MTs, which can understand the meaning closely related to science material in the Qur'an as expressed by students in QS Al Maidah related to blood donation. At the MTs level, students have been able to elaborate on understanding the Qur'an with the students' initial experience. By contextual elaboration of students' initial experiences, it shows that students have made effective contextual learning connections.

Meanwhile, at the MA level, the level of understanding of science material in the Qur'an is already in a structured contextual dimension where students can classify the relationship between science and other lessons and policies in the Qur'anic verses that are interrelated each other as presented by students in accordance with students' expressions about halal food and haram food reviewed from the science of Biology namely on the digestive system, Chemistry on addictive substances, and the science of Fiqh that is halal food and haram food. In the textual dimension, the practice of interpretation is more oriented to the text in itself. The textual approach tends to use analysis that moves from reflection/text to practice/context that focuses on the grammatical/textual discussion. While the contextuality of a text is more seen as the position of an internal discourse or intra-text. Context is the situation in which an event occurs or the situation that accompanies the emergence of the text, while contextual means related to a particular context.<sup>36</sup>

From the discussion that has been presented, it can be said that each level of madrasah at different levels of age has different internalization-interconnecting skills. These differences can be caused by the presence of internal and external factors that affect. Internal factors can occur due to differences in motivation and cognitive and affective development of each student due to age differences, while external factors can occur due to differences in environmental conditions, both families, school and community. Diagnosing the skill of Internalization-

---

<sup>36</sup> M Solahudin, "Pendekatan Tekstual Dan Kontekstual Dalam Penafsiran Alquran," *Al-Bayan: Jurnal Studi Ilmu Al- Qur'an Dan Tafsir* 1, no. 2 (2016): 115-30, <https://doi.org/10.15575/al-bayan.v1i2.1596>.

Interconnection of science materials with Qur'anic values that have been discussed in the above exposure can be an important asset in the world of education, especially in science education in madrasah. With this diagnosis, it can be a guide for teachers in managing effective learning to suit the characteristics of students at the level of the madrasah.

Policy implications can be done by adjusting learning strategies to the characteristics of students' internalization-interconnecting skills at each level, as well as learning more directed at the love of the Qur'an. There are many values of the Qur'an that can be emphasized when teaching and learning science in the classroom to create a sense of love for the Qur'an in them. Love for the Qur'an can be manifested through the cultivation and appreciation of the verses of the Qur'an that command man to think and appreciate most of the signs of His greatness and majesty through the creation of heaven and earth, as well as natural phenomena and events that happened.<sup>37</sup> Technically, that can be developed in learning by integrating the content of the Qur'anic verses that are relevant or appropriate to a particular topic of discussion in science learning.<sup>38</sup> The integration of the content will be able to stimulate students' curiosity about the verses of the Qur'an and encourage students to reveal and find the meaning of the verse explanation according to the topic of scientific discussion.

## CONCLUSION

The results of the diagnosis of the internalization-interconnecting skill of the Qur'an with science as a whole show that the concept of education centred on the divine and humanitarian approach (*theoanthropocentris*) has been implemented quite good in a madrasah, even from the earliest level of MI. The development of Qur'anic internalization-interconnection skill with science occurs gradually at each level, in particular, there is a significant increase is from the level of MI to MTs, so from this identification, it can be stated that the MTs level is the golden age for optimizing interconnection skill.

The profile of the skill to internalize the Qur'an is obtained as a result of that at the MI level, the level of new students know science material separate from the Qur'an (*knowing*). At the MTs level, students have begun to know and understand the existence of science material contained in the Qur'an and can imitate the attitude in accordance with the discovery of science values in the Qur'an (*responding*). At the MA level, students can instil science values in the Qur'an to imitate and even invite others to instil science values contained in

---

<sup>37</sup> Muspiroh, "Integrasi Nilai-Nilai Islam Dalam Pembelajaran IPA Di Sekolah."

<sup>38</sup> Jaakko Turkka, Outi Haatainen, and Maija Aksela, "Integrating Art into Science Education: A Survey of Science Teachers' Practices," *International Journal of Science Education* 39, no. 10 (2017): 1403-19.

the Qur'an (*organizing*). While the profile of the Qur'anic interconnecting skill at the MI level, the understanding of the interconnection of science material in the Qur'an still tends to the dimension of knowing what is in the text (*textual*). At the MTs level, it can contextualize the students' initial experiences (*effective contextual*). Meanwhile, at the MA level, the level of understanding of science material in the Qur'an in the student dimension is already able to classify the relationship of science with other lessons as well as with Qur'anic verses that are interrelated with each other (*structured contextual*).

