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# AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY, CENTRAL JAVA, INDONESIA

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#### **ABSTRACT**

The discourse on the integration of science and Islam is being realized in the establishment of various Islamic religious universities in Indonesia. One of the Islamic Universities that accommodates this discourse is the Al-Qur'an Science University, Central Java, Indonesia (UNSIQ). This study aims to examine the the basic concept of scientific integration at UNSIQ and critically analyze the academic tradition and research development patterns based on the Lakatos research development pattern. This research shows that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture in the frame al-Qur'an based academic knowledge. However, researches as auxiliary hypotheses in building scientific paradigm are still limited in certain disciplines and need to be improved. This needs to be a common concern in order to increase the scientific base of the *syajarah al-Qur'an* into a solid scientific paradigm.

**Contribution:** This research figured out that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture, but this scientific base needs to be supported by research plan and researches in various disciplines. Thus, those researches become the auxiliary hypotheses to build a particular scientific paradigm of this university.

Keywords: scientific integration; philosophy of science; Lakatos; Islamic University; UNSIQ Wonosobo

#### INTRODUCTION

The discourse on the integration of science and religion has become the concern of many Islamic thinkers and universities in Indonesia recently. Syed Naquib al-Attas, Isma'il Raji al-Faruqi, and Ziauddin Sardar are three prominent Islamic thinkers who are widely used as references in the pattern of integration of Islam and science in universities in Indonesia (Mas'ud, Fuad, and Zaini 2019; Mufid 2014). Al-Faruqi coined the concept of Islamization of knowledge by going through 5 stages, those are 1) mastering modern scientific disciplines; 2) master the basic knowledge of Islam; 3) determine the specific relevance of Islam according to the field of knowledge; 4) find ways of creative synthesis; and 5) directing Islamic thought on a path that leads to the fulfillment of Allah's design pattern (Al-Faruqi 1982). The two main ideas are the integration of the two educational systems and instilling the vision of Islam within the disciplines (Inayah 2020).

The same thing was expressed by al-Attas, who stated that the Islamization of science must go through two interrelated processes. The two processes are isolating the key concepts that emerged from Western civilization (dewesternization) and incorporating the key elements and concepts of Islam into every branch of science (Wan Daud 1998, 2013). The output of these two models is Islamic science (al-Ma'rifah al-Islamiyyah) (Haris 2010). The difference between the two concepts lies only from the background of the urgency of an Islamization, al-Attas views it from external factors, namely Western civilization, while al-Farugi views it from internal factors (Soleh 2017). As for Ziauddin Sardar, there are differences with the two mentioned concepts. Sardar criticized al-Faruqi's model Islamization of science and provided a solution that the Islamization of science must depart from building an Islamic epistemology. This is in order to create a contemporary Islamic science as a counter to modern Western science (Soleh 2017).

However, the theory of integration of science and religion above is not absolutely practiced in Islamic universities in Indonesia. The majority of Islamic universities in Indonesia have initiated the concept of integrating various sciences, such as using the spider web metaphor, tree of knowledge, cart wheel, twintowers, and so on (Muslih 2017; Nata 2019). The whole model aimed at eliminating the dichotomy between the religious sciences and the general sciences (U. Hanifah 2018). This discourse is often carried out in Islamic universities in Indonesia. The transformation of Islamic Higher Institutions (IAIN) into Islamic University (UIN) is also inseparable from this discourse with their respective trademarks and various implementations (Muslih 2017). According to al-Attas. university (kulliyyah/jami'ah) is a concrete implementation of the basic concepts of Islam, from which the key elements of Islam are incorporated into every sciences(Al-Attas 1993; Wan Daud 2013). Therefore, Islamic universities in Indonesia play an important role in determining the success of this scientific discourse which gave birth to a new scientific cluster based on a comparative-critical social scientific paradigm called "Dirasat Islamiyyah" (Abdullah 2014, 2017).

The important thing in this focus is, as mentioned by Sudarto (Sudarto 2020), the Islamization of Science has become a necessity for current Islamic education, including higher education, to break away from the hegemony of the worldview of Western civilization. Nata (Nata 2019) revealed that various models of the integration approach of Islamic science and religion in universities in Indonesia still stop at the theoretical aspects and the practical aspects of their operations have not been seen clearly. In addition, there are also parties who integrate knowledge by means of re-actualization, reinterpretation, reformulation, contextualization, and transformation without laying down the methodological framework and approach.

This study aims to examine the implementation of scientific integration between science and the Qur'an which was carried out by the Al-Qur'an Science University in Central Java Indonesia (hereinafter abbreviated as UNSIQ). This university has launched a vision to become a transformative, humanist, and Qur'anic university by placing the Qur'an as a scientific basis and a foundation for thinking in analyzing various sciences (Administrator n.d.). In analyzing it, this research uses the perspective of the Lakatos' research methodology.

#### RESEARCH METHOD

This research is qualitative research with philosophy of sciences perspective, especially research program methodology. According to Lakatos, this perspective is a methodological structure that guides the development of future research and has several methodological rules called "heuristics". Heuristics are conceptual frameworks that are a consequence of scientific language. In the research program, there are at least 3 elements in it, which contains of: first, "hard-core"; second, "protective-belt" which consists of auxiliary hypotheses (supporting hypotheses), and third, "a series theory", namely linking theory in which a theory is the result of a development or auxiliary clause. from a pre-existing theory (Lakatos 1970; Muslih 2017, 2020). Based on this view, it is necessary to examine the three elements in the existing research program at UNSIQ through the results of lecturer research which published online between 2015-2020 in online journals. These various studies should act as supporting hypotheses that form a protective circle for the hard-core promoted by UNSIQ, namely the development of science and technology based on the Qur'an.

# THE SYAJARAH AL-QUR'AN PARADIGM AS THE SCIENTIFIC BASE OF UNSIQ WONOSOBO

The discourse of scientific integration has become a focus in the development of educational institutions in Indonesia in the last two decades (Mas'ud, Fuad, and Zaini 2019). The change of several Islamic Higher Institution into Islamic University also carries the same spirit. Each university carries a model scientific integration with its own characteristics. Sunan Kalijaga State Islamic University of Yogyakarta uses the integrationinterconnection paradigm (Abdullah 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (U. Hanifah 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al. 2016), and Sultan Maulana Hasanuddin State Islamic University Banten also uses the integrationcomparative-diffusion paradigm (Muzhiat and Kartanegara 2020). The University of Science al-Qur'an (UNSIQ) Central Java, is no exception. The university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a Transformative, Humanist, and Qur'ani University (Administrator n.d.).

The scientific building at UNSIQ Wonosobo is built on the concept of *syajarah al-Qur'an* or a scientific tree based on the Qur'an (Sukawi 2016a). The Qur'an is placed as the basis for the entire scientific structure at UNSIQ. This scientific tree is the embodiment of QS 14: 24-25, where a good tree has strong roots and is sourced from the Qur'an and Qur'anic spirituality (*al-ruh al-Qur'aniyah*) (Sukawi

2016a). This tree has branches that soar to the sky and have useful fruit. These branches and fruits are likened to other disciplines taught at this university.

Syajarah Al-Qur'an serves as a building model for assessment and development as well as orientation of academic and scientific cultural life in its various dimensions. The building was inspired by the tree concept as stated in the Qur'an 24: 35 (Sukawi 2020). From this verse, various concepts that have an important role in the development and sustainability of UNSIQ can be summarized. Some of these concepts are; first, UNSIQ is a form of transformation of the pearl of the *pesantren* (traditional Islamic boarding school in Indonesia) tradition which is referred to as a *pesantren* transformation model university. Second, the scientific development in its various dimensions as a whole and comprehensively that comes from all the power possessed by humans, namely the power of the senses, the power of reason, the power of imagination, the power of thought, and intuition. These various powers come from the same source, namely spirituality at the level of the al-fitrah and al-ruh dimensions. Third, the science developed is based on a harmonioussynergistic-integrative paradigm emphasizes neither east nor west (la syarqiyyah wa la gharbiyyah) so that it is free from the confines of secularization, desacralization, and scientific dichotomy. This is symbolized by the synergy of UNSIQ figures, Kyai Muntaha al-Hafidz as East figure and Kyai Abdurrahman Mas'ud and Kyai Zamakhsyari Dhofier as representatives of the West figures because of their educational experiences in Australia and America. The two mindsets do not overlap each other, but synergize the advantages of East and West in their visions and thoughts (Sukawi 2020).

In discussing the integration of science between the West and the East, this university takes the example of how the Ibn Sina and Ibn Rushd's works were adopted by Western civilization which is secular and has no spiritual foundation. This causes their adopted works to lose their spiritual essence. However, UNSIQ presents a solution based on the development of knowledge based on the Qur'anic spirituality which is harmonious-synergistic integrative. This is supported by epistemology of the syajarah al-Qur'an which can integrate it well, beautifully, harmoniously. The goals of Western science which are oriented to "to exchange the quality of human life" and Eastern science that are oriented to "to exchange the quality of human being" are harmonized and synergized into "to exchange the quality of human life and being" (Sukawi 2020).

The concept of syajarah al-Qur'an which is the scientific building of UNSIQ has several differences with similar concepts, for example the tree of knowledge which is a scientific paradigm at Maulana Malik Ibrahim State Islamic University of Malang. These differences can be seen from the basis of determination. historicity, symbolization, implementation, goals, performance, content, and keywords used. In performance and content, the syajarah al-Qur'an consists of three dimensions, namely roots, trees and stems, and fruit. The root dimension contains revelation (al-Our'an and Hadith), reason, and natural science which is integrated with 3 those spiritualities, are theocentric, anthropocentric, and comocentric. The three models spirituality connected are harmoniously, synergistically, and integratively in this university (Sukawi 2020).

The tree and stem dimensions contain language, history, and methodology. Language in this context is a response to the language of science, culture, and civilization (*lisan al-qoum*), which is always changing and developing according to space and time. Historically, what is meant here is that the dynamic process of developing science always considers 3 dimensions of time, the past, present, and future. All of them will be strengthened with the methodology as a scalpel in conducting exploration, testing, innovation, and revitalization (Sukawi 2016a, 2020).

The fruit that is expected from the tree of the Qur'an is oriented to the results of physical and spiritual efforts by adhering to the four pillars as stated in Qur'an 2:151. Psychologically, the tree will give birth to a person who is healthy, superior, and great so that he can become *khalifatullah* (vicegerent of Allah) on earth and become *khair al-bariyah* (the ideal man). Sociologically, the tree creates *khair al-ummah* (the ideal society). As for scientifically, it can give birth to scientific development through research, utilization, and discovery of new theories in accordance with each scientific discipline (Sukawi 2020).

Before discussing scientific integration, UNSIQ has established itself by integrating various systems within it. This integration can be seen from the integration of Islamic boarding schools and modern education. spiritual, development of emotional, intellectual potential, to skills between Western and Eastern traditions, the integration of Islam, the state, and the Indonesian wisdom, as well as the integration of the four main pillars, namely kyai (religious leaders), bureaucracy (umara'), entrepreneurs, and academics (Sejarah YPIIQ n.d.; Sukawi 2016b).

All of these integrations and collaborations are guided by the principles of the *pesantren* tradition. This principle includes three main principles. Firstly, *al-Muhafadhatu ala al-qadim al-salih wa al-akhdu bi al-jadid al-ashlah* which means guarding over old traditions that are still relevant and integrating them with new, better traditions (Asrohah 2011). Secondly, *tafaqquh fi al-din wa al-takhalluq bi al-akhlaqu al-karimah* which means deepening religious knowledge and having noble character. The third, *thalabu al-'ilmi faridhatun 'ala kulli muslimin wa muslimatin* which means studying is a *fardhu 'ain* obligation for all Muslims (Sukawi 2016a).

From the vision mentioned, one of the main missions carried out by UNSIQ is to transform the values of the Qur'an in life. The goal of education aimed at by UNSIQ is to produce human resources who are able to transform the values of the Qur'an creatively and innovatively in order to help provide solutions to the problems of people's lives. The research and service developed also focuses on integrating the values of the Qur'an and science to implement Islam rahmatan lil 'alamin (blessing for all creatures) (Administrator n.d.). This integration is intended to strengthen the scientific base ('ilmiyah) of the academic community in it with the basis of the 'natural' character of the Qur'an as a solution to the dichotomy of general science and religion after the golden age of Islam (Hamzah 2018). In other words, the learning process at UNSIQ prioritizes a spiritual introduction based on the Qur'an to educate students to have a handle on life and in the learning process of other disciplines (Sakir 2016).

The main figure in this university is Kyai Muntaha Hafidz. He took the initiative to establish innovation and scientific development of the Our'an. One of his ideas was to establish a higher education institution with the characteristics of the Koran in Central Java. This idea was approved by the four main pillars of society, which contains of kyai with their pesantren, umara (government) with their bureaucracy, entrepreneurs (business industry) with their finances, and academics with their knowledge, and intellectuals (Firdausa 2019; Sukawi 2020). This was the initial idea of establishing the Institute of Our'anic Sciences (IIQ) in 1987. The initial aim was to serve as a place to preserve and disseminate the Qur'an through formal education (Sukawi 2020). Until 2016, UNSIQ had a vision to become a *Qur'any* University that produces superior graduates, virtuous, noble personality, knowledge, technology, and art by adhering to the values of the Qur'an (Hamzah et al. 2018). In its development, UNSIQ includes a vision in 2031 to become a transformative, humanist, and university (Administrator n.d.). This further confirms the goal of UNSIQ to create a generation that has a strong scientific base and character base from the values of the Qur'an.

In the organization of these various educational institutions, Kyai Muntaha Hafidz placed the Qur'an and *al-hadith* as his main view of life or worldview (Sari 2006). According to Smart, worldview are beliefs, feelings and things that are in people's minds that function as motors for social and moral sustainability and change (Smart 1983). This is in line with what Kyai Muntaha Hafidz did in issuing ideas, thoughts, and ideas. All of them are based on the worldview of the Qur'an and Hadith. According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology (Sari 2006).

This spiritual education is the main focus in the education pattern at UNSIQ. Spirituality is the most fundamental and most important thing in determining a person's life style. Frankl, as quoted by Sukawi (Sukawi 2016a), stated that humans as a whole consist of 3 dimensions, the physical dimension, psychological the dimension, and the spiritual dimension. This spirituality contains various human characteristics, such as the desire to seek meaning, orientation, intuition, creativity, faith, vision, even listening to conscience beyond the control of the super-ego (Sukawi 2016a). Talking about spirituality, actually talking about the most basic religious teachings, namely aqidah (faith). Aqidah makes humans understand their relationship with God, nature, and other humans. Belief in this form of agidah has creative, constructive, and positive power. On the other hand, the absence of faith gives birth to negative, sluggish, and destructive forces (Musawwi 2011; Sukawi 2016a).

As mentioned by Sukawi (Sukawi 2016a), that the happiness of a Muslim is when he is able to utilize his spiritual energy to solve problems, find solutions, and provide benefits in terms of absolute obedience and belief in the commands of Allah SWT. This attitude is a form of logical consequence of the recognition of the Almighty God and the powerlessness of creatures so that

they must depend on Him. This attitude is extracted from QS 112: 1-2 about the Oneness of Allah (tawhid) and His Almighty so that all creatures depend on Him. When one is immersed in this concept of servitude, one becomes a free entity and is free from any bondage of life. The only thing that makes him submissive and obedient is obedience to the Giver of life, namely Allah SWT. This independence and detachment that is in the corridor of obedience to Allah allows humans to explore their full potential in order to carry out their caliphate function on earth. Thus, humans will be more creative by using various kinds of knowledge they learn to carry out their duties and mandates on this earth (Sukawi 2016a).

This is where the spirituality understood by the UNSIQ academic community lies. spirituality that inspires and becomes the foundation in the establishment, management, and development of UNSIQ is qur'anic-based spirituality (al-ruh al-Qur'aniyah) which is harmonious-synergistic-integrative (Sukawi 2016a, 2020). This spirit comes from the views, mindset, attitudes, and behavior of KH. Muntaha al-Hafidz as the central figure in the founding of UNSIO. Various educational institutions that were previously established reflect that qur'anic-based spirituality has become an identity in each of these educational institutions, not least in the realm of higher education.

spirituality has a substantive-UNSIO complementariness nature. Substantive means that all mindsets and views are based on the most basic teachings and concepts, namely the complementary means Qur'an. As for complementing and giving new colors to existing spirituality. This complementary form can be seen from the integration of Western and Eastern scientific traditions as well as the concept of *pesantren* and modern education (Sukawi 2016a, 2020). The principle of taking the new tradition and maintaining the old tradition becomes the guideline in these various integration processes so that it does not

eliminate the identity and tradition of Islamic boarding schools that have taken root at UNSIQ. The tradition Islamic boarding school which is a place for spiritual education makes all the activities of the academic community in it full of values to create human beings who have an Islamic and Qur'anic identity (Hamzah 2018; Sakir 2016).

From the explanation above, it can be concluded that the scientific basis for integrating modern science and the Qur'an has become the spirit in scientific development at UNSIQ. This can be seen from the learning outcomes that are carried out and the curriculum that supports it. The various learning achievements of graduates from all study programs and prescribed subjects make the vision of scientific integration a common awareness of the academic community at UNSIQ.

# A CRITICAL READING ON RESEARCH DEVELOPMENT PATTERN

As stated in the Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers, as professional educators, one of the main tasks of lecturers is to develop science, technology and art through education, research, and community service. These studies also play an important role in strengthening the scientific base at UNSIQ which uses the concept of "syajarah al-Qur'an". Several publications and research by UNSIQ lecturers have also begun to strengthen the scientific base. The first scientific publication entitled "The Concept of Gravity in the Perspective of the Qur'an and Science (Study of Surah al-Hajj verse 65)" written by Muchotob Hamzah and Badriyatul Muniroh who came from the Islamic Education Study Program and the Physics Education Study Program (Hamzah and Muniroh 2016). This study compared the theory of gravity in the perspective of physics with the views of the

Qur'an on the theory, especially those mentioned in Qur'an Surah al-Hajj verse 65. This study uses an analysis of the meaning and definition of gravity from a scientific perspective. Then analyzed the interpretation of the verse and its relation to the prevailing theory of gravity. The results of this study indicate that the Qur'an does not explain this concept in detail and only provides a global understanding. If physics learning in high school focuses on physical analysis, it needs to be equipped with spiritual meaning and wisdom behind these events.

A similar study entitled "Meteorology in the Perspective of the Qur'an and Modern Science" was written by Nurul Mubin in 2020 (Mubin 2020). Nurul Mubin is a lecturer in the Islamic Education Study Program, Faculty of Tarbiyah and Teacher Science. This research focused on meteorological studies which include wind, cloud, rain, and lightning phenomena. This study is dominated by the classification of verses related to the phenomena mentioned above and then the interpretation of these verses. The results of this study conclude that various modern scientific discoveries related to natural phenomena have been confirmed by the Our'an through its verses, both *qauliyah* (written words on Qur'an) and kauniyah (Allah's words that spread out the Qur'an) verses. This also shows evidence of the truth of the revelation of the Qur'an.

Both studies were strengthened by the research "Science and Technology in the Perspective of the Qur'an" by Asep Sunarko, a lecturer at the Arabic Language Education Study Program, Faculty of Tarbiyah and Teacher Science (Sunarko 2015). The research shows the sources of knowledge, ways of obtaining knowledge, as well as the evidence of knowledge in the Qur'an. This study concludes that the development of science must be in accordance with the guidelines of the Qur'an. If it is not, then it cannot provide benefits to humans, and can even cause harm. In addition, knowledge can not only be achieved with the human mind, but it is necessary to bring the

heart to believe and do *dhikr* (remembering Allah) and *dzauq* (spiritual feelings) to feel. The three studies above fall into the first category of research by UNSIQ lecturers which focuses on the study of modern scientific theory in the Our'an.

The second category of research by UNSIQ lecturers consists of several lecturers' scientific publications that focus on the application of modern science in studying the Qur'an and al-Hadith. One of them is a study entitled "Vector Analysis in the Prayer Movement on Health" conducted by Sri Jumini and Chakimatul Munawaroh from the Physics Education study program (Jumini and Munawaroh 2018). This study aimed to analyze the vector in the prayer movement as seen from the standing, takbiratul ihram, ruku', sujud up to salam. After being analyzed by vector analysis, the benefits of these various movements were sought from a health perspective. The results of this study indicate that all prayer movements in one raka'at have a number of angles of 3600 and have the same number as the tawaf movement. From a health point of view, all these movements if done properly and perfectly from standing up to greetings can provide benefits to the body.

A similar study entitled "Study of Thought and Backbiting for the Health of the Human Body (Teaching the Concept of Vibration and Waves)" conducted by Nelly Azizah from the Physics Education Study Program also falls into the same category (Azizah 2018). This study aims to show the lessons learned from the prohibition of backbiting and evil suspicion a health perspective, especially cardiovascular and mental health. This research shows that prejudice and backbiting can cause anxiety and stress that have an impact on physical and mental health. This anxiety can cause high blood pressure and an accelerated heart rate according to the concept of vibration in the body in physics. As for the concept of waves indicating heart disease that is not immediately resolved, causing the rupture of blood vessels and disrupting the circulatory system.

The next research is a study entitled "Early Determination of Fardhu Prayer Time with Circulation of the Sun" which was carried out by Ahmad Khoiri, a lecturer in Physics Education, Faculty of Tarbiyah and Teacher Sciences (Khoiri 2017). This research used the deductive method and the *tahlily* (analyzing) method, the deductive method is used to derive physical theories from the general to the more specific and the tahlily method is used to explain the related verses of the Our'an and reveal the meaning behind it. This study concluded that the determination of the beginning of prayer with the circulation of the sun is interconnected between modern science and the Qur'an. In fact, from this research, modern scientific knowledge, especially regarding the circulation of the sun can help a Muslim in determining the start of the fardhu prayer time.

Another research applied in community service activities entitled "Design of a Mobile Verifier for Sacrificial Animals Using a QR Code Based on the ZXING Library" (Baihaqy, Asnawi, and Fatimah 2020). This research was conducted by M. Alif Muwafi Baihagy, Muhammad Fuat Asnawi, and Siti Fatimah from the Informatics Management program and Informatics Engineering program. This research facilitated the process of buying and selling sacrificial animals and minimizing human error and has implications for losses suffered by consumers and traders. With this system, it can be detailed animal data and track records are based on android mobile.

The third category of research is research that focuses on the formation of the Qur'anic character. The first research entitled "The Growth of Islamic Character through Physics Learning based on Science-Islam Integration" was conducted by Ahmad Khoiri, Qori Agussuryani, and Hartini from the Physics Education Study Program (Khoiri, Agussuryani, and Hartini 2017). This study

applied physics learning to class IX students of al-Qur'an Vocational High School based on the integration of science and Islamic values and reflection on the results of the evaluation of learning. This study showed that learning based on Islamic-science integration can improve student learning outcomes, attitudes, and social attitudes. Moreover, the character values that are instilled during the learning process require students to have an Islamic character in the form of honesty.

The next research is a study entitled "Growing Scientific Attitudes Through Thematic Studies of Science QS al-Mu'minun verses 12-14 Using Journal Qur'an Techniques" conducted by Desy Putri Hanifah from the Madrasah Ibtidaiyah Teacher Education Study Program (D. P. Hanifah 2020). This research is the result of a reflection of science courses and the Qur'an in the 6th semester of the Islamic Elementary School Teacher Education study program. The verse that becomes the object of the research is the verse that explains the origin of human events. This study concluded that the technique of al-Qur'an journaling can be an alternative in studying the Qur'an thematically according to the branch of science. From the learning process there are several attitudes that are well stimulated, such as gratitude, obedience, faith, and so on as well as scientific attitudes such as honesty, confidence, skepticism, curiosity, and so on.

Another similar research is a study entitled "Internalization of Character Values in Learning 'Ilm al-Ashwat (Case Study Against Arabic Language Education Students UNSIQ Wonosobo)" conducted by Chairani Astina and Rifqi Aulia Rahman from Arabic Language Education Program (Astina and Rahman 2018). This study analyzed the character values contained in the 'ilm al-Ashwat (Arabic that phonology) course support achievement of the UNSIQ spirit, namely qur'ani, transformative, and humanist. This study concludes that the character values that are internalized to the student of first semester in Arabic Language Education program at UNSIQ are divided into 2 categories. *The first* is the character values implied in the learning methods such as self-confidence, responsibility, love of reading, respect for achievement, and curiosity. The next character values are further implied in the learning materials which include honest, disciplined, communicative, and religious attitudes.

From the explanation above, it can be concluded that the researches in the first category focuses on proving the facts of modern science in the Qur'an. This research model can be said to be a beginner research model because it only contains a definition of a concept from a scientific discipline and compares it with verses in the Qur'an which have close problems. In fact, not infrequently, because the Qur'an is global and not a book of science. This research model is in line with the thinking model of Harun Yahya and Maurice Bucaille, which is directly referred to by the majority of research in category one. This model aims to find the suitability of scientific findings with the verses in the Qur'an (Muslih 2017). In this case, when the Qur'an and science introduce the same issue, many parties conclude that the two can be brought together and even merged. In this phase, many commentators leave the realm of science and enter into scientific findings and methodologies. On the other hand, there are also scientists who bring their findings and methodologies to the area of the Qur'an and look for verses that justify these findings or those findings that strengthen the "truth" of the Qur'an (Muslih 2017). In fact, science is something that has the potential to be wrong and the Qur'an is an area where there is no doubt in it. From this, if the findings change due to other findings that have accumulated, then the verses of the Qur'an that support these findings are wrong and need to be corrected. In this first study, the majority of researchers came from Islamic scholarship or from the perspective of the Koran, namely from the study programs of Islamic Education and Arabic Language Education. although there were still

collaborative efforts with Physics Education lecturers.

The second category of research focuses on the application of modern science in studying the Qur'an and al-Hadith. This research model appears to be a continuation of the first category of research, and applies modern scientific theory in analyzing verses of the Qur'an or al-Hadith. Other forms of research show the application of modern science such as the science of the sun's circulation and the use of QR Codes in selecting sacrificial animals. This second research model is practical-applicable and allows modern science to run side by side without the need to compare theories in science to be confirmed by the verses of the Qur'an. This second model of research is mostly done by lecturers in Physics Education, Information Management, and Informatics Engineering study programs. Unlike the two previous research models, the third research focuses on the formation of the Qur'anic character from various disciplines taught, both in courses and high school subjects. This research model tries to reveal the Qur'anic character values contained in learning activities. This research model strengthens the Qur'anic spiritual base which is the spiritual basis at UNSIQ as enshrined in the example of Kyai Muntaha al-Hafidz. This research model is dominated by lecturers from the Faculty of Tarbiyah and Teacher Science.

From this analysis, the first research model can be categorized as basic research to stimulate communication and dialogue between the Qur'an and science. The second model research can be categorized into research that becomes auxiliary hypotheses in the encounter of science and the Qur'an. The third research model is also a supporting hypothesis for the formation of Qur'anic characters in the learning process that runs at UNSIQ. In addition, research with the theme of scientific integration is still limited to a few study programs. As the researchers found, the majority of themed research came from the Faculty of Tarbiyah and Teacher Science, especially the Physics Education study

program. As for other science faculties, such as faculty of technology and computer sciences, faculty of medical sciences, faculty of economy, faculty of language and literature, and faculty of communication and social-politics sciences, there is still a lack of research on the theme which indirectly supports the scientific base at UNSIQ.

On the other hand, these works have only appeared in the last 5 to 10 years. When compared with UNSIQ which has been established since 2001, the direction of research development and strengthening of the unique scientific base of UNSIQ is quite late. Two major seminars were also held in 2017 and 2018. The above studies also ranged from 2010 and above. Thus, this is a special concern for the development of UNSIQ in the future, especially in order to strengthen the scientific base so that it can become a scientific paradigm and animate all study programs in it. This is in line with the reflection of Mahfudz Junaedi, Dean of Faculty of Syariah and Law UNSIQ 2017-2021 who said that this university needed to sharpen the methodology in integrating modern science and the Qur'an systematically. According to him, the scientific base at UNSIQ needs to be reconstructed in order to lead to changes in the on-going process of an integrated curriculum that needs to be enriched with research that strengthens the scientific base at UNSIQ (Junaedi 2017).

#### **CONCLUSION**

From the beginning of its establishment and the name it carries, UNSIQ has prioritized the integration between modern science and the Qur'anic Science. This is inseparable from the historical side of the founder and also the needs of the people which indicate the existence of this scientific integration. Al-Qur'an is placed as the basis of character in the development of science and technology. However, in order for the scientific base to become a scientific paradigm, it must meet the requirements. From the author's observations, the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive

academic tradition and scientific culture. This is reflected in the achievements of graduates that have been declared and also the curriculum that has been set. However, researches which are auxiliary hypotheses have not been widely carried out by the academic community in it as the work of lecturers discussing this theme is still minimal. Existing research is also still limited in certain faculties and is not evenly distributed. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ.

#### Acknowledgements

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#### **Competing Interest**

The authors declare that they have no financial or personal relationship that may have inappropriately influenced them in writing this article

#### **Author's contribution**

M.M and Y.K.Y contributed to the implementation of the research and the writing of the manuscript. S.H. and A.A.M. contributed to the implementation of the research and the analysis of the results.

#### **Ethical Considerations**

This article followed all ethical standards for research without direct contact with human and animal subjects.

#### **Funding Information**

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#### **Data Availability**

Data sharing is not applicable to this article as no new data were created or analyzed in this study

#### Disclaimer

The views and opinions expressed in this article are those of the authors dan do not necessarily reflect the official policy or position of any affiliated agency of the author.

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2. Bukti Konfirmasi Desk Review (22 September 2023)

Fri, Sep 22, 2023 at 3:26 PM



## HTS Submission 9459 - Manuscript at Desk Review

1 message

aosis@hts.org.za <aosis@hts.org.za>

Reply-To: Ms Jessica Majiet <3ts.fpsupport@hts.org.za>

To: Mr Yahya <yuangga4@unida.gontor.ac.id>

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Ref. No.: 9459

Manuscript title: Al-Qur'an as a paradigm base for science integration at

the Al-Qur'an science university, Central Java, Indonesia Journal: HTS Teologiese Studies / Theological Studies

Dear Mohammad Muslih, Yuangga Yahya, Sri Haryanto, Aufa Musthofa

Thank you for working with our Editorial Office to ensure that we have a complete record of your manuscript and all submission's compulsory forms at HTS Teologiese Studies / Theological Studies.

All new manuscripts are presented to our Handling Editor for a preliminary Desk Review to assess whether the subject matter and general content are appropriate for this journal.

We have requested our Handling Editor to commence with this preliminary Desk Review in the upcoming week. We trust you will be receiving an outcome of this assessment before 2023-09-29.

If you do not receive the required feedback, we invite you to contact our Editorial Office to enquire the reason for the delay.

Thank you for your continued patience and support.

Kind regards, Ms Majiet AOSIS Pty Itd

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3. Bukti konfirmasi hasil review dan hasil review
(12 Januari 2024)



## HTS External Review Decision 9459 - Revisions required

1 message

aosis@hts.org.za <aosis@hts.org.za>

Fri, Jan 12, 2024 at 7:49 PM

Reply-To: Prof Eugene Baron <editorhts@gmail.com>

To: "Mr Yuangga K. Yahya" <yuangga4@unida.gontor.ac.id>

Cc: Mohammad Muslih <muslih@unida.gontor.ac.id>, Sri Haryanto <sriharyanto@unsiq.ac.id>, "Aufa A. Musthofa" <aufa@unida.gontor.ac.id>

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Ref. No.: 9459

Manuscript title: Al-Qur'an as a paradigm base for science integration at

the Al-Qur'an science university, Central Java, Indonesia Journal: HTS Teologiese Studies / Theological Studies

Dear Mr Yahya

We thank you for the submission of your manuscript. The peer review process of your manuscript has now been completed and we have reached a decision regarding your submission.

At present, your manuscript requires minor revisions to address the concerns of the reviewers. Their comments are attached to the email and/or to the bottom of this letter. If not, for your convenience log onto your profile to view the reviewers' comments.

Please include with your revised submission an itemised, point-by-point response to the reviewers which details the changes made. The revised manuscript should be submitted by 26-Jan-24; if you anticipate that you will be unable to meet this deadline, please notify the Editorial Office.

As a member of the Committee on Publication Ethics, we encourage your participation in assessing your Similarity Check Report in your journals' personalised manuscript section. Proceed to rewrite the paraphrased text or to introduce citations and acknowledgements as needed. Our assessment revealed:

The manuscript does not contain similarities concerns at this time.

Below my signature, you will find steps to resubmit your revised manuscript. If you need any assistance, kindly contact the Editorial Office at <a href="mailto:submissions@hts.org.za">submissions@hts.org.za</a> with any questions or concerns.

We look forward to receiving the revised manuscript.

Yours sincerely,

**Prof Baron** 

Department of Christian Spirituality, Church History and Missiology, University of South Africa

\*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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When the editor dealing with your submission chooses to ask for a revision, you will be notified by email. In the journal's personalised section your submission will move in the active table from the status 'In Review' to 'In Review: Revisions Required'.

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If references, tables, or figures are moved, added, or deleted during the revision process, renumber them to reflect such changes so that all tables, references (Vancouver Style) and figures are cited in numeric order. Images need only be uploaded if changes have been made to the figures since the previous version.

The annotated copy should have highlights on the changes (either by using the 'Track Changes' function in Word or by highlighting or underlining text) with comments in the text referring to the editor or reviewer query. Be sure when you upload your annotated version that the changes are clearly visible on the Word (.doc) file prior to resubmission.

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- 13. Summary of major findings and shortcomings?:
- 14. Major points that must be addressed?

15. Minor points or recommended revisions?  Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:				
Reviewer C:				
COMMENTS TO AUTHORS All comments you enter in this section will be provided verbatim to authors.				
13. Summary of major findings and shortcomings?: Review of article:				
AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY, CENTRAL JAVA, INDONESIA				
This article examines the implementation of scientific integration between science and the Qur'an which was carried out by the Al-Qur'an Science University in Central Java Indonesia (UNSIQ).				
The paradigm of "syajarah al-Qur'an" is employed. The idea is to strengthen the scientific base. A number of recent research projects by UNSIQ lecturers are evaluated. The central idea is that UNSIQ has prioritized the integration between modern science and the Qur'anic Science. Strenghts and weaknesses are pointed out in the conclusion.				
The study is important and relevant.  The author has a good understanding of the subject matter and is closely linked to the project being evaluated.  A number of other sources have been referred to.				
While the article does refer to the Islamization of knowledge projects of Faruqi and al-Attas what the article fails to show is to evaluate the Islamization of knowledge project undertaken by the Islamic University of Malaysia and Islamic University of Islamabad. This can then be compared to the UNSIQ experience. This will add value to the current article.				
14. Major points that must be addressed? Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:  Add a comparison with Islamic University of Malaysia and Islamabad				
15. Minor points or recommended revisions? Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:  Please revise language use at some places.				

Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:

### COMMENTS TO AUTHORS

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13. Summary of major findings and shortcomings?:

14. Major points that must be addressed?

Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:

15. Minor points or recommended revisions?

Please provide a numbered list to facilitate responses with the page and/or line numbers and detailed information on specific recommendations.:

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Peer Review Round 1 Manuscript ID 9459

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### **MANUSCRIPT TO REVIEW**

AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY, CENTRAL JAVA, INDONESIA

[information redacted to maintain the integrity of the review process]

The discourse on the integration of science and Islam is being realized in the establishment of various Islamic religious universities in Indonesia. One of the Islamic Universities that accommodates this discourse is the Al-Qur'an Science University, Central Java, Indonesia (UNSIQ). This study aims to examine the the basic concept of scientific integration at UNSIQ and critically analyze the academic tradition and research development patterns based on the Lakatos research development pattern. This research shows that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture in the frame al-Qur'an based academic knowledge. However, researches as auxiliary hypotheses in building scientific paradigm are still limited in certain disciplines and need to be improved. This needs to be a common concern in order to increase the scientific base of the *syajarah al-Qur'an* into a solid scientific paradigm.

 **Contribution:** This research figured out that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture, but this scientific base needs to be supported by research plan and researches in various disciplines. Thus, those researches become the auxiliary hypotheses to build a particular scientific paradigm of this university.

Keywords: scientific integration; philosophy of science; Lakatos; Islamic University; UNSIQ

Wonosobo

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#### INTRODUCTION

The discourse on the integration of science and religion has become the concern of many Islamic thinkers and universities in Indonesia recently. Syed Naquib al-Attas, Isma'il Raji al-Faruqi, and Ziauddin Sardar are three prominent Islamic thinkers who are widely used as references in the pattern of integration of Islam and science in universities in Indonesia (Mas'ud, Fuad, and Zaini 2019; Mufid 2014). Al-Faruqi coined the concept of Islamization of knowledge by going through 5 stages, those are 1) mastering modern scientific disciplines; 2) master the basic knowledge of Islam; 3) determine the specific relevance of Islam according to the field of knowledge; 4) find ways of creative synthesis; and 5) directing Islamic thought on a path that leads to the fulfillment of Allah's design pattern (Al-Faruqi 1982). The two main ideas are the integration of the two educational systems and instilling the vision of Islam within the disciplines (Inayah 2020).