## REFERENCES

- Ahmadi, A, B Basuki, and E Irawan. "The Internalization of Attitude and Values: Comparison Study in PTKIN and PTKIS." *Cendekia: Jurnal ...* 18, no. 1 (2020): 17-32.
- Akerson, Valarie L., Khemmawadee Pongsanon, Ingrid S. Weiland, and Vanashri Nargund-Jo shi. "Developing a Professional Identity as an Elementary Teacher of Nature of Science: A Self-Study of Becoming an Elementary Teacher." *International Journal of Science Education* 36, no. 12 (2014): 2055-82.
- Amin Abdullah, M. "Religion, Science and Culture: An Integrated, Interconnected Paradigm of Science." *Al-Jami'ah* 52, no. 1 (2014): 175-203. <https://doi.org/10.14421/ajis.2014.521.175-203>.
- Annur, Fauzi. *Integrasi-Interkoneksi Sains Dan Agama Pemikiran Agus Purwanto Dan Implikasinya Terhadap Pendidikan Agama Islam*. Salatiga: IAIN Salatiga, 2017.
- Arends, Richard. *Learning to Teach. Connect, Learn, Succeed CN - LB1025.3 .A74 2012*. 9th ed. Dubuque, Iowa: McGraw-Hill, 2012.
- Bamberger, Michael. *Integrating Quantitative and Qualitative Research: Lessons from the Field Directions in Development*. World Bank, 2000.
- Buseri, Kamrani. *Dasar, Asas Dan Prinsip Pendidikan Islam*. Banjarmasin: IAIN Antasari, 2014.
- Cahyaningrum, Eka Sapti, Sudaryanti Sudaryanti, and Nurtanio Agus Purwanto. "Pengembangan Nilai-Nilai Karakter Anak Usia Dini Melalui Pembiasaan Dan Keteladanan." *Jurnal Pendidikan Anak* 6, no. 2 (2017): 203-13.
- Fadiana, M., S. M. Amin, A. Lukito, A. Wardhono, and S. Aishah. "Assessment of Seventh Grade Students' Capacity of Logical Thinking." *Jurnal Pendidikan IPA Indonesia* 8, no. 1 (2019): 75-80.
- Fadly, W., and P. Rochmahwati. "Kaunyah Verse-Based Science Learning: Reconstruction of the 21st Century Science Learning Program." *Journal of Physics: Conference Series* 1567, no. 4 (2020).

- Fadly, Wirawan. "Optimalisasi Kemampuan Pedagogik Calon Guru IPA Melalui Program Perkuliahan Pimak (Pembelajaran IPA Muatan Ayat Kaunyah)." *Kodifikasi: Jurnal Penelitian Islam* 12, no. 2 (2018): 289-306.
- Ikhwan, Afiful. "Development of Educational Resources." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 18, no. 1 (2020): 1-16.
- Jack R. Fraenkel, Norman E Wallen. *How To Design And Evaluate Research In Education 8th Ed*, 2012.
- Mubin, Fatkhul. "Pemikiran Filosofis Dan Teori Kontemporer Tentang Pendidikan" 1 (2020): 1-17. <https://doi.org/10.31219/osf.io/3e2pa>.
- Muhadjir. *Ilmu Pendidikan Dan Perubahan Sosial*. Yogyakarta: Rake, 2000.
- Murtono. "Pendidikan Sains Dalam Al-Qur'an." *Jurnal Pendidikan Agama Islam* II, no. 02 (2005): 163-74.
- Muspiroh, Novianti. "Integrasi Nilai-Nilai Islam Dalam Pembelajaran IPA Di Sekolah." *Jurnal Pendidikan Islam* 28, no. 3 (2013): 168-88.
- Purwanto, Agus. *Ayat-Ayat Semesta: Sisi Al-Qur'an Yang Terlupakan*. Bandung: Mizan, 2008.
- Puspitasari, Fantika. "The Integration-Interconnection Discourse of Islamic Education and Science in Indonesia." *Tarbawi: Jurnal Pendidikan Islam* 2, no. 8 (2020): 153-62.
- Rijal, Fakhrul, Tasnim Idris, and Darmiah Darmiah. "Internalisasi Nilai-Nilai Multikulturalisme Dalam Pembelajaran PAI Di Sekolah Dasar." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 17, no. 1 (2019): 99.
- Saputro, B, K M Marjuni, A Kuswaya, H Saputra, and W Fadly. "Developing Stages for the Scientific Cues Concept in the Integrated Science-Tafseer Learning Model." *Jurnal Pendidikan IPA Indonesia* 8, no. 1 (2019): 63-74.
- Sihotang, Resmin. "Hubungan Antara Komunikasi Dan Pengambilan Keputusan Dengan Kinerja Kepala Sekolah Dasar Negeri Di Wilayah Jakarta Timur." *Jurnal Manajemen Pendidikan* 3, no. 2 (May 2, 2012).
- Slavin, Robert E. *Educational Psychology: Theory and Practice*. Boston: Allyn and Bacon, 2019.

- Solahudin, M. "Pendekatan Tekstual Dan Kontekstual Dalam Penafsiran Alquran." *Al-Bayan: Jurnal Studi Ilmu Al- Qur'an Dan Tafsir* 1, no. 2 (2016): 115-30.
- Suharto, Toto. "The Paradigm of Theo-Anthropo-Cosmocentrism: Reposition of the Cluster of Non-Islamic Studies in Indonesian State Islamic Universities." *Walisongo: Jurnal Penelitian Sosial Keagamaan* 23, no. 2 (2015): 251.
- Sunarko, Asep. "Iptek Dalam Perspektif Al- Qur'an." *Manarul Qur'an* 14, no. 1 (2015): 1-14.
- Syam, Aldo Redho. "Democratic Leadership and Decisions Making on Education in Islamic Perspective." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 18, no. 1 (2020): 33-47.
- Turkka, Jaakko, Outi Haatainen, and Maija Aksela. "Integrating Art into Science Education: A Survey of Science Teachers' Practices." *International Journal of Science Education* 39, no. 10 (2017): 1403-19.
- Vitale, Jonathan M., Elizabeth McBride, and Marcia C. Linn. "Distinguishing Complex Ideas about Climate Change: Knowledge Integration vs Specific Guidance." *International Journal of Science Education* 38, no. 9 (2016): 1548-69.
- Weible, Jennifer L., and Heather Toomey Zimmerman. "Science Curiosity in Learning Environments: Developing an Attitudinal Scale for Research in Schools, Homes, Museums, and the Community." *International Journal of Science Education* 38, no. 8 (2016): 1235-55.