The same thing was expressed by al-Attas, who stated that the Islamization of science must go through two interrelated processes. The two processes are isolating the key concepts that emerged from Western civilization (de-westernization) and incorporating the key elements and concepts of Islam into every branch of science (Wan Daud 1998, 2013). The output of these two models is Islamic science (*al-Ma'rifah al-Islamiyyah*) (Haris 2010). The difference between the two concepts lies only from the background of the urgency of an Islamization, al-Attas views it from external factors, namely Western civilization, while al-Faruqi views it from internal factors (Soleh 2017). As for Ziauddin Sardar, there are differences with the two mentioned concepts. Sardar criticized al-Faruqi's model of Islamization of science and provided a solution that the Islamization of science must depart from building an Islamic epistemology. This is in order to create a contemporary Islamic science as a counter to modern Western science (Soleh 2017).

However, the theory of integration of science and religion above is not absolutely practiced in Islamic universities in Indonesia. The majority of Islamic universities in Indonesia have initiated the concept of integrating various sciences, such as using the spider web metaphor, tree of knowledge, cart wheel, twin- towers, and so on (Muslih 2017; Nata 2019). The whole model aimed at eliminating the dichotomy between the religious sciences and the general sciences (U. Hanifah 2018). This discourse is often carried out in Islamic universities in

Commented [A2]: The introduction must be contextualized with research on the integration of Islam and science at several Islamic universities in Indonesia (especially UIN) based on research by Indonesian Muslim scholars.

Indonesia. The transformation of Islamic Higher Institutions (IAIN) into Islamic University (UIN) is also inseparable from this discourse with their respective trademarks and various implementations (Muslih 2017). According to al-Attas, university (*kulliyyah/jami'ah*) is a concrete implementation of the basic concepts of Islam, from which the key elements of Islam are incorporated into every sciences(Al-Attas 1993; Wan Daud 2013). Therefore, Islamic universities in Indonesia play an important role in determining the success of this scientific discourse which gave birth to a new scientific cluster based on a comparative-critical social scientific paradigm called "*Dirasat Islamiyyah*" (Abdullah 2014, 2017).

The important thing in this focus is, as mentioned by Sudarto (Sudarto 2020), the Islamization of Science has become a necessity for current Islamic education, including higher education, to break away from the hegemony of the worldview of Western civilization. Nata (Nata 2019) revealed that various models of the integration approach of Islamic science and religion in universities in Indonesia still stop at the theoretical aspects and the practical aspects of their operations have not been seen clearly. In addition, there are also parties who integrate knowledge by means of re-actualization, reinterpretation, reformulation, contextualization, and transformation without laying down the methodological framework and approach.

This study aims to examine the implementation of scientific integration between science and the Qur'an which was carried out by the Al-Qur'an Science University in Central Java Indonesia (hereinafter abbreviated as UNSIQ). This university has launched a vision to become a transformative, humanist, and Qur'anic university by placing the Qur'an as a scientific basis and a foundation for thinking in analyzing various sciences (Administrator n.d.). In analyzing it, this research uses the perspective of the Lakatos' research methodology.

#### RESEARCH METHOD

This research is qualitative research with philosophy of sciences perspective, especially research program methodology. According to Lakatos, this perspective is a methodological structure that guides the development of future research and has several methodological rules called "heuristics". Heuristics are conceptual frameworks that are a consequence of scientific language. In the research program, there are at least 3 elements in it, which contains of: *first*, "hard-core"; *second*, "protective-belt" which consists of auxiliary hypotheses (supporting

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hypotheses), and *third*, "a series theory", namely linking theory in which a theory is the result of a development or auxiliary clause. from a pre-existing theory (Lakatos 1970; Muslih 2017, 2020). Based on this view, it is necessary to examine the three elements in the existing research program at UNSIQ through the results of lecturer research which published online between 2015-2020 in online journals. These various studies should act as supporting hypotheses that form a protective circle for the hard-core promoted by UNSIQ, namely the development of science and technology based on the Qur'an.

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# THE $\mathit{SYAJARAH}$ $\mathit{AL\text{-}QUR'AN}$ PARADIGM AS THE SCIENTIFIC BASE OF UNSIQ WONOSOBO

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The discourse of scientific integration has become a focus in the development of educational institutions in Indonesia in the last two decades (Mas'ud, Fuad, and Zaini 2019). The change of several Islamic Higher Institution into Islamic University also carries the same spirit. Each university carries a model of scientific integration with its own characteristics. Sunan Kalijaga State Islamic University of Yogyakarta uses the integration-interconnection paradigm (Abdullah 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (U. Hanifah 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al. 2016), and Sultan Maulana Hasanuddin State Islamic University of Banten also uses the integration-comparative-diffusion paradigm (Muzhiat and Kartanegara 2020). The University of Science al-Qur'an (UNSIQ) Central Java, is no exception. The university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a Transformative, Humanist, and Qur'ani University (Administrator n.d.).

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The scientific building at UNSIQ Wonosobo is built on the concept of *syajarah al-Qur'an* or a scientific tree based on the Qur'an (Sukawi 2016a). The Qur'an is placed as the basis for the entire scientific structure at UNSIQ. This scientific tree is the embodiment of QS 14: 24-25, where a good tree has strong roots and is sourced from the Qur'an and Qur'anic spirituality (*al-*

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*ruh al-Qur'aniyah*) (Sukawi 2016a). This tree has branches that soar to the sky and have useful fruit. These branches and fruits are likened to other disciplines taught at this university.

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Syajarah Al-Qur'an serves as a building model for assessment and development as well as orientation of academic and scientific cultural life in its various dimensions. The building was inspired by the tree concept as stated in the Qur'an 24: 35 (Sukawi 2020). From this verse, various concepts that have an important role in the development and sustainability of UNSIQ can be summarized. Some of these concepts are; first, UNSIQ is a form of transformation of the pearl of the pesantren (traditional Islamic boarding school in Indonesia) tradition which is referred to as a pesantren transformation model university. Second, the scientific development in its various dimensions as a whole and comprehensively that comes from all the power possessed by humans, namely the power of the senses, the power of reason, the power of imagination, the power of thought, and intuition. These various powers come from the same source, namely spirituality at the level of the al-fitrah and al-ruh dimensions. Third, the science developed is based on a harmonious-synergistic-integrative paradigm that emphasizes neither east nor west (la syarqiyyah wa la gharbiyyah) so that it is free from the confines of secularization, desacralization, and scientific dichotomy. This is symbolized by the synergy of UNSIQ figures, Kyai Muntaha al-Hafidz as East figure and Kyai Abdurrahman Mas'ud and Kyai Zamakhsyari Dhofier as representatives of the West figures because of their educational experiences in Australia and America. The two mindsets do not overlap each other, but synergize the advantages of East and West in their visions and thoughts (Sukawi 2020).

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159 160 In discussing the integration of science between the West and the East, this university takes the example of how the Ibn Sina and Ibn Rushd's works were adopted by Western civilization which is secular and has no spiritual foundation. This causes their adopted works to lose their spiritual essence. However, UNSIQ presents a solution based on the development of knowledge based on the Qur'anic spirituality which is harmonious-synergistic and integrative. This is supported by the epistemology of the *syajarah al-Qur'an* which can integrate it well, beautifully, and harmoniously. The goals of Western science which are oriented to "to exchange the quality of human life" and Eastern science that are oriented to "to exchange the quality of human being" are harmonized and synergized into "to exchange the quality of human life and being" (Sukawi 2020).

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The concept of *syajarah al-Qur'an* which is the scientific building of UNSIQ has several differences with similar concepts, for example the tree of knowledge which is a scientific paradigm at Maulana Malik Ibrahim State Islamic University of Malang. These differences can be seen from the basis of determination, historicity, symbolization, implementation, goals, performance, content, and keywords used. In performance and content, the *syajarah al-Qur'an* consists of three dimensions, namely roots, trees and stems, and fruit. The root dimension contains revelation (al-Qur'an and Hadith), reason, and natural science which is integrated with 3 spiritualities, those are theocentric, anthropocentric, and comocentric. The three models of spirituality are connected harmoniously, synergistically, and integratively in this university (Sukawi 2020).

The tree and stem dimensions contain language, history, and methodology. Language in this context is a response to the language of science, culture, and civilization (*lisan al-qoum*), which is always changing and developing according to space and time. Historically, what is meant here is that the dynamic process of developing science always considers 3 dimensions of time, the past, present, and future. All of them will be strengthened with the methodology as a scalpel in conducting exploration, testing, innovation, and revitalization (Sukawi 2016a, 2020).

The fruit that is expected from the tree of the Qur'an is oriented to the results of physical and spiritual efforts by adhering to the four pillars as stated in Qur'an 2:151. Psychologically, the tree will give birth to a person who is healthy, superior, and great so that he can become *khalifatullah* (vicegerent of Allah) on earth and become *khair al-bariyah* (the ideal man). Sociologically, the tree creates *khair al-ummah* (the ideal society). As for scientifically, it can give birth to scientific development through research, utilization, and discovery of new theories in accordance with each scientific discipline (Sukawi 2020).

Before discussing scientific integration, UNSIQ has established itself by integrating various systems within it. This integration can be seen from the integration of Islamic boarding schools and modern education, the development of spiritual, emotional, intellectual potential, to skills between Western and Eastern traditions, the integration of Islam, the state, and the Indonesian wisdom, as well as the integration of the four main pillars, namely kyai (religious leaders), bureaucracy (*umara'*), entrepreneurs, and academics (Sejarah YPIIQ n.d.; Sukawi 2016b).

All of these integrations and collaborations are guided by the principles of the *pesantren* tradition. This principle includes three main principles. Firstly, *al-Muhafadhatu ala al-qadim* 

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al-salih wa al-akhdu bi al-jadid al-ashlah which means guarding over old traditions that are still relevant and integrating them with new, better traditions (Asrohah 2011). Secondly, tafaqquh fi al-din wa al-takhalluq bi al-akhlaqu al-karimah which means deepening religious knowledge and having noble character. The third, thalabu al-'ilmi faridhatun 'ala kulli muslimin wa muslimatin which means studying is a fardhu 'ain obligation for all Muslims (Sukawi 2016a).

From the vision mentioned, one of the main missions carried out by UNSIQ is to transform the values of the Qur'an in life. The goal of education aimed at by UNSIQ is to produce human resources who are able to transform the values of the Qur'an creatively and innovatively in order to help provide solutions to the problems of people's lives. The research and service developed also focuses on integrating the values of the Qur'an and science to implement Islam *rahmatan lil 'alamin* (blessing for all creatures) (Administrator n.d.). This integration is intended to strengthen the scientific base ('ilmiyah) of the academic community in it with the basis of the 'natural' character of the Qur'an as a solution to the dichotomy of general science and religion after the golden age of Islam (Hamzah 2018). In other words, the learning process at UNSIQ prioritizes a spiritual introduction based on the Qur'an to educate students to have a handle on life and in the learning process of other disciplines (Sakir 2016).

The main figure in this university is Kyai Muntaha Hafidz. He took the initiative to establish innovation and scientific development of the Qur'an. One of his ideas was to establish a higher education institution with the characteristics of the Koran in Central Java. This idea was approved by the four main pillars of society, which contains of kyai with their *pesantren*, *umara* (government) with their bureaucracy, entrepreneurs (business and industry) with their finances, and academics with their knowledge, and intellectuals (Firdausa 2019; Sukawi 2020). This was the initial idea of establishing the Institute of Qur'anic Sciences (IIQ) in 1987. The initial aim was to serve as a place to preserve and disseminate the Qur'an through formal education (Sukawi 2020). Until 2016, UNSIQ had a vision to become a *Qur'any* University that produces superior graduates, virtuous, noble personality, knowledge, technology, and art by adhering to the values of the Qur'an (Hamzah et al. 2018). In its development, UNSIQ includes a vision in 2031 to become a transformative, humanist, and qur'anic university (Administrator n.d.). This further confirms the goal of UNSIQ to create a generation that has a strong scientific base and character base from the values of the Qur'an.

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In the organization of these various educational institutions, Kyai Muntaha Hafidz placed the Qur'an and *al-hadith* as his main view of life or worldview (Sari 2006). According to Smart, worldview are beliefs, feelings and things that are in people's minds that function as motors for social and moral sustainability and change (Smart 1983). This is in line with what Kyai Muntaha Hafidz did in issuing ideas, thoughts, and ideas. All of them are based on the worldview of the Qur'an and Hadith. According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology (Sari 2006).

This spiritual education is the main focus in the education pattern at UNSIQ. Spirituality is the most fundamental and most important thing in determining a person's life style. Frankl, as quoted by Sukawi (Sukawi 2016a), stated that humans as a whole consist of 3 dimensions, the physical dimension, the psychological dimension, and the spiritual dimension. This spirituality contains various human characteristics, such as the desire to seek meaning, orientation, intuition, creativity, faith, vision, even listening to conscience beyond the control of the superego (Sukawi 2016a). Talking about spirituality, actually talking about the most basic religious teachings, namely *aqidah* (faith). Aqidah makes humans understand their relationship with God, nature, and other humans. Belief in this form of *aqidah* has creative, constructive, and positive power. On the other hand, the absence of faith gives birth to negative, sluggish, and destructive forces (Musawwi 2011; Sukawi 2016a).

As mentioned by Sukawi (Sukawi 2016a), that the happiness of a Muslim is when he is able to utilize his spiritual energy to solve problems, find solutions, and provide benefits in terms of absolute obedience and belief in the commands of Allah SWT. This attitude is a form of logical consequence of the recognition of the Almighty God and the powerlessness of creatures so that they must depend on Him. This attitude is extracted from QS 112: 1-2 about the Oneness of Allah (*tawhid*) and His Almighty so that all creatures depend on Him. When one is immersed in this concept of servitude, one becomes a free entity and is free from any bondage of life. The only thing that makes him submissive and obedient is obedience to the Giver of life, namely Allah SWT. This independence and detachment that is in the corridor of obedience to Allah allows humans to explore their full potential in order to carry out their caliphate function on earth. Thus, humans will be more creative by using various kinds of knowledge they learn to carry out their duties and mandates on this earth (Sukawi 2016a).

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This is where the spirituality understood by the UNSIQ academic community lies. The spirituality that inspires and becomes the foundation in the establishment, management, and development of UNSIQ is qur'anic-based spirituality (*al-ruh al-Qur'aniyah*) which is harmonious-synergistic-integrative (Sukawi 2016a, 2020). This spirit comes from the views, mindset, attitudes, and behavior of KH. Muntaha al-Hafidz as the central figure in the founding of UNSIQ. Various educational institutions that were previously established reflect that qur'anic-based spirituality has become an identity in each of these educational institutions, not least in the realm of higher education.

UNSIQ spirituality has a substantive-complementariness nature. Substantive means that all mindsets and views are based on the most basic teachings and concepts, namely the Qur'an. As for complementary means complementing and giving new colors to existing spirituality. This complementary form can be seen from the integration of Western and Eastern scientific traditions as well as the concept of *pesantren* and modern education (Sukawi 2016a, 2020). The principle of taking the new tradition and maintaining the old tradition becomes the guideline in these various integration processes so that it does not eliminate the identity and tradition of Islamic boarding schools that have taken root at UNSIQ. The tradition Islamic boarding school which is a place for spiritual education makes all the activities of the academic community in it full of values to create human beings who have an Islamic and Qur'anic identity (Hamzah 2018; Sakir 2016).

From the explanation above, it can be concluded that the scientific basis for integrating modern science and the Qur'an has become the spirit in scientific development at UNSIQ. This can be seen from the learning outcomes that are carried out and the curriculum that supports it. The various learning achievements of graduates from all study programs and prescribed subjects make the vision of scientific integration a common awareness of the academic community at UNSIQ.

#### A CRITICAL READING ON RESEARCH DEVELOPMENT PATTERN

As stated in the Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers, as professional educators, one of the main tasks of lecturers is to develop science, technology and art through education, research, and community service. These studies also

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play an important role in strengthening the scientific base at UNSIQ which uses the concept of "syajarah al-Qur'an". Several publications and research by UNSIQ lecturers have also begun to strengthen the scientific base. The first scientific publication entitled "The Concept of Gravity in the Perspective of the Qur'an and Science (Study of Surah al-Hajj verse 65)" written by Muchotob Hamzah and Badriyatul Muniroh who came from the Islamic Education Study Program and the Physics Education Study Program (Hamzah and Muniroh 2016). This study compared the theory of gravity in the perspective of physics with the views of the Qur'an on the theory, especially those mentioned in Qur'an Surah al-Hajj verse 65. This study uses an analysis of the meaning and definition of gravity from a scientific perspective. Then analyzed the interpretation of the verse and its relation to the prevailing theory of gravity. The results of this study indicate that the Qur'an does not explain this concept in detail and only provides a global understanding. If physics learning in high school focuses on physical analysis, it needs to be equipped with spiritual meaning and wisdom behind these events.

A similar study entitled "Meteorology in the Perspective of the Qur'an and Modern Science" was written by Nurul Mubin in 2020 (Mubin 2020). Nurul Mubin is a lecturer in the Islamic Education Study Program, Faculty of *Tarbiyah* and Teacher Science. This research focused on meteorological studies which include wind, cloud, rain, and lightning phenomena. This study is dominated by the classification of verses related to the phenomena mentioned above and then the interpretation of these verses. The results of this study conclude that various modern scientific discoveries related to natural phenomena have been confirmed by the Qur'an through its verses, both *qauliyah* (written words on Qur'an) and *kauniyah* (Allah's words that spread out the Our'an) verses. This also shows evidence of the truth of the revelation of the Our'an.

Both studies were strengthened by the research "Science and Technology in the Perspective of the Qur'an" by Asep Sunarko, a lecturer at the Arabic Language Education Study Program, Faculty of Tarbiyah and Teacher Science (Sunarko 2015). The research shows the sources of knowledge, ways of obtaining knowledge, as well as the evidence of knowledge in the Qur'an. This study concludes that the development of science must be in accordance with the guidelines of the Qur'an. If it is not, then it cannot provide benefits to humans, and can even cause harm. In addition, knowledge can not only be achieved with the human mind, but it is necessary to bring the heart to believe and do *dhikr* (remembering Allah) and *dzauq* (spiritual feelings) to

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feel. The three studies above fall into the first category of research by UNSIQ lecturers which focuses on the study of modern scientific theory in the Qur'an.

The second category of research by UNSIQ lecturers consists of several lecturers' scientific publications that focus on the application of modern science in studying the Qur'an and al-Hadith. One of them is a study entitled "Vector Analysis in the Prayer Movement on Health" conducted by Sri Jumini and Chakimatul Munawaroh from the Physics Education study program (Jumini and Munawaroh 2018). This study aimed to analyze the vector in the prayer movement as seen from the standing, *takbiratul ihram*, *ruku'*, *sujud* up to *salam*. After being analyzed by vector analysis, the benefits of these various movements were sought from a health perspective. The results of this study indicate that all prayer movements in one raka'at have a number of angles of 3600 and have the same number as the tawaf movement. From a health point of view, all these movements if done properly and perfectly from standing up to greetings can provide benefits to the body.

A similar study entitled "Study of Thought and Backbiting for the Health of the Human Body (Teaching the Concept of Vibration and Waves)" conducted by Nelly Azizah from the Physics Education Study Program also falls into the same category (Azizah 2018). This study aims to show the lessons learned from the prohibition of backbiting and evil suspicion from a health perspective, especially cardiovascular and mental health. This research shows that prejudice and backbiting can cause anxiety and stress that have an impact on physical and mental health. This anxiety can cause high blood pressure and an accelerated heart rate according to the concept of vibration in the body in physics. As for the concept of waves indicating heart disease that is not immediately resolved, causing the rupture of blood vessels and disrupting the circulatory system.

The next research is a study entitled "Early Determination of *Fardhu* Prayer Time with Circulation of the Sun" which was carried out by Ahmad Khoiri, a lecturer in Physics Education, Faculty of Tarbiyah and Teacher Sciences (Khoiri 2017). This research used the deductive method and the *tahlily* (analyzing) method, the deductive method is used to derive physical theories from the general to the more specific and the *tahlily* method is used to explain the related verses of the Qur'an and reveal the meaning behind it. This study concluded that the determination of the beginning of prayer with the circulation of the sun is interconnected

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between modern science and the Qur'an. In fact, from this research, modern scientific knowledge, especially regarding the circulation of the sun can help a Muslim in determining the start of the *fardhu* prayer time.

Another research applied in community service activities entitled "Design of a Mobile Verifier for Sacrificial Animals Using a QR Code Based on the ZXING Library" (Baihaqy, Asnawi, and Fatimah 2020). This research was conducted by M. Alif Muwafi Baihaqy, Muhammad Fuat Asnawi, and Siti Fatimah from the Informatics Management program and Informatics Engineering program. This research facilitated the process of buying and selling sacrificial animals and minimizing human error and has implications for losses suffered by consumers and traders. With this system, it can be detailed animal data and track records are based on android mobile.

The third category of research is research that focuses on the formation of the Qur'anic character. The first research entitled "The Growth of Islamic Character through Physics Learning based on Science-Islam Integration" was conducted by Ahmad Khoiri, Qori Agussuryani, and Hartini from the Physics Education Study Program (Khoiri, Agussuryani, and Hartini 2017). This study applied physics learning to class IX students of al-Qur'an Vocational High School based on the integration of science and Islamic values and reflection on the results of the evaluation of learning. This study showed that learning based on Islamic-science integration can improve student learning outcomes, attitudes, and social attitudes. Moreover, the character values that are instilled during the learning process require students to have an Islamic character in the form of honesty.

The next research is a study entitled "Growing Scientific Attitudes Through Thematic Studies of Science QS *al-Mu'minun* verses 12-14 Using Journal Qur'an Techniques" conducted by Desy Putri Hanifah from the *Madrasah Ibtidaiyah* Teacher Education Study Program (D. P. Hanifah 2020). This research is the result of a reflection of science courses and the Qur'an in the 6th semester of the Islamic Elementary School Teacher Education study program. The verse that becomes the object of the research is the verse that explains the origin of human events. This study concluded that the technique of al-Qur'an journaling can be an alternative in studying the Qur'an thematically according to the branch of science. From the learning process

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there are several attitudes that are well stimulated, such as gratitude, obedience, faith, and so on as well as scientific attitudes such as honesty, confidence, skepticism, curiosity, and so on. Another similar research is a study entitled "Internalization of Character Values in Learning *Ilm al-Ashwat* (Case Study Against Arabic Language Education Students UNSIQ Wonosobo)" conducted by Chairani Astina and Rifqi Aulia Rahman from Arabic Language Education Program (Astina and Rahman 2018). This study analyzed the character values contained in the *'ilm al-Ashwat* (Arabic phonology) course that support the achievement of the UNSIQ spirit, namely qur'ani, transformative, and humanist. This study concludes that the character values that are internalized to the student of first semester in Arabic Language Education program at UNSIQ are divided into 2 categories. *The first* is the character values implied in the learning methods such as self-confidence, responsibility, love of reading, respect for achievement, and curiosity. The next character values are further implied in the learning materials which include honest, disciplined, communicative, and religious attitudes.

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From the explanation above, it can be concluded that the researches in the first category focuses on proving the facts of modern science in the Qur'an. This research model can be said to be a beginner research model because it only contains a definition of a concept from a scientific discipline and compares it with verses in the Qur'an which have close problems. In fact, not infrequently, because the Qur'an is global and not a book of science. This research model is in line with the thinking model of Harun Yahya and Maurice Bucaille, which is directly referred to by the majority of research in category one. This model aims to find the suitability of scientific findings with the verses in the Qur'an (Muslih 2017). In this case, when the Qur'an and science introduce the same issue, many parties conclude that the two can be brought together and even merged. In this phase, many commentators leave the realm of science and enter into scientific findings and methodologies. On the other hand, there are also scientists who bring their findings and methodologies to the area of the Qur'an and look for verses that justify these findings or those findings that strengthen the "truth" of the Qur'an (Muslih 2017). In fact, science is something that has the potential to be wrong and the Qur'an is an area where there is no doubt in it. From this, if the findings change due to other findings that have accumulated, then the verses of the Qur'an that support these findings are wrong and need to be corrected. In this first study, the majority of researchers came from Islamic scholarship or from the perspective of the Koran, namely from the study programs of Islamic Education and

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Arabic Language Education, although there were still collaborative efforts with Physics Education lecturers.

The second category of research focuses on the application of modern science in studying the Qur'an and al-Hadith. This research model appears to be a continuation of the first category of research, and applies modern scientific theory in analyzing verses of the Qur'an or al-Hadith. Other forms of research show the application of modern science such as the science of the sun's circulation and the use of QR Codes in selecting sacrificial animals. This second research model is practical-applicable and allows modern science to run side by side without the need to compare theories in science to be confirmed by the verses of the Qur'an. This second model of research is mostly done by lecturers in Physics Education, Information Management, and Informatics Engineering study programs. Unlike the two previous research models, the third research focuses on the formation of the Qur'anic character from various disciplines taught, both in courses and high school subjects. This research model tries to reveal the Qur'anic character values contained in learning activities. This research model strengthens the Qur'anic spiritual base which is the spiritual basis at UNSIQ as enshrined in the example of Kyai Muntaha al-Hafidz. This research model is dominated by lecturers from the Faculty of Tarbiyah and Teacher Science.

From this analysis, the first research model can be categorized as basic research to stimulate communication and dialogue between the Qur'an and science. The second model research can be categorized into research that becomes auxiliary hypotheses in the encounter of science and the Qur'an. The third research model is also a supporting hypothesis for the formation of Qur'anic characters in the learning process that runs at UNSIQ. In addition, research with the theme of scientific integration is still limited to a few study programs. As the researchers found, the majority of themed research came from the Faculty of Tarbiyah and Teacher Science, especially the Physics Education study program. As for other science faculties, such as faculty of technology and computer sciences, faculty of medical sciences, faculty of economy, faculty of language and literature, and faculty of communication and social-politics sciences, there is still a lack of research on the theme which indirectly supports the scientific base at UNSIQ. On the other hand, these works have only appeared in the last 5 to 10 years. When compared with UNSIQ which has been established since 2001, the direction of research development and strengthening of the unique scientific base of UNSIQ is quite late. Two major seminars were

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also held in 2017 and 2018. The above studies also ranged from 2010 and above. Thus, this is a special concern for the development of UNSIQ in the future, especially in order to strengthen the scientific base so that it can become a scientific paradigm and animate all study programs in it. This is in line with the reflection of Mahfudz Junaedi, Dean of Faculty of Syariah and Law UNSIQ 2017-2021 who said that this university needed to sharpen the methodology in integrating modern science and the Qur'an systematically. According to him, the scientific base at UNSIQ needs to be reconstructed in order to lead to changes in the on-going process of an integrated curriculum that needs to be enriched with research that strengthens the scientific base at UNSIQ (Junaedi 2017).

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#### CONCLUSION

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From the beginning of its establishment and the name it carries, UNSIQ has prioritized the integration between modern science and the Qur'anic Science. This is inseparable from the historical side of the founder and also the needs of the people which indicate the existence of this scientific integration. Al-Qur'an is placed as the basis of character in the development of science and technology. However, in order for the scientific base to become a scientific paradigm, it must meet the requirements. From the author's observations, the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture. This is reflected in the achievements of graduates that have been declared and also the curriculum that has been set. However, researches which are auxiliary hypotheses have not been widely carried out by the academic community in it as the work of lecturers discussing this theme is still minimal. Existing research is also still limited in certain faculties and is not evenly distributed. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ. This could be because there is no research development plan

**Commented [A7]:** Conclusions according to research objectives

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that supports the strengthening of UNSIQ's unique scientific base. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ.

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# AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY [UNSIQ], CENTRAL JAVA, INDONESIA

## Response

# **Summary**

This research is announced as a qualitative research based on the Lakatos research development pattern which several methodological rules called "heuristics" comprising a "hard-core" [primary hypothesis], auxiliary hypotheses and a series theory.

However, the author does not structure the article using these three rules as point of departure but proceeds to discuss the theory underlying the integration of science and religion at his institution.

The model is characterized as a scientific tree based on the Qur'an 24: 35 [referring to the oil of an olive tree enabling a lamp to glow].

A similar scientific paradigm is used by the Maulana Malik Ibrahim State Islamic University of Malang, but that of UNSIQ differs as regards performance and content, prioritizing a spiritual introduction based on the Qur'an to educate students to have a handle on life and in the learning process of other disciplines.

Objective is that a learner should utilize his spiritual energy to solve problems, find solutions, and provide benefits in terms of absolute obedience and belief in the commands of Allah SWT. This attitude is extracted from QS 112: 1-2 about the Oneness of Allah (*tawhid*) and His Almighty so that all creatures depend on Him.

The introductory discussion is followed by a critical reading on the research development pattern. Examples of papers by lecturers pertaining to three categories are given. The first category focuses on proving the facts of modern science in the Qur'an (e.g., comparing the theory of gravity with related views of the Surah 22:65). The second focuses on the application of modern science in studying the Qur'an and al-Hadith (e.g., determination of the beginning of prayer with the circulation of the sun). The third research focuses on the formation of the Qur'anic character from various disciplines (e.g., internalization of character values in learning 'ilm al-ashwat).

Positive outcome of the program is reflected by achievements of graduates that have been declared and also the curriculum that has been set. However, the author observes that existing research is still limited in certain faculties and is not evenly distributed. He suggests that this could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base.

#### **Observations**

The study demonstrates intensive research, ample use of secondary material, and logical arguing. However, from a scientific point of view it has several shortcomings.

- 1. The ultimate solution of a research development plan is not explained or motivated sufficiently.
- 2. The research development patterns are not related or explained. Categories one (Qur'an > science) and two (science > Qur'an) are aimed at illustrating uniqueness of the Noble Qur'an; the third (Qur'an > believer) the effect of the Qur'an on the user.
- 3. The theoretical discussion should be shortened and / or more focused.

The author only mentions patterns utilized by other institutions, e.g., integration-interconnection, dialogue integration paradigm, a different tree of knowledge, wagon wheel, twin towers, and integration-comparative-diffusion. It would enhance the study if the author could indicate the difference between the tree of knowledge pattern extant at UNSIQ and the other patterns. What are the problems and successes of other institutions?

# Recommendation

The paper should be referred back to the author for reformulation, and again be submitted for review.

#### Review of article:

# AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY, CENTRAL JAVA, INDONESIA

This article examines the implementation of scientific integration between science and the Qur'an which was carried out by the Al-Qur'an Science University in Central Java Indonesia (UNSIQ).

The paradigm of "syajarah al-Qur'an" is employed. The idea is to strengthen the scientific base. A number of recent research projects by UNSIQ lecturers are evaluated. The central idea is that UNSIQ has prioritized the integration between modern science and the Qur'anic Science. Strengths and weaknesses are pointed out in the conclusion.

The study is important and relevant.

The author has a good understanding of the subject matter and is closely linked to the project being evaluated.

A number of other sources have been referred to.

While the article does refer to the Islamization of knowledge projects of Faruqi and al-Attas what the article fails to show is to evaluate the Islamization of knowledge project undertaken by the Islamic University of Malaysia and Islamic University of Islamabad. This can then be compared to the UNSIQ experience. This will add value to the current article.

4. Bukti konfirmasi submit revisi, respon kepada reviewer, dan artikel yang diresubmit (18 Januari 2024)



# HTS 9459 - Revisions Uploaded

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Thu, Jan 18, 2024 at 9:32 AM

Reply-To: "Mr Yuangga K. Yahya" <yuangga4@unida.gontor.ac.id>
To: Prof Eugene Baron <editorhts@gmail.com>, Ms Elizna De Bod <5ts.srsupport@hts.org.za>

Dear Prof Eugene Baron, Ms Elizna De Bod

Thank you for the opportunity to submit a revision of my article 'Al-Qur'an as a paradigm base for science integration at the Al-Qur'an science university, Central Java, Indonesia' submitted for consideration with HTS Teologiese Studies / Theological Studies. I have uploaded the revised documents of the article and completed all requested changes.

I hope that the changes made resolve all your concerns about the article. I'm happy to make further changes to improve the paper and/or facilitate successful publication.

Thank you once again for your time and interest. I look forward to hearing from you.

Kind regards, Mr Yuangga K. Yahya

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Revision Report – Article #9459

**Dear Editor** 

Here the revised made based on reports of the reviewers on our submitted article as follows:

#### **REVIEWER A**

Summary of major findings and shortcomings

# Major points or recommended revisions

1. While the article does refer to the Islamization of knowledge projects of Faruqi and al-Attas what the article fails to show is to evaluate the Islamization of knowledge project undertaken by the Islamic University of Malaysia and Islamic University of Islamabad. This can then be compared to the UNSIQ experience. This will add value to the current article. We have added an evaluation explanation of the Islamization of Science project carried out by IIUM and IIUI.

## **REVIEWER B**

# Minor points or recommended revisions

- 1. The author does not structure the article using these three rules as point of departure but proceeds to discuss the theory underlying the integration of science and religion at his institution. We focused this discussion on two main aspects, namely hard-core and auxiliary hypotheses, while a series theory has not been applied in this research. We discuss the *Syajarah al-Qur'an* paradigm at the beginning as a hard-core scientific paradigm at the university and then in the next section we discuss in detail the lecturers' research which is the auxiliary hypothesis of this hard-core paradigm.
- 2. The ultimate solution of a research development plan is not explained or motivated sufficiently. We have added an explanation in the suggestions
- 3. The research development patterns are not related or explained. Categories one (Qur'an > science) and two (science > Qur'an) are aimed at illustrating uniqueness of the Noble Qur'an; the third (Qur'an > believer) the effect of the Qur'an on the user. We have added an explanation regarding this categorization to make it easier for readers to understand
- 4. The theoretical discussion should be shortened and / or more focused. We have summarized the discussion in the theoretical discussion so that the explanation is more focused
- 5. The author only mentions patterns utilized by other institutions, e.g., integration-interconnection, dialogue integration paradigm, a different tree of knowledge, wagon wheel, twin towers, and integration-comparative-diffusion. It would enhance the study if the author could indicate the

difference between the tree of knowledge pattern extant at UNSIQ and the other patterns. What are the problems and successes of other institutions? We have written the advantages of the scientific integration model at UNSIQ in the introduction, discussion and conclusion

## **REVIEWER C**

# Minor points or recommended revisions

- 1. The introduction must be contextualized with research on the integration of Islam and science at several Islamic universities in Indonesia (especially UIN) based on research by Indonesian Muslim scholars. We have added relevant discussion in the introduction.
- 2. Research methods are less compatible with research problems. We have adapted research methods according to the research problem.
- 3. An image of the syajarah of the Qur'an is needed to facilitate the definitive meaning of the syarah of the Qur'an. We have added images to facilitate the definitive meaning of the Syajarah al-Qur'an
- 4. Operational findings regarding the syjarah of the Qur'an need to be more detailed so that they can be adopted by other Islamic universities. We have detailed the operational findings.

# Kind regards

Yuangga K. Yahya

The Corresponding Author

# **MANUSCRIPT TO REVIEW**

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AL-QUR'AN AS A PARADIGM BASE FOR SCIENCE INTEGRATION AT THE AL-QUR'AN SCIENCE UNIVERSITY, CENTRAL JAVA, INDONESIA

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The discourse on the integration of science and Islam is being realized through the establishment of various Islamic religious universities in Indonesia. One of the Islamic universities that accommodates this discourse is the Al-Qur'an Science University, Central Java, Indonesia (UNSIQ). This study aims to examine the basic concept of scientific integration at UNSIQ and critically analyze the academic tradition and research development patterns based on the Lakatos research development pattern, both are hard-core and auxiliary hypotheses. This research shows that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture in the framework of al-Qur'an-based academic knowledge. However, research, as auxiliary hypotheses in building scientific paradigm is still limited in certain disciplines and needs to be improved. This needs to be a common concern in order to increase the scientific base of the Svajarah al-Qur'an into a solid scientific paradigm.

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**Contribution:** This research figured out that the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture, but this scientific base needs to be supported by research plan and researches in various disciplines. Thus, those researches become the auxiliary hypotheses to build a particular scientific paradigm of this university.

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Keywords: scientific integration; philosophy of science; Lakatos; Islamic University; UNSIQ

Wonosobo

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#### INTRODUCTION

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The discourse on the integration of science and religion has become the concern of many Islamic thinkers and universities in Indonesia recently. Syed Naquib al-Attas (Al-Attas, 1993), Isma'il Raji al-Faruqi (Al-Faruqi, 1982), and Ziauddin Sardar are three prominent Islamic thinkers who are widely used as references in the pattern of integration of Islam and science in universities in Indonesia (Mufid, 2014; Mas'ud, Fuad and Zaini, 2019). The difference between the two concepts lies only <u>in</u> the background of the urgency of an Islamization; al-Attas views it from external factors, namely Western civilization, while al-Faruqi views it from internal factors (Soleh, 2017). As for Ziauddin Sardar, there are differences from his opinion with the two mentioned concepts. Sardar criticized al-Faruqi's model of Islamization of science and provided a solution; the Islamization of science must depart from building an Islamic epistemology. This is in order to create a contemporary Islamic science as a counter to modern Western science (Soleh, 2017). The idea of Islamization of science from al-Attas and al-Faruqi was then implemented in the form of the establishment of the International Islamic University of Malaysia (IIUM), which was followed by the International Islamic University of Islamabad (IIUI) (Hashim and Ssekamanya, 2014; Rufai, 2016)

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However, the theory of integration of science and religion above is not absolutely practiced in Islamic universities in Indonesia. This discourse is often carried out in Islamic universities in Indonesia. The transformation of Islamic Higher Institutions (IAIN) into Islamic Universities, (UIN) is also inseparable from this discourse, with their respective trademarks and various implementations (Muslih, 2017). The majority of Islamic universities in Indonesia have initiated various models of Islam and science integration (Muslih, 2017; Nata, 2019). (Muslih, 2017; Nata, 2019). The discourse of scientific integration has become a focus in the development of educational institutions in Indonesia in the last two decades (Mas'ud, Fuad and Zaini, 2019). Sunan Kalijaga State Islamic University of Yogyakarta uses the integrationinterconnection paradigm (Abdullah, 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin, 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (Hanifah, 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al., 2016), and Sultan Maulana

Deleted: Al-Farugi coined the concept of Islamization of knowledge by going through 5 stages, those are 1) mastering modern scientific disciplines; 2) master the basic knowledge of Islam; 3) determine the specific relevance of Islam according to the field of knowledge; 4) find ways of creative synthesis; and 5) directing Islamic thought on a path that leads to the fulfillment of Allah's design pattern (Al-Faruqi 1982). The two main ideas are the integration of the two educational systems and instilling the vision of Islam within the disciplines (Inayah 2020). ¶

The same thing was expressed by al-Attas, who stated that the Islamization of science must go through two interrelated processes. The two processes are isolating the key concepts that emerged from Western civilization (de-westernization) and incorporating the key elements and concepts of Islam into every branch of science (Wan Daud 1998, 2013). The output of these two models is Islamic science (al-Ma'rifah al-Islamiyyah) (Haris 2010).

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Hasanuddin State Islamic University of Banten also uses the integration-comparative-diffusion paradigm (Muzhiat and Kartanegara, 2020). The University of Science al-Qur'an (UNSIQ) Central Java, is no exception. This university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a transformative, humanist, and *Qur'ani* university (Administrator, no date).

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However, Nata (2019) revealed that various models of the integration approach of Islamic science and religion in universities in Indonesia still stop at the theoretical aspects and the practical aspects of their operations have not been clearly seen. In addition, there are also parties who integrate knowledge by means of re-actualization, reinterpretation, reformulation, contextualization, and transformation without laying down the methodological framework and approach. . The scientific integration model implemented at IIUM and IIUI is also considered to have a missing link at the core of the project, namely knowledge (Rufai, 2016; Hussien, Mamat and Ssekamanya, 2019). The great ideals of the project are practically difficult to implement in courses, research, and knowledge production. Apart from the lack of even distribution of academic staff's understanding of this model, there is minimal collaboration with wider parties such as Muslim scientists, humanists and scientists as well as other parties in refreshing understanding of the Islamization of science (Chande, 2023). Meanwhile, the Al-Qur'an Science University in Central Java Indonesia (hereinafter abbreviated as UNSIQ) applied synergy to the four main pillars, namely kyai (religious leaders), bureaucracy (umara'), entrepreneurs, and academics ('ulama). This is UNSIQ's advantage compared to the two universities, even Islamic universities in Indonesia in implementing the principle of integration, because integration is not limited to the knowledge component, but also to external stakeholders. Beside that, the integration system between traditional Islamic boarding school (pesantren) tradition and higher education institution also made this university stand out among another Islamic universities in Indonesia (Sukawi, 2020). Therefore, this study aims to examine the implementation of scientific integration between science and the Qur'an which was carried out by the Al-Qur'an Science University in Central Java Indonesia (hereinafter abbreviated as UNSIQ). This university has launched a vision to become a transformative, humanist, and Qur'anic university by placing the Qur'an as a scientific basis and a foundation for thinking in analyzing various sciences (Administrator, no date). In analyzing it, this research uses the perspective of the Lakatos' research methodology.

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#### RESEARCH METHOD

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This research is qualitative research with <u>a</u> philosophy of sciences perspective, especially research program methodology. According to Lakatos, this perspective is a methodological structure that guides the development of future research and has several methodological rules called "heuristics". Heuristics are conceptual frameworks that are a consequence of scientific language. In the research program, there are at least 3 elements, which <u>are: first</u>, "hard-core"; second, "protective-belt" which consists of auxiliary hypotheses (supporting hypotheses), and third, "a series theory", namely linking theory in which a theory is the result of a development or auxiliary clause. from a pre-existing theory (Lakatos, 1970; Muslih, 2017, 2020). <u>Based on this theory, it is necessary to examine the basic elements, both are hard-core of Syajarah al-Qur'an as a scientific paradigm (hard-core) in UNSIQ and lecturers' research, especially research with the theme relationship between al-Qur'an and science, which was published online between 2015 and 2020 in online journals as auxiliary or supporting hypotheses, that form a protective circle for the hard-core, namely the development of science and technology based on the Qur'an.</u>

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# THE $\mathit{SYAJARAH}$ $\mathit{AL\text{-}QUR'AN}$ PARADIGM AS THE SCIENTIFIC BASE OF UNSIQ WONOSOBO

The scientific building at UNSIQ Wonosobo is built on the concept of *syajarah al-Qur'an*, or a scientific tree based on the Qur'an (Sukawi, 2016a). The Qur'an is placed as the basis for the entire scientific structure at UNSIQ. This scientific tree is the embodiment of QS 14:24-25, where a good tree has strong roots and is sourced from the Qur'an and Qur'anic spirituality (*al-ruh al-Qur'aniyah*) (Sukawi, 2016a). This tree has branches that soar to the sky and have useful fruit. These branches and fruits are likened to the other disciplines taught at this university.

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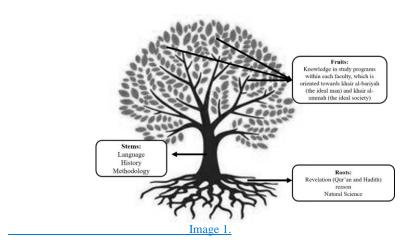
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The discourse of scientific integration has become a focus in the development of educational institutions in Indonesia in the last two decades (Mas'ud, Fuad, and Zaini 2019). The change of several Islamic Higher Institution into Islamic University also carries the same spirit. Each university carries a model of scientific integration with its own characteristics. Sunan Kalijaga State Islamic University of Yogyakarta uses the integration-interconnection paradigm (Abdullah 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (U. Hanifah 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al. 2016), and Sultan Maulana Hasanuddin State Islamic University of Banten also uses the integration-comparative-diffusion paradigm (Muzhiat and Kartanegara 2020). The University of Science al-Qur'an (UNSIQ) Central Java, is no exception. The university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a Transformative, Humanist, and Qur'ani University (Administrator n.d.).¶

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Syajarah al-Qur'an as scientific paradigm in UNSIQ (Sukawi, 2020; 176)

Syajarah Al-Qur'an serves as a building model for assessment and development as well as orientation of academic and scientific cultural life in its various dimensions. The building was inspired by the tree concept as stated in the Qur'an 24;35 (Sukawi, 2020). From this verse, various concepts that have an important role in the development and sustainability of UNSIQ can be summarized. Some of these concepts are first, UNSIQ is a form of transformation of the pearl of the pesantren (traditional Islamic boarding school in Indonesia) traditions which is referred to as a *pesantren* transformation model university. Second, scientific development in its various dimensions as a whole and comprehensively comes from all the power possessed by humans, namely the power of the senses, the power of reason, the power of imagination, the power of thought, and intuition. These various powers come from the same source, namely spirituality at the level of the al-fitrah and al-ruh dimensions. Third, the science developed is based on a harmonious-synergistic-integrative paradigm that emphasizes neither east nor west (la syarqiyyah wa la gharbiyyah) so that it is free from the confines of secularization, desacralization, and scientific dichotomy. This is symbolized by the synergy of UNSIQ figures, Kyai Muntaha al-Hafidz as an East figure and Kyai Abdurrahman Mas'ud and Kyai Zamakhsyari Dhofier as representatives of the West figures because of their educational experiences in Australia and America. The two mindsets do not overlap each other, but synergize the advantages of East and West in their visions and thoughts (Sukawi, 2020).

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In discussing the integration of science between the West and the East, this university takes the example of how Ibn Sina and Ibn Rushd's works were adopted by Western civilization, which is secular and has no spiritual foundation. However, UNSIQ presents a solution based on the development of knowledge based on the Qur'anic spirituality, which is harmonious, synergistic and integrative. This is supported by the epistemology of the *syajarah al-Qur'an* which can integrate it well, beautifully, and harmoniously. The goals of Western science, which is oriented to "to exchange the quality of human life" and Eastern science, which is oriented to "to exchange the quality of human being", are harmonized and synergized into "to exchange the quality of human life and being" (Sukawi, 2020).

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The concept of *syajarah al-Qur'an* which is the scientific building of UNSIQ has several differences with similar concepts, for example, the tree of knowledge which is a scientific paradigm at Maulana Malik Ibrahim State Islamic University of Malang. These differences can be seen from the basis of determination, historicity, symbolization, implementation, goals, performance, content, and keywords used. In performance and content, the *syajarah al-Qur'an* consists of three dimensions, namely roots, trees and stems, and fruit. The root dimension contains revelation (al-Qur'an and Hadith), reason, and natural science, which are integrated with three spiritualities; theocentric, anthropocentric, and comocentric. The three models of spirituality are connected harmoniously, synergistically, and integratively in this university (Sukawi, 2020).

The tree and stem dimensions contain language, history, and methodology. Language in this context is a response to the language of science, culture, and civilization (*lisan al-qoum*), which is always changing and developing according to space and time. Historically, what is meant here is that the dynamic process of developing science always considers three dimensions of time; the past, present, and future. All of them will be strengthened with the methodology as a scalpel in conducting exploration, testing, innovation, and revitalization (Sukawi, 2016a, 2020). The fruit that is expected from the tree of the Qur; an is oriented to the results of physical and spiritual efforts by adhering to the four pillars as stated in Qur'an 2:151. Psychologically, the tree will give birth to a person who is healthy, superior, and great so that he can become *khalifatullah* (vicegerent of Allah) on earth and become *khair al-bariyah* (the ideal man). Sociologically, the tree creates *khair al-ummah* (the ideal society). As for scientifically, it can

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give birth to scientific development through research, utilization, and <u>the</u> discovery of new theories in accordance with each scientific discipline (Sukawi, 2020).

In its operational practice, the *syajarah al-Qur'an* becomes a model for study and development as well as an orientation to scientific cultural life that originates from QS 24:35. The study and development process is based on the synergy and harmonization of the verses of the al-Qur'an, the Prophetic tradition, the studies of *mufassir* (interpretation of al-Qur'an experts), *muhadditsin* (*hadith experts*), and *'ulama* with the phenomena of life which are always changing and developing. The implication of the concept of *syajarah al-Qur'an* is to provide a foundation, guidance and direction to the academic community in the development of science, academic culture, scientific traditions and the university atmosphere, in which there are symbolic themes for developing science and technology in life (Sukawi, 2020, 171-172). The symbolic themes contained in QS 24:35 are *nūr* (light), *misykāt* (niche), *mishbāh* (lamp), *zujājah* (glass), blessed tree, and *nūr 'ala nūr* (light upon light). The five themes based on al-Ghazali's interpretation in *Misykat al-Anwar* are linked to the five spiritual powers of humans, namely the sensory soul (*hissi*), imagination (*khayali*), rational power (*'aqli*), reflective power (*fikri*), and power that is purely based on prophecy (*qudsi/nabawi*) (Sukawi, 2020; Labib,

Before discussing scientific integration, UNSIQ has established itself by integrating various systems within it. This integration can be seen in the integration of Islamic boarding schools and modern education, the development of spiritual, emotional, and intellectual potential, skills between Western and Eastern traditions, the integration of Islam, the state, and Indonesian wisdom, as well as the integration of the four main pillars, namely kyai (religious leaders), bureaucracy (*umara'*), entrepreneurs, and academics (*Sejarah YPIIQ*, no date; Sukawi, 2016b).

2021). This paradigm is what underlies academic and non-academic activities, where the Qur'an becomes a source of scientific culture and synergizes and harmonizes with various

scientific disciplines to answer the challenges of life's phenomena.

All of these integrations and collaborations are guided by the principles of the *pesantren* tradition. This principle includes three main principles. Firstly, *al-Muhafadhatu ala al-qadim al-salih wa al-akhdu bi al-jadid al-ashlah* which means guarding over old traditions that are still relevant and integrating them with new, better traditions (Asrohah, 2011). Secondly, *tafaqquh fi al-din wa al-takhalluq bi al-akhlaqu al-karimah* which means deepening religious

knowledge and having noble character. The third, thalabu al-'ilmi faridhatun 'ala kulli

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*muslimin wa muslimatin* which means studying is a *fardhu 'ain* obligation for all Muslims (Sukawi, 2016a).

From the vision mentioned, one of the main missions carried out by UNSIQ is to transform the 369 values of the Qur'an in life. The goal of education aimed at by UNSIQ is to produce human 370 resources who are able to transform the values of the Qur'an creatively and innovatively in 371 372 order to help provide solutions to the problems of people's lives. The research and service 373 developed also focus on integrating the values of the Qur'an and science to implement Islam 374 rahmatan lil 'alamin (blessing for all creatures) (Administrator, no date). This integration is 375 intended to strengthen the scientific base ('ilmiyah) of the academic community in it on the 376 basis of the 'natural' character of the Qur'an as a solution to the dichotomy of general science

and religion after the golden age of Islam (Hamzah, 2018). In other words, the learning process

at UNSIQ prioritizes a spiritual introduction based on the Qur'an to educate students to have a

at UNSIQ prioritizes a spiritual introduction based on the Qur'an to educate students to have a

handle on life and in the learning process of other disciplines (Sakir, 2016).

The main figure at this university is Kyai Muntaha Hafidz. He took the initiative to establish innovation and scientific development in the Qur'an. One of his ideas was to establish a higher education institution with the characteristics of the al-Qur'an (Firdausa, 2019; Sukawi, 2020). In the organization of these various educational institutions, Kyai Muntaha Hafidz placed the Qur'an and al-hadith as his main view of life or worldview (Sari, 2006). According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology and has also become the main focus of the education pattern at UNSIQ (Sari, 2006). This is where the spirituality understood by the UNSIQ academic community lies. The spirituality that inspires and becomes the foundation for the establishment, management, and development of UNSIQ is qur'anic-based spirituality (al-ruh al-Qur'aniyah) which is harmonious, synergistic, and integrative (Sukawi, 2016a, 2020). This spirit comes from the views, mindset, attitudes, and behavior of KH. Muntaha al-Hafidz as the central figure in UNSIQ establishment.

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From the explanation above, it can be concluded that the scientific basis for integrating modern science and the Qur'an has become the spirit of scientific development at UNSIQ. This can be seen from the learning outcomes that are carried out and the curriculum that supports them. The various learning achievements of graduates from all study programs and prescribed

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Deleted: This was the initial idea of establishing the Institute of Qur'anic Sciences (IIQ) in 1987. The initial aim was to serve as a place to preserve and disseminate the Qur'an through formal education (Sukawi 2020). Until 2016, UNSIQ had a vision to become a Qur'any University that produces superior graduates, virtuous, noble personality, knowledge, technology, and art by adhering to the values of the Qur'an (Hamzah et al. 2018). In its development, UNSIQ includes a vision in 2031 to become a transformative, humanist, and qur'anic university (Administrator n.d.). This further confirms the goal of UNSIQ to create a generation that has a strong scientific base and character base from the values of the Qur'an. ¶

**Deleted:** According to Smart, worldview are beliefs, feelings and things that are in people's minds that function as motors for social and moral sustainability and change (Smart 1983). This is in line with what Kyai Muntaha Hafidz did in issuing ideas, thoughts, and ideas. All of them are based on the worldview of the Qur'an and Hadith. According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology (Sari 2006).

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**Deleted:** This spiritual education is the main focus in the education pattern at UNSIQ. Spirituality is the most fundamental and most important thing in determining a person's life style. Frankl, as quoted by Sukawi (Sukawi 2016a), stated that humans as a whole consist of 3 dimensions, the physical dimension, the psychological dimension, and the spiritual dimension. This spirituality contains various human characteristics, such as the desire to seek meaning, orientation, intuition, creativity, faith, vision, even listening to conscience beyond the control of the superego (Sukawi 2016a). Talking about spirituality, actually talking about the most basic religious teachings, namely aqidah (faith). Aqidah makes humans understand their relationship with God, nature, and other humans. Belief in this form of aqidah has creative, constructive, and positive power. On the other hand, the absence of faith gives birth to negative, sluggish, and destructive forces (Musawwi 2011; Sukawi 2016a). ¶

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subjects make the vision of scientific integration a common awareness of the academic community at UNSIO.

#### A CRITICAL READING ON RESEARCH DEVELOPMENT PATTERN

As stated in Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers, as professional educators, one of the main tasks of lecturers is to develop science, technology, and art through education, research, and community service. These studies also play an important role in strengthening the scientific base at UNSIQ which uses the concept of "syajarah al-Qur'an". Several publications and research projects by UNSIQ lecturers have also begun to strengthen the scientific base. To assist the analysis process, researchers divided the research into three categories of theistic science, namely the research category that seeks the conformity of scientific discoveries with the verses of the al-Qur'an, the research category that focuses on the application of modern science in understanding the verses of the al-Qur'an, and the research category that focuses on revealing character values in the al-Qur'an and their implementation in modern life (Muslih, 2016). First and second categories are aimed at illustrating the uniqueness of the al-Qur'an, while the third category focuses on the effect of the al-Qur'an on the user.

The first scientific publication entitled "The Concept of Gravity in the Perspective of the Qur'an and Science (Study of Surah al-Hajj verse 65)" written by Muchotob Hamzah and Badriyatul Muniroh who came from the Islamic Education Study Program and the Physics Education Study Program (Hamzah and Muniroh, 2016). This study compared the theory of gravity from the perspective of physics with the views of the Qur'an on the theory, especially those mentioned in Qur'an Surah al-Hajj verse 65. This study uses an analysis of the meaning and definition of gravity from a scientific perspective. Then it analyzed the interpretation of the verse and its relation to the prevailing theory of gravity. The results of this study indicate that the Qur'an does not explain this concept in detail and only provides a global understanding. If physics learning in high school focuses on physical analysis, it needs to be equipped with the spiritual meaning and wisdom behind these events.

A similar study entitled "Meteorology in the Perspective of the Qur'an and Modern Science" was written by Nurul Mubin in 2020 (Mubin, 2020). Nurul Mubin is a lecturer in the Islamic

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Education Study Program, Faculty of *Tarbiyah* and Teacher Science. This research focused on meteorological studies which include wind, cloud, rain, and lightning phenomena. This study is dominated by the classification of verses related to the phenomena mentioned above and then the interpretation of these verses. The results of this study conclude that various modern scientific discoveries related to natural phenomena have been confirmed by the Qur'an through its verses, both *qauliyah* (written words on the Qur'an) and *kauniyah* (Allah's words that spread out the Qur'an) verses. This also shows evidence of the truth of the revelation of the Qur'an.

Both studies were strengthened by the research "Science and Technology in the Perspective of the Qur'an" by Asep Sunarko, a lecturer at the Arabic Language Education Study Program, Faculty of Tarbiyah and Teacher Science (Sunarko, 2015). The research shows the sources of knowledge and ways of obtaining knowledge, as well as the evidence of knowledge in the Qur'an. This study concludes that the development of science must be in accordance with the guidelines of the Qur'an. If it is not, then it cannot provide benefits to humans and can even cause harm. In addition, knowledge can not only be achieved with the human mind, but it is also necessary to bring the heart to believe and do *dhikr* (remembering Allah) and *dzauq* (spiritual feelings) to feel. The three studies above fall into the first category of research by UNSIO lecturers which focuses on the study of modern scientific theory in the Our'an.

The second category of research by UNSIQ lecturers consists of several lecturers' scientific publications that focus on the application of modern science in studying the Qur'an and al-Hadith. One of them is a study entitled "Vector Analysis in the Prayer Movement on Health" conducted by Sri Jumini and Chakimatul Munawaroh from the Physics Education study program (Jumini and Munawaroh, 2018). This study aimed to analyze the vector in the prayer movement as seen from the standing, *takbiratul ihram*, *ruku'*, *sujud* up to *salam*. After being analyzed by vector analysis, the benefits of these various movements were sought from a health perspective. The results of this study indicate that all prayer movements in one raka'at have a number of angles of 3600 and have the same number as the tawaf movement. From a health point of view, all these movements if done properly and perfectly from standing up to greetings (*salām*) can provide benefits to the body.

A similar study entitled "Study of Thought and Backbiting for the Health of the Human Body (Teaching the Concept of Vibration and Waves)" conducted by Nelly Azizah from the Physics

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Education Study Program also falls into the same category (Azizah, 2018). This study aims to show the lessons learned from the prohibition of backbiting and evil suspicion from a health perspective, especially cardiovascular and mental health. This research shows that prejudice and backbiting can cause anxiety and stress that have an impact on physical and mental health. This anxiety can cause high blood pressure and an accelerated heart rate according to the concept of vibration in the body in physics. As for the concept of waves indicating heart disease that is not immediately resolved, causing the rupture of blood vessels and disrupting the circulatory system.

The next research is a study entitled "Early Determination of *Fardhu* Prayer Time with Circulation of the Sun", which was carried out by Ahmad Khoiri, a lecturer in Physics Education at the Faculty of Tarbiyah and Teacher Sciences (Khoiri, 2017). This research used the deductive method and the *tahlily* (analyzing) method. The deductive method is used to derive physical theories from the general to the more specific, and the *tahlily* method is used to explain the related verses of the Qur'an and reveal the meaning behind them. This study concluded that the determination of the beginning of prayer with the circulation of the sun is interconnected between modern science and the Qur'an. In fact, from this research, modern scientific knowledge, especially regarding the circulation of the sun can help a Muslim determine the start of the *fardhu* prayer time.

Another piece of research applied to community service activities entitled "Design of a Mobile Verifier for Sacrificial Animals Using a QR Code Based on the ZXING Library" (Baihaqy, Asnawi and Fatimah, 2020). This research was conducted by M. Alif Muwafi Baihaqy, Muhammad Fuat Asnawi, and Siti Fatimah from the Informatics Management program and Informatics Engineering program. This research facilitated the process of buying and selling sacrificial animals and minimized human error and has implications for losses suffered by consumers and traders. With this system, there can be detailed animal data and track records are based on Android mobile.

The third category of research is research that focuses on the formation of the Qur'anic character. The first research entitled "The Growth of Islamic Character through Physics Learning based on Science-Islam Integration" was conducted by Ahmad Khoiri, Qori Agussuryani, and Hartini from the Physics Education Study Program (Khoiri, Agussuryani and

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Hartini, 2017). This study applied physics learning to class IX students of al-Qur'an Vocational High School based on the integration of science and Islamic values and reflection on the results of the evaluation of learning. This study showed that learning based on Islamic-science integration can improve student learning outcomes, attitudes, and social attitudes. Moreover, the character values that instilled during the learning process require students to have an Islamic Deleted: are character in the form of honesty. The next research is a study entitled "Growing Scientific Attitudes Through Thematic Studies of Science QS al-Mu'minun Verses 12-14 Using Journal Qur'an Techniques" conducted by Deleted: verses Desy Putri Hanifah from the Madrasah Ibtidaiyah Teacher Education Study Program (Hanifah, 2020). This research is the result of a reflection on science courses and the Qur'an in the 6th Deleted: of semester of the Islamic Elementary School Teacher Education study program. The verse that becomes the object of the research is the verse that explains the origin of human events. This study concluded that the technique of al-Qur'an journaling can be an alternative to studying the Deleted: in Qur'an thematically according to the branch of science. <u>During</u> the learning process, there are Deleted: From several attitudes that are well stimulated, such as gratitude, obedience, faith, and so on, as well as scientific attitudes such as honesty, confidence, skepticism, curiosity, and so on. Another similar study is "Internalization of Character Values in Learning 'Ilm al-Ashwat (Case Deleted: research Deleted: a study entitled Study Against Arabic Language Education Students UNSIQ Wonosobo)" conducted by Chairani Astina and Rifqi Aulia Rahman from the Arabic Language Education Program (Astina and Rahman, 2018). This study analyzed the character values contained in the 'ilm al-Ashwat (Arabic phonology) course that support the achievement of the UNSIO spirit, namely qur'ani, transformative, and humanist. This study concludes that the character values that are internalized in the first semester student in Arabic Language Education program at UNSIQ are Deleted: to Deleted: student of divided into 2 categories. The first is the character values implied in the learning methods such as self-confidence, responsibility, love of reading, respect for achievement, and curiosity. The next set of character values is further implied in the learning materials which include honest, Deleted: are disciplined, communicative, and religious attitudes. Deleted: es From the explanation above, it can be concluded that the research projects, in the first category focuses on proving the facts of modern science in the Qur'an. This research model can be said

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scientific discipline and compares it with verses in the Qur'an that have similar problems. In fact, not infrequently, because the Qur'an is global and not a book of science. This research model is in line with the thinking model of Harun Yahya and Maurice Bucaille, which is directly referred to by the majority of research in category one. This model aims to determine the suitability of scientific findings with the verses in the Qur'an (Muslih, 2017). In this case, when the Qur'an and science introduce the same issue, many parties conclude that the two can be brought together and even merged. In this phase, many commentators leave the realm of science and enter the realm of scientific findings and methodologies. On the other hand, there are also scientists who bring their findings and methodologies to the area of the Qur'an and look for verses that justify these findings or those findings that strengthen the "truth" of the Qur'an (Muslih, 2017). In fact, science is something that has the potential to be wrong and the Qur'an is an area where there is no doubt about it. From this, if the findings change due to other findings that have accumulated, then the verses of the Qur'an that support these findings are wrong and need to be corrected. In this first study, the majority of researchers came from Islamic scholarship or from the perspective of the Koran, namely from the study programs of Islamic Education and Arabic Language Education, although there were still collaborative efforts with Physics Education lecturers.

The second category of research focuses on the application of modern science to studying the Qur'an and al-Hadith. This research model appears to be a continuation of the first category of research, and applies modern scientific theory to analyzing verses of the Qur'an or al-Hadith. Other forms of research show the application of modern science such as the science of the sun's circulation and the use of QR codes in selecting sacrificial animals. This second research model is practical and applicable and allows modern science to run side by side without the need to compare theories in science to be confirmed by the verses of the Qur'an. This second model of research is mostly done by lecturers in Physics Education, Information Management, and Informatics Engineering study programs. Unlike the two previous research models, the third research focuses on the formation of the Qur'anic character from various disciplines taught, both in courses and high school subjects. This research model tries to reveal the Qur'anic character values contained in learning activities. This research model strengthens the Qur'anic spiritual base which is the spiritual basis at UNSIQ as enshrined in the example of Kyai Muntaha al-Hafidz. This research model is dominated by lecturers from the Faculty of Tarbiyah and Teacher Science.

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From this analysis, the first model of research can be categorized as basic research to stimulate communication and dialogue between the Qur'an and science. The second model of research can be categorized as research that becomes auxiliary hypotheses in the encounter of science and the Qur'an. The third research model is also a supporting hypothesis for the formation of Qur'anic characters in the learning process that runs at UNSIQ. In addition, research on the theme of scientific integration is still limited to a few study programs. As the researchers found, the majority of themed research came from the Faculty of Tarbiyah and Teacher Science, especially the Physics Education study program. As for other science faculties, such as the Faculty of technology and computer sciences, the Faculty of medical sciences, the Faculty of economy, the Faculty of language and literature, and the Faculty of communication and social-politics sciences, there is still a lack of research on the theme which indirectly supports the scientific base at UNSIQ.

On the other hand, these works have only appeared in the last 5 to 10 years. When compared with UNSIQ which has been established since 2001, the direction of research development and strengthening of the unique scientific base of UNSIQ is quite late. Two major seminars were also held in 2017 and 2018. The above studies also ranged from 2010 and above. Thus, this is a special concern for the development of UNSIQ in the future, especially in order to strengthen the scientific base so that it can become a scientific paradigm and animate all study programs in it. This is in line with the reflection of Mahfudz Junaedi, Dean of the Faculty of Syariah and Law UNSIQ 2017-2021 who said that this university needed to sharpen the methodology for integrating modern science and the Qur'an systematically. According to him, the scientific base at UNSIQ needs to be reconstructed in order to lead to changes in the on-going process of an integrated curriculum that needs to be enriched with research that strengthens the scientific base at UNSIQ (Junaedi, 2017).

#### CONCLUSION

 From the beginning of its establishment and the name it carries, UNSIQ has prioritized the integration between modern science and the Qur'anic Science. This is inseparable from the historical side of the founder and also <u>from</u> the needs of the people, which indicate the existence of this scientific integration. Al-Qur'an is placed as the basis of character in the development of science and technology. The synergy initiated also combines science development based on

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a harmonious-synergistic-integrative paradigm that emphasizes the integration of East-West civilization and combines the traditional wisdom of Islamic boarding schools with modernity in the university system. However, in order for the scientific base to become a scientific paradigm, it must meet the requirements. From the author's observations, the scientific base at UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture. This is reflected in the achievements of graduates that have been declared and also in the curriculum that has been set. However, research as an auxiliary hypotheses has not been widely carried out by the academic community in it as the work of lecturers discussing this theme is still minimal. Existing research is also still limited in certain faculties and is not evenly distributed. This could be because there is no research development plan that supports the strengthening of UNSIQ's unique scientific base or the existing research development plans have not been properly socialized to all academic staff and implemented in their academic works. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in UNSIQ's vision so as to be able to build a unique scientific paradigm of UNSIQ. As a suggestion, establishing a scientific paradigm needs to consider the possibility of its implementation in various research and scientific studies. Apart from that, socialization and shared perceptions of academic staff are the most important things in unifying thinking paradigms so that the various research produced mutually strengthens the scientific paradigm and not vice versa, actually weakening the prevailing scientific paradigm as happens in Malaysia and Islamabad.

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# **XAOSIS**

# Al-Qur'an as a paradigm base for science integration at the Al-Qur'an Science University, Central Java, Indonesia

[AQ1]

[AQ2]



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The discourse on the integration of science and Islam is being realised through the establishment of various Islamic religious universities in Indonesia. One of the Islamic universities that accommodates this discourse is the Al-Qur'an Science University, Central Java, Indonesia (UNSIQ). This study aims to examine the basic concept of scientific integration at the UNSIQ and critically analyses the academic tradition and research development patterns based on the Lakatos research development pattern, both of which are hard-core and auxiliary hypotheses. This research shows that the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture in the framework of al-Qur'an-based academic knowledge. However, research as auxiliary hypotheses in building scientific paradigm is still limited in certain disciplines and needs to be improved. This needs to be a common concern in order to increase the scientific base of the Syajarah al-Qur'an into a solid scientific paradigm.

**Contribution:** This research figured out that the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture, but this scientific base needs to be supported by research plan and researches in various disciplines. Thus, those researches become the auxiliary hypotheses to build a particular scientific paradigm of this university.

**Keywords:** scientific integration; philosophy of science; Lakatos; Islamic University; UNSIQ Wonosobo.

## Introduction

The discourse on the integration of science and religion has become the concern of many Islamic thinkers and universities in Indonesia recently. Syed Naquib al-Attas (Al-Attas 1993), Isma'il Raji al-Faruqi (Al-Faruqi 1982), and Ziauddin Sardar are three prominent Islamic thinkers who are widely used as references in the pattern of integration of Islam and science in universities in Indonesia (Mas'ud, Fuad & Zaini 2019; Mufid 2014). The difference between the two concepts lies only in the background of the urgency of an Islamisation; al-Attas views it from external factors, namely Western civilisation, while al-Faruqi views it from internal factors (Soleh 2017). As for Ziauddin Sardar, there are differences from his opinion with the two mentioned concepts. Sardar criticised al-Faruqi's model of Islamisation of science and provided a solution: the Islamisation of science must depart from building an Islamic epistemology. This is in order to create a contemporary Islamic science as a counter to modern Western science (Soleh 2017). The idea of Islamisation of science from al-Attas and al-Faruqi was then implemented in the form of the establishment of the International Islamic University of Malaysia (IIUM), which was followed by the International Islamic University of Islamabad (IIUI) (Hashim & Ssekamanya 2014; Rufai 2016).

However, the above theory of integration of science and religion is not absolutely practised in Islamic universities in Indonesia. This discourse is often carried out in Islamic universities in Indonesia. The transformation of Islamic Higher Institutions (IAIN) into Islamic Universities (UIN) is also inseparable from this discourse, with their respective trademarks and various implementations (Muslih 2017). The majority of Islamic universities in Indonesia have initiated various models of Islam and science integration (Muslih 2017; Nata 2019). The discourse of scientific integration has become a focus in the development of educational institutions in

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Indonesia in the last two decades (Mas'ud et al. 2019). Sunan Kalijaga State Islamic University of Yogyakarta uses the integration-interconnection paradigm (Abdullah 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (Hanifah 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al. 2016), and Sultan Maulana Hasanuddin State Islamic University of Banten uses the integration-comparative-diffusion paradigm (Muzhiat & Kartanegara 2020). The Al-Qur'an Science University in Central Java, Indonesia (hereinafter UNSIQ), is no exception. The university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a transformative, humanist, and Qur'ani university (Administrator no date).

However, Nata (2019) revealed that various models of the integration approach of Islamic science and religion in universities in Indonesia still stop at the theoretical aspects, and the practical aspects of their operations have not been clearly seen. In addition, there are also parties who integrate knowledge by means of re-actualisation, reinterpretation, reformulation, contextualisation, and transformation without laying down the methodological framework and approach. The scientific integration model implemented at the IIUM and the IIUI is also considered to have a missing link at the core of the project, namely knowledge (Hussien, Mamat & Ssekamanya 2019; Rufai 2016). The great ideals of the project are practically difficult to implement in courses, research, and knowledge production. Apart from the lack of even distribution of academic staff's understanding of this model, there is minimal collaboration with wider parties such as Muslim scientists, humanists and scientists, as well as other parties in refreshing understanding of the Islamisation of science (Chande 2023). Meanwhile, the UNSIQ applied synergy to the four main pillars, namely kyai [religious leaders], bureaucracy (umara'), entrepreneurs, and academics ('ulama). This is UNSIQ's advantage compared to the two universities, even Islamic universities, in Indonesia in implementing the principle of integration, because integration is not limited to the knowledge component but also to external stakeholders. Besides that, the integration system between traditional Islamic boarding school (pesantren) and higher education institution also made this university stand out among another Islamic universities in Indonesia (Sukawi 2020). Therefore, this study aims to examine the implementation of scientific integration between science and the Qur'an which was carried out by the UNSIQ. The university has launched a vision to become a transformative, humanist, and Qur'anic university by placing the Qur'an as a scientific basis and a foundation for thinking in analysing various sciences (Administrator no date). In analysing it, this research uses the perspective of the Lakatos' research methodology.

## Research method

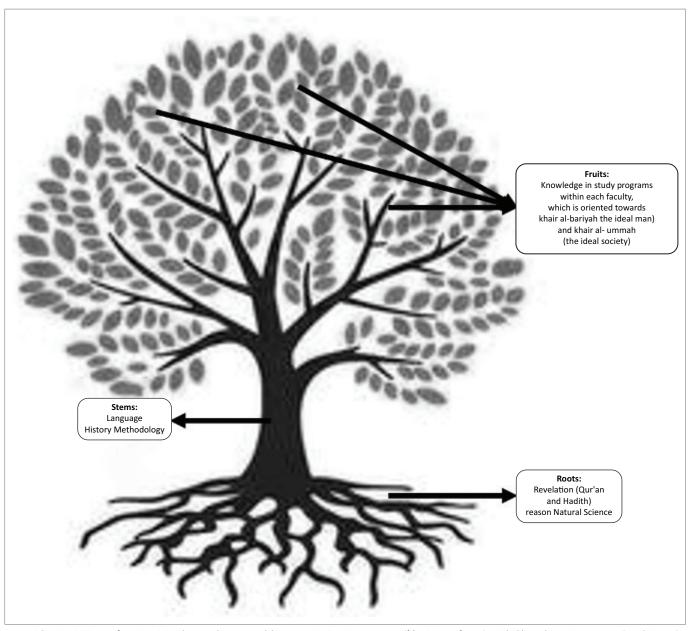
This research is a qualitative research with a philosophy of sciences perspective, especially research programme methodology. According to Lakatos, this perspective is a [AQ3] methodological structure that guides the development of future research and has several methodological rules called 'heuristics'. Heuristics are conceptual frameworks that are a consequence of scientific language. In the research programme, there are at least three elements, which are: firstly, 'hard-core'; secondly, 'protective-belt' which consists of auxiliary hypotheses (supporting hypotheses), and thirdly, 'a series theory', namely linking theory in which a theory is the result of a development or auxiliary clause from a preexisting theory (Lakatos 1970; Muslih 2017, 2020). Based on this theory, it is necessary to examine the basic elements, both are hard-core of Syajarah al-Our'an as a scientific paradigm (hard-core) in UNSIQ and lecturers' research, especially research with the theme relationship between al-Qur'an and science, which was published online between 2015 and 2020 in online journals as auxiliary or supporting hypotheses, that form a protective circle for the hard-core, namely the development of science and technology based on the Qur'an.

[AQ4]

# The Syajarah al-Qur'an paradigm as the scientific base of the Al-Qur'an Science University, Wonosobo, Central Java, Indonesia

The scientific building at the UNSIQ Wonosobo is built on the concept of Syajarah al-Qur'an (Figure 1), or a scientific tree based on the Qur'an (Sukawi 2016a). The Qur'an is placed as the basis for the entire scientific structure at the UNSIQ. This scientific tree is the embodiment of QS 14:24-25, where a good tree has strong roots and is sourced from the Qur'an and Qur'anic spirituality (al-ruh al-Qur'aniyah) (Sukawi 2016a). This tree has branches that soar to the sky and have useful fruits. These branches and fruits are likened to the other disciplines taught at this university.

Syajarah Al-Qur'an serves as a building model for assessment and development as well as orientation of academic and scientific cultural life in its various dimensions. The building was inspired by the tree concept as stated in the Qur'an 24:35 (Sukawi 2020). From this verse, various concepts that have an important role in the development and sustainability of the UNSIQ can be summarised. Some of these concepts are: firstly, the UNSIQ is a form of transformation of the pearl of the pesantren (traditional Islamic boarding school in Indonesia) traditions which is referred to as a pesantren transformation model university. Secondly, scientific development in its various dimensions as a whole and comprehensively comes from all the power possessed by humans, namely the power of the senses, the power of reason, the power of imagination, the power of thought and intuition. These various powers come from the same source, namely spirituality at the level of the al-fitrah and al-ruh dimensions.



Source: Sukawi, Z., 2020, Transformasi UNSIQ Dalam Membangun Peradaban Harmonis, Sinergis, Dan Integratif (UNSIQ transformation in building a harmonious, synergistic and integrative civilization), UNSIQ Press, Wonosobo

FIGURE 1: Syajarah al-Qur'an as scientific paradigm in the Al-Qur'an Science University, Central Java, Indonesia.

Thirdly, the science developed is based on a harmonious-synergistic-integrative paradigm that emphasises neither the East nor the West (*la syarqiyyah wa la gharbiyyah*), so that it is free from the confines of secularisation, desacralisation, and scientific dichotomy. This is symbolised by the synergy of the UNSIQ figures, Kyai Muntaha al-Hafidz as an East figure and Kyai Abdurrahman Mas'ud and Kyai Zamakhsyari Dhofier as representatives of the West figures because of their educational experiences in Australia and America. The two mindsets do not overlap each other but synergise the advantages of the East and the West in their visions and thoughts (Sukawi 2020).

In discussing the integration of science between the West and the East, this university takes the example of how Ibn Sina and Ibn Rushd's works were adopted by Western civilisation, which is secular and has no spiritual foundation. However, the UNSIQ presents a solution based on the development of knowledge based on the Qur'anic spirituality, which is harmonious, synergistic, and integrative. This is supported by the epistemology of the *Syajarah al-Qur'an* which can integrate it well, beautifully, and harmoniously. The goals of Western science, which is oriented 'to exchange the quality of human life' and Eastern science, which is oriented 'to exchange the quality of human being', are harmonised and synergised into 'to exchange the quality of human life and being' (Sukawi 2020).

The concept of *Syajarah al-Qur'an* which is the scientific building of the UNSIQ has several differences with similar concepts, for example, the tree of knowledge which is a scientific paradigm at Maulana Malik Ibrahim State Islamic University of Malang.

These differences can be seen from the basis of determination, historicity, symbolisation, implementation, goals, performance, content, and keywords used. In performance and content, the Syajarah al-Qur'an consists of three dimensions, namely roots, trees and stems, and fruit. The root dimension contains revelation (al-Qur'an and Hadith), reason, and natural science, which are integrated with three spiritualities: theocentric, anthropocentric, and cosmocentric. The three models of spirituality are connected harmoniously, synergistically, and integratively in this university (Sukawi 2020).

The tree and stem dimensions contain language, history, and methodology. Language in this context is a response to the language of science, culture, and civilisation (lisan al-qoum), which is always changing and developing according to space and time. Historically, what is meant here is that the dynamic process of developing science always considers three dimensions of time: the past, present, and future. All of them will be strengthened with the methodology as a scalpel in conducting exploration, testing, innovation, and revitalisation (Sukawi 2016a, 2020). The fruit that is expected from the tree of the Qur'an is oriented to the results of physical and spiritual efforts by adhering to the four pillars as stated in Qur'an 2:151. Psychologically, the tree will give birth to a person who is healthy, superior, and great so that he can become khalifatullah [vicegerent of Allah] on earth and become khair al-bariyah [the ideal man]. Sociologically, the tree creates khair al-ummah [the ideal society]. As for scientifically, it can give birth to scientific development through research, utilisation, and the discovery of new theories in accordance with each scientific discipline (Sukawi 2020).

In its operational practice, the Syajarah al-Qur'an becomes a model for study and development as well as an orientation to scientific cultural life that originates from QS 24:35. The study and development process is based on the synergy and harmonisation of the verses of the al-Qur'an, the prophetic tradition, the studies of mufassir [interpretation of al-Qur'an experts], muhadditsin [hadith experts], and 'ulama with the phenomena of life which are always changing and developing. The implication of the concept of Syajarah al-Qur'an is to provide a foundation, guidance, and direction to the academic community in the development of science, academic culture, scientific traditions and the university atmosphere, in which there are symbolic themes for developing science and technology in life (Sukawi 2020:171-172). The symbolic themes contained in QS 24:35 are nūr [light], misykāt [niche], mishbāh [lamp], zujājah [glass], blessed tree, and nūr 'ala nūr [light upon light]. The five themes based on al-Ghazali's interpretation in Misykat al-Anwar are linked to the five spiritual powers of humans, namely the sensory soul (hissi), imagination (khayali), rational power ('aqli), reflective power (fikri), and power that is purely [AQ5] based on prophecy (qudsi/nabawi) (Labib 2021; Sukawi 2020). This paradigm is what underlies academic and non-academic activities, where the Qur'an becomes a source of scientific culture and synergises and harmonises with various scientific disciplines to answer the challenges of life's phenomena.

Before discussing scientific integration, the UNSIQ has established itself by integrating various systems within it. This integration can be seen in the integration of Islamic boarding schools and modern education, the development of spiritual, emotional, and intellectual potential, skills between Western and Eastern traditions, the integration of Islam, the state, and Indonesian wisdom, as well as the integration of the four main pillars, namely kyai [religious leaders], bureaucracy (umara'), entrepreneurs, and academics (Sejarah YPIIQ no date; Sukawi 2016b).

All of these integrations and collaborations are guided by the principles of the *pesantren* tradition. This tradition includes three main principles. Firstly, al-Muhafadhatu ala al-qadim alsalih wa al-akhdu bi al-jadid al-ashlah which means guarding over old traditions that are still relevant and integrating them with new, better traditions (Asrohah 2011). Secondly, tafaqquh fi al-din wa al-takhalluq bi al-akhlaqu al-karimah which means deepening religious knowledge and having noble character. Thirdly, thalabu al-'ilmi faridhatun 'ala kulli muslimin wa muslimatin which means studying is a fardhu 'ain obligation for all Muslims (Sukawi 2016a).

From the vision mentioned, one of the main missions carried out by the UNSIQ is to transform the values of the Qur'an in life. The goal of education aimed at by the UNSIQ is to produce human resources who are able to transform the values of the Qur'an creatively and innovatively in order to help provide solutions to the problems of people's lives. The research and service developed also focus on integrating the values of the Qur'an and science to implement Islam rahmatan lil 'alamin [blessing for all creatures] (Administrator no date). This integration is intended to strengthen the scientific base ('ilmiyah) of the academic community in it on the basis of the 'natural' character of the Qur'an as a solution to the dichotomy of general science and religion after the golden age of Islam (Hamzah 2018). In other words, the learning process at the UNSIQ prioritises a spiritual introduction based on the Qur'an to educate students to have a handle on life and in the learning process of other disciplines (Sakir 2016).

The main figure at this university is Kyai Muntaha Hafidz. He took the initiative to establish innovation and scientific development in the Qur'an. One of his ideas was to establish a higher education institution with the characteristics of the al-Qur'an (Firdausa 2019; Sukawi 2020). In the organisation of these various educational institutions, Kyai Muntaha Hafidz placed the Qur'an and al-hadith as his main view of life or worldview (Sari 2006). According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology, and has also become the main focus of the education pattern at UNSIQ (Sari 2006). This is where the spirituality understood by the UNSIQ academic community lies. The spirituality that inspires and becomes the foundation for the establishment, management, and development of the UNSIQ is qur'anic-based spirituality (al-ruh al-Qur'aniyah) which is harmonious, synergistic, and integrative (Sukawi 2016a, 2020). This spirit comes from the views, mindset, attitudes, and behaviour of KH. Muntaha al-

Hafidz as the central figure in the establishment of the UNSIO.

From the explanation above, it can be concluded that the scientific basis for integrating modern science and the Qur'an has become the spirit of scientific development at the UNSIQ. This can be seen from the learning outcomes that are carried out and the curriculum that supports them. The various learning achievements of graduates from all study programmes and prescribed subjects make the vision of scientific integration a common awareness of the academic community at the UNSIO.

# A critical reading on research development pattern

As stated in Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers, as professional educators, one of the main tasks of lecturers is to develop science, technology, and art through education, research, and community service. These studies also play an important role in strengthening the scientific base at the UNSIQ which uses the concept of 'Syajarah al-Qur'an'. Several publications and research projects by the UNSIQ lecturers have also begun to strengthen the scientific base. To assist the analysis process, researchers divided the research into three categories of theistic science, namely the research category that seeks the conformity of scientific discoveries with the verses of the al-Qur'an, the research category that focusses on the application of modern science in understanding the verses of the al-Qur'an, and the research category that focusses on revealing character values in the al-Qur'an and their implementation in modern life (Muslih 2016). First and second categories are aimed at illustrating the uniqueness of the al-Qur'an, while the third category focusses on the effect of the al-Qur'an on the user.

The first scientific publication entitled 'The Concept of Gravity in the Perspective of the Qur'an and Science (Study of Surah al-Hajj verse 65)' was written by Muchotob Hamzah and Badriyatul Muniroh who came from the Islamic Education Study Program and the Physics Education Study Program (Hamzah & Muniroh 2016). This study compared the theory of gravity from the perspective of physics with the views of the Qur'an on the theory, especially those mentioned in Qur'an Surah al-Hajj verse 65. This study uses an analysis of the meaning and definition of gravity from a scientific perspective. Then it analysed the interpretation of the verse and its relation to the prevailing theory of gravity. The results of this study indicate that the Qur'an does not explain this concept in detail and only provides a global understanding. If physics learning in high school focusses on physical analysis, it needs to be equipped with the spiritual meaning and wisdom behind these events.

A similar study entitled 'Meteorology in the Perspective of the Qur'an and Modern Science' was written by Nurul Mubin in 2020 (Mubin 2020). Nurul Mubin is a lecturer in the Islamic Education Study Program, Faculty of Tarbiyah and Teacher Science. This research focussed on meteorological studies which include wind, cloud, rain, and lightning phenomena. This study is dominated by the classification of verses related to the phenomena mentioned above and then the interpretation of these verses. The results of this study conclude that various modern scientific discoveries related to natural phenomena have been confirmed by the Qur'an through its verses, both *qauliyah* [written words on the Qur'an] and *kauniyah* [Allah's words that spread out the Qur'an] verses. This also shows evidence of the truth of the revelation of the Qur'an.

Both studies were strengthened by the research 'Science and Technology in the Perspective of the Qur'an' by Asep Sunarko, a lecturer at the Arabic Language Education Study Program, Faculty of Tarbiyah and Teacher Science (Sunarko 2015). The research shows the sources of knowledge and ways of obtaining knowledge, as well as the evidence of knowledge in the Qur'an. This study concludes that the development of science must be in accordance with the guidelines of the Qur'an. If it is not, then it cannot provide benefits to humans and can even cause harm. In addition, knowledge can not only be achieved with the human mind, but it is also necessary to bring the heart to believe and do dhikr [remembering Allah] and dzauq [spiritual feelings] to feel. The three studies above fall into the first category of research by the UNSIQ lecturers which focusses on the study of modern scientific theory in the Qur'an.

The second category of research by the UNSIQ lecturers consists of several scientific publications by the lecturers that focus on the application of modern science in studying the Qur'an and al-Hadith. One of them is a study entitled 'Vector Analysis in the Prayer Movement on Health' conducted by Sri Jumini and Chakimatul Munawaroh from the Physics Education Study Program (Jumini & Munawaroh 2018). This study aimed to analyse the vector in the prayer movement as seen from the standing, takbiratul ihram, ruku', sujud up to salam. After being analysed by vector analysis, the benefits of these various movements were sought from a health perspective. The results of this study indicate that all prayer movements in one raka'at have a number of angles of 3600 and have the same number as the tawaf movement. From a health point of view, all these movements if done properly and perfectly from standing up to greetings (sal m) can provide benefits to the body.

A similar study entitled 'Study of Thought and Backbiting for the Health of the Human Body (Teaching the Concept of Vibration and Waves)' conducted by Nelly Azizah from the Physics Education Study Program also falls into the same category (Azizah 2018). This study aims to show the lessons learned from the prohibition of backbiting and evil suspicion from a health perspective, especially cardiovascular and mental health. This research shows that prejudice and backbiting can cause anxiety and stress that have an impact on physical and mental health. This anxiety can cause high blood pressure and an accelerated heart rate according to the concept of vibration in the body in physics. As for the concept

of waves indicating heart disease that is not immediately resolved, causing the rupture of blood vessels and disrupting the circulatory system.

The next research is a study entitled 'Early Determination of *Fardhu* Prayer Time with Circulation of the Sun', which was carried out by Ahmad Khoiri, a lecturer in Physics Education at the Faculty of Tarbiyah and Teacher Sciences (Khoiri 2017). This research used the deductive method and the *tahlily* [analysing] method. The deductive method is used to derive physical theories from the general to the more specific, and the *tahlily* method is used to explain the related verses of the Qur'an and reveal the meaning behind them. This study concluded that the determination of the beginning of prayer with the circulation of the sun is interconnected between modern science and the Qur'an. In fact, from this research, modern scientific knowledge, especially regarding the circulation of the sun can help a Muslim determine the start of the *fardhu* prayer time.

Another piece of research applied to community service activities is 'Design of a Mobile Verifier for Sacrificial Animals Using a QR Code Based on the ZXING Library' (Baihaqy, Asnawi & Fatimah 2020). This research was conducted by M. Alif Muwafi Baihaqy, Muhammad Fuat Asnawi, and Siti Fatimah from the Informatics Management Program and Informatics Engineering Program. This research facilitated the process of buying and selling sacrificial animals and minimised human error, and has implications for losses suffered by consumers and traders. With this system, there can be detailed animal data and track records are based on Android mobile.

The third category of research is research that focusses on the formation of the Qur'anic character. The first research entitled 'The Growth of Islamic Character through Physics Learning based on Science-Islam Integration' was conducted by Ahmad Khoiri, Qori Agussuryani, and Hartini from the Physics Education Study Program (Khoiri, Agussuryani & Hartini 2017). This study applied physics learning to class IX students of al-Qur'an Vocational High School based on the integration of science and Islamic values and reflection on the results of the evaluation of learning. This study showed that learning based on Islamic-science integration can improve student learning outcomes, attitudes, and social attitudes. Moreover, the character values that are instilled during the learning process require students to have an Islamic character in the form of honesty.

The next research is a study entitled 'Growing Scientific Attitudes Through Thematic Studies of Science QS *al-Mu'minun* Verses 12–14 Using Journal Qur'an Techniques' conducted by Desy Putri Hanifah from the *Madrasah Ibtidaiyah* Teacher Education Study Program (Hanifah 2020). This research is the result of a reflection on science courses and the Qur'an in the 6th semester of the Islamic Elementary School Teacher Education study program. The verse that becomes the object of the research is the verse that explains the origin

of human events. This study concluded that the technique of al-Qur'an journalling can be an alternative to studying the Qur'an thematically according to the branch of science. During the learning process, there are several attitudes that are well stimulated, such as gratitude, obedience, faith, and so on, as well as scientific attitudes such as honesty, confidence, scepticism, curiosity, and so on.

Another similar study entitled 'Internalization of Character Values in Learning 'Ilm al-Ashwat (Case Study Against Arabic Language Education Students UNSIQ Wonosobo)' was conducted by Chairani Astina and Rifqi Aulia Rahman from the Arabic Language Education Program (Astina & Rahman 2018). This study analysed the character values contained in the 'ilm al-Ashwat [Arabic phonology] course that supports the achievement of the UNSIQ spirit, namely qur'ani, transformative, and humanist. This study concludes that the character values that are internalised in the first semester student in Arabic Language Education Program at the UNSIQ are divided into two categories. The first is the character values implied in the learning methods such as self-confidence, responsibility, love of reading, respect for achievement, and curiosity. The next set of character values is further implied in the learning materials which include honest, disciplined, communicative, and religious attitudes.

From the explanation above, it can be concluded that the research projects in the first category focus on proving the facts of modern science in the Qur'an. This research model can be said to be a beginner research model because it only contains a definition of a concept from a scientific discipline and compares it with verses in the Qur'an that have similar problems. In fact, not infrequently, because the Qur'an is global and not a book of science. This research model is in line with the thinking model of Harun Yahya and Maurice Bucaille, which is directly referred to by the majority of research in category one. This model aims to determine the suitability of scientific findings with the verses in the Qur'an (Muslih 2017). In this case, when the Qur'an and science introduce the same issue, many parties conclude that the two can be brought together and even merged. In this phase, many commentators leave the realm of science and enter the realm of scientific findings and methodologies. On the other hand, there are also scientists who bring their findings and methodologies to the area of the Qur'an and look for verses that justify these findings or those findings that strengthen the 'truth' of the Qur'an (Muslih 2017). In fact, science is something that has the potential to be wrong and the Qur'an is an area where there is no doubt about it. From this, if the findings change because of other findings that have accumulated, then the verses of the Qur'an that support these findings are wrong and need to be corrected. In this first study, the majority of researchers came from Islamic scholarship or from the perspective of the Qur'an, namely from the study programmes of Islamic Education and Arabic Language Education, although there were still collaborative efforts with Physics Education lecturers.

[AQ6]

[AQ7]

The second category of research focusses on the application of modern science to studying the Qur'an and al-Hadith. This research model appears to be a continuation of the first category of research and applies modern scientific theory to analysing verses of the Qur'an or al-Hadith. Other forms of research show the application of modern science such as the science of the sun's circulation and the use of QR codes in selecting sacrificial animals. This second research model is practical and applicable, and allows modern science to run side by side without the need to compare theories in science to be confirmed by the verses of the Qur'an. This second model of research is mostly done by lecturers in Physics Education, Information Management, and Informatics Engineering study programmes. Unlike the two previous research models, the third research focusses on the formation of the Qur'anic character from various disciplines taught, both in courses and high school subjects. This research model tries to reveal the Qur'anic character values contained in learning activities. This research model strengthens the Qur'anic spiritual base which is the spiritual basis at the UNSIQ as enshrined in the example of Kyai Muntaha al-Hafidz. This research model is dominated by lecturers from the Faculty of Tarbiyah and Teacher Science.

From this analysis, the first model of research can be categorised as basic research to stimulate communication and dialogue between the Qur'an and science. The second model of research can be categorised as research that becomes auxiliary hypotheses in the encounter of science and the Qur'an. The third research model is also a supporting hypothesis for the formation of Qur'anic characters in the learning process that runs at the UNSIQ. In addition, research on the theme of scientific integration is still limited to a few study programmes. As the researchers found, the majority of themed research came from the Faculty of Tarbiyah and Teacher Science, especially the Physics Education Study Program. As for other science faculties, such as the Faculty of Technology and Computer Sciences, the Faculty of Medical Sciences, the Faculty of Economy, the Faculty of Language and Literature, and the Faculty of Communication and Social-Politics Sciences, there is still a lack of research on the theme which indirectly supports the scientific base at the UNSIQ.

On the other hand, these works have only appeared in the last 5-10 years. When compared with the UNSIQ which has been established since 2001, the direction of research development and strengthening of the unique scientific base of the UNSIQ are quite late. Two major seminars were also held in 2017 and 2018. The above studies also ranged from 2010 and above. Thus, this is a special concern for the development of the UNSIQ in the future, especially in order to strengthen the scientific base so that it can become a scientific paradigm and animate all study programmes in it. This is in line with the reflection of Mahfudz Junaedi, Dean of the Faculty of Syariah and Law UNSIQ 2017-2021 who said that this university needed to sharpen the methodology for integrating modern science and the Qur'an systematically. According to him, the scientific base at the UNSIQ needs to be reconstructed in order to lead to changes in the ongoing

process of an integrated curriculum that needs to be enriched with research that strengthens the scientific base at the UNSIQ (Junaedi 2017).

#### Conclusion

From the beginning of its establishment and the name it carries, the UNSIQ has prioritised the integration between modern science and the Qur'anic Science. This is inseparable from the historical side of the founder and also from the needs of the people, which indicates the existence of this scientific integration. Al-Qur'an is placed as the basis of character in the development of science and technology. The synergy initiated also combines science development based on a harmonious-synergistic-integrative paradigm that emphasises the integration of East-West civilisation and combines the traditional wisdom of Islamic boarding schools with modernity in the university system. However, in order for the scientific base to become a scientific paradigm, it must meet the requirements. From the author's observations, the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture. This is reflected in the achievements of graduates that have been declared and also in the curriculum that has been set. However, research as an auxiliary hypothesis has not been widely carried out by the academic community in it as the work of lecturers discussing this theme is still minimal. Existing research is also still limited in certain faculties and is not evenly distributed. This could be because there is no research development plan that supports the strengthening of the UNSIQ's unique scientific base or the existing research development plans that have not been properly socialised to all academic staff and implemented in their academic works. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in the UNSIQ's vision so as to be able to build a unique scientific paradigm of the UNSIQ. As a suggestion, establishing a scientific paradigm needs to consider the possibility of its implementation in various research and scientific studies. Apart from that, socialisation and shared perceptions of academic staff are the most important things in unifying thinking paradigms so that the various research produced mutually strengthens the scientific paradigm and not vice versa, actually weakening the prevailing scientific paradigm as happens in Malaysia and Islamabad.

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#### **Competing interests**

The authors have declared that no competing interest exists.

[AQ8]

#### Authors' contributions

M.M. and Y.K.Y. contributed to the implementation of the research and the writing of the manuscript. S.H. and A.A.M. contributed to the implementation of the research and the analysis of the results.

#### **Ethical considerations**

This article followed all ethical standards for research without direct contact with human or animal subjects.

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#### Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

#### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors, and the publisher.

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# Al-Qur'an as a paradigm base for science integration at the Al-Qur'an Science University, Central Java, Indonesia

Original Research

[AQ1]

[AQ2]



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The discourse on the integration of science and Islam is being realised through the establishment of various Islamic religious universities in Indonesia. One of the Islamic universities that accommodates this discourse is the Al-Qur'an Science University, Central Java, Indonesia (UNSIQ). This study aims to examine the basic concept of scientific integration at the UNSIQ and critically analyses the academic tradition and research development patterns based on the Lakatos research development pattern, both of which are hard-core and auxiliary hypotheses. This research shows that the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture in the framework of al-Qur'an-based academic knowledge. However, research as auxiliary hypotheses in building scientific paradigm is still limited in certain disciplines and needs to be improved. This needs to be a common concern in order to increase the scientific base of the Syajarah al-Qur'an into a solid scientific paradigm.

**Contribution:** This research figured out that the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture, but this scientific base needs to be supported by research plan and researches in various disciplines. Thus, those researches become the auxiliary hypotheses to build a particular scientific paradigm of this university.

**Keywords:** scientific integration; philosophy of science; Lakatos; Islamic University; UNSIQ Wonosobo.

## Introduction

The discourse on the integration of science and religion has become the concern of many Islamic thinkers and universities in Indonesia recently. Syed Naquib al-Attas (Al-Attas 1993), Isma'il Raji al-Faruqi (Al-Faruqi 1982), and Ziauddin Sardar are three prominent Islamic thinkers who are widely used as references in the pattern of integration of Islam and science in universities in Indonesia (Mas'ud, Fuad & Zaini 2019; Mufid 2014). The difference between the two concepts lies only in the background of the urgency of an Islamisation; al-Attas views it from external factors, namely Western civilisation, while al-Faruqi views it from internal factors (Soleh 2017). As for Ziauddin Sardar, there are differences from his opinion with the two mentioned concepts. Sardar criticised al-Faruqi's model of Islamisation of science and provided a solution: the Islamisation of science must depart from building an Islamic epistemology. This is in order to create a contemporary Islamic science as a counter to modern Western science (Soleh 201) he idea of Islamisation of science from al-Attas and al-Faruqi was then implemented in the form of the establishment of the International Islamic University of Malaysia (IIUM), which was followed by the International Islamic University of Islamabad (IIUI) (Hashim & Ssekamanya 2014; Rufai 2016).

However, the above theory of integration of science and religion is not absolutely practised in Islamic universities in Indonesia. This discourse is often carried out in Islamic universities in Indonesia. The transformation of Islamic Higher Institutions (IAIN) into Islamic Universities (UIN) is also inseparable from this discourse, with their respective trademarks and various implementations (Muslih 2017). The majority of Islamic universities in Indonesia have initiated various models of Islam and science integration (Muslih 2017; Nata 2019). The discourse of scientific integration has become a focus in the development of educational institutions in

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Indonesia in the last two decades (Mas'ud et al. 2019). Sunan Kalijaga State Islamic University of Yogyakarta uses the integration-interconnection paradigm (Abdullah 2014), Syarif Hidayatullah State Islamic University of Jakarta uses the dialogue integration paradigm, Maulana Malik Ibrahim State Islamic University of Malang uses the tree of knowledge paradigm (Miftahuddin 2019), Sunan Gunung Djati State Islamic University of Bandung uses the revelation paradigm to guide science with the analogy of a wagon wheel (Hanifah 2018), Sunan Ampel State Islamic University of Surabaya uses the Twin Towers paradigm (A'la et al. 2016), and Sultan Maulana Hasanuddin State Islamic University of Banten uses the integration-comparative-diffusion paradigm (Muzhiat & Kartanegara 2020). The Al-Qur'an Science University in Central Java, Indonesia (hereinafter UNSIQ), is no exception. The university, which was founded in 2001, carries the integration of the sciences with the Qur'an as a scientific basis and the basis for character building. This can be seen from the vision that was carried out, namely to create a transformative, humanist, and Qur'ani university (Administrator no date).

However, Nata (2019) revealed that various models of the integration approach of Islamic science and religion in universities in Indonesia still stop at the theoretical aspects, and the practical aspects of their operations have not been clearly seen. In addition, there are also parties who integrate knowledge by means of re-actualisation, reinterpretation, reformulation, contextualisation, and transformation without laying down the methodological framework and approach. The scientific integration model implemented at the IIUM and the IIUI is also considered to have a missing link at the core of the project, namely knowledge (Hussien, Mamat & Ssekamanya 2019; Rufai 2016). The great ideals of the project are practically difficult to implement in courses, research, and knowledge production. Apart from the lack of even distribution of academic staff's understanding of this model, there is minimal collaboration with wider parties such as Muslim scientists, humanists and scientists, as well as other parties in refreshing understanding of the Islamisation of science (Chande 2023). Meanwhile, the UNSIQ applied synergy to the four main pillars, namely kyai [religious leaders], bureaucracy (umara'), entrepreneurs, and academics ('ulama). This is UNSIQ's advantage compared to the two universities, even Islamic universities, in Indonesia in implementing the principle of integration, because integration is not limited to the knowledge component but also to external stakeholders. Besides that, the integration system between traditional Islamic boarding school (pesantren) and higher education institution also made this university stand out among another Islamic universities in Indonesia (Sukawi 2020). Therefore, this study aims to examine the implementation of scientific integration between science and the Qur'an which was carried out by the UNSIQ. The university has launched a vision to become a transformative, humanist, and Qur'anic university by placing the Qur'an as a scientific basis and a foundation for thinking in analysing various sciences (Administrator no date). In analysing it, this research uses the perspective of the Lakatos' research methodology.

## Research method

This research is a qualitative research with a philosophy of sciences perspective, especially research programme methodology. According to Lakatos, this perspective is a [AQ] methodological structure that guides the development of future research and has several methodological rules called 'heuristics'. Heuristics are conceptual frameworks that are a consequence of scientific language. In the research programme, there are at least three elements, which are: firstly, 'hard-core'; secondly, 'protective-belt' which consists of auxiliary hypotheses (supporting hypotheses), and thirdly, 'a series theory', namely linking theory in which a theory is the result of a development or auxiliary clause from a preexisting theory (Lakatos 1970; Muslih 2017, 202 ased on this theory, it is necessary to examine the bash both are hard-core of Syajarah al-Our'an as a scientific paradigm (hard-core) in UNSIQ and lecturers' research, especially research with the theme relationship between al-Qur'an and science, which was published online between 2015 and 2020 in online journals as auxiliary or supporting hypotheses, that form a protective circle for the hard-core, namely the development of science and technology based on the Qur'an.

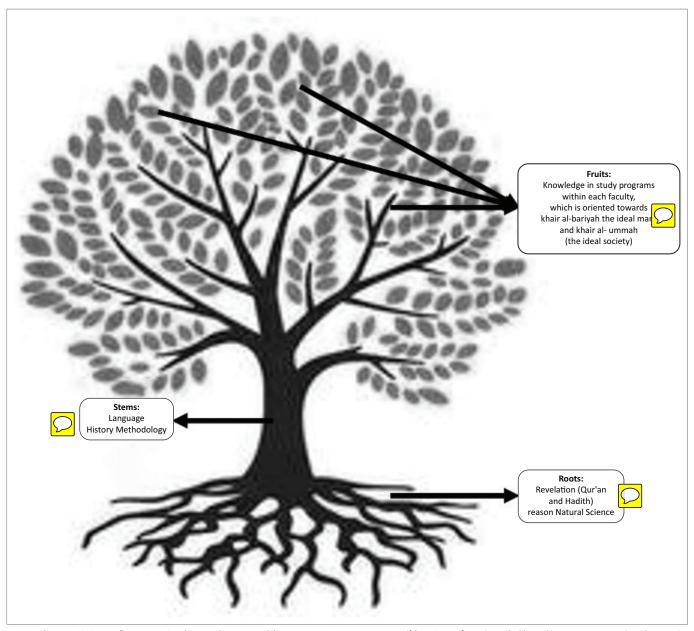


[AQ4]

# The Syajarah al-Qur'an paradigm as the scientific base of the Al-Qur'an Science University, Wonosobo, Central Java, Indonesia

The scientific building at the UNSIQ Wonosobo is built on the concept of Syajarah al-Qur'an (Figure 1), or a scientific tree based on the Qur'an (Sukawi 2016a). The Qur'an is placed as the basis for the entire scientific structure at the UNSIQ. This scientific tree is the embodiment of QS 14:24-25, where a good tree has strong roots and is sourced from the Qur'an and Qur'anic spirituality (al-ruh al-Qur'aniyah) (Sukawi 2016a). This tree has branches that soar to the sky and have useful fruits. These branches and fruits are likened to the other disciplines taught at this university.

Syajarah Al-Qur'an serves as a building model for assessment and development as well as orientation of academic and scientific cultural life in its various dimensions. The building was inspired by the tree concept as stated in the Qur'an 24:35 (Sukawi 2020). From this verse, various concepts that have an important role in the development and sustainability of the UNSIQ can be summarised. Some of these concepts are: firstly, the UNSIQ is a form of transformation of the pearl of the pesantren (traditional Islamic boarding school in Indonesia) traditions which is referred to as a pesantren transformation model university. Secondly, scientific development in its various dimensions as a whole and comprehensively comes from all the power possessed by humans, namely the power of the senses, the power of reason, the power of imagination, the power of thought and intuition. These various powers come from the same source, namely spirituality at the level of the al-fitrah and al-ruh dimensions.



Source: Sukawi, Z., 2020, Transformasi UNSIQ Dalam Membangun Peradaban Harmonis, Sinergis, Dan Integratif (UNSIQ transformation in building a harmonious, synergistic and integrative civilization), UNSIQ Press, Wonosobo

FIGURE 1: Syajarah al-Qur'an as scientific paradigm in the Al-Qur'an Science University, Central Java, Indonesia.

Thirdly, the science developed is based on a harmonious-synergistic-integrative paradigm that emphasises neither the East nor the West (*la syarqiyyah wa la gharbiyyah*), so that it is free from the confines of secularisation, desacralisation, and scientific dichotomy. This is symbolised by the synergy of the UNSIQ figures, Kyai Muntaha al-Hafidz as an East figure and Kyai Abdurrahman Mas'ud and Kyai Zamakhsyari Dhofier as representatives of the West figures because of their educational experiences in Australia and America. The two mindsets do not overlap each other but synergise the advantages of the East and the West in their visions and thoughts (Sukawi 2020).

In discussing the integration of science between the West and the East, this university takes the example of how Ibn Sina and Ibn Rushd's works were adopted by Western civilisation, which is secular and has no spiritual foundation. However, the UNSIQ presents a solution based on the development of knowledge based on the Qur'anic spirituality, which is harmonious, synergistic, and integrative. This is supported by the epistemology of the *Syajarah al-Qur'an* which can integrate it well, beautifully, and harmoniously. The goals of Western science, which is oriented 'to exchange the quality of human life' and Eastern science, which is oriented 'to exchange the quality of human being', are harmonised and synergised into 'to exchange the quality of human life and being' (Sukawi 2020).

The concept of *Syajarah al-Qur'an* which is the scientific building of the UNSIQ has several differences with similar concepts, for example, the tree of knowledge which is a scientific paradigm at Maulana Malik Ibrahim State Islamic University of Malang.

These differences can be seen from the basis of determination, historicity, symbolisation, implementation, goals, performance, content, and keywords used. In performance and content, the *Syajarah al-Qur'an* consists of three dimensions, namely roots, trees and stems, and fruit. The root dimension contains revelation (al-Qur'an and Hadith), reason, and natural science, which are integrated with three spiritualities: theocentric, anthropocentric, and cosmocentric. The three models of spirituality are connected harmoniously, synergistically, and integratively in this university (Sukawi 2020).

The tree and stem dimensions contain language, history, and methodology. Language in this context is a response to the language of science, culture, and civilisation (lisan al-qoum), which is always changing and developing according to space and time. Historically, what is meant here is that the dynamic process of developing science always considers three dimensions of time: the past, present, and future. All of them will be strengthened with the methodology as a scalpel in conducting exploration, testing, innovation, and revitalisation (Sukawi 2016a, 2020). The fruit that is expected from the tree of the Qur'an is oriented to the results of physical and spiritual efforts by adhering to the four pillars as stated in Qur'an 2:151. Psychologically, the tree will give birth to a person who is healthy, superior, and great so that he can become khalifatullah [vicegerent of Allah] on earth and become khair al-bariyah [the ideal man]. Sociologically, the tree creates khair al-ummah [the ideal society]. As for scientifically, it can give birth to scientific development through research, utilisation, and the discovery of new theories in accordance with each scientific discipline (Sukawi 2020).

In its operational practice, the Syajarah al-Qur'an becomes a model for study and development as well as an orientation to scientific cultural life that originates from QS 24:35. The study and development process is based on the synergy and harmonisation of the verses of the al-Qur'an, the prophetic tradition, the studies of mufassir [interpretation of al-Qur'an experts], muhadditsin [hadith experts], and 'ulama with the phenomena of life which are always changing and developing. The implication of the concept of Syajarah al-Qur'an is to provide a foundation, guidance, and direction to the academic community in the development of science, academic culture, scientific traditions and the university atmosphere, in which there are symbolic themes for developing science and technology in life (Sukawi 2020:171-172). The symbolic themes contained in QS 24:35 are nūr [light], misykāt [niche], mishbāh [lamp], zujājah [glass], blessed tree, and nūr 'ala nūr [light upon light]. The five themes based on al-Ghazali's interpretation in Misykat al-Anwar are linked to the five spiritual powers of humans, namely the sensory soul (hissi), imagination (khayali), rational power ('aqli), reflective power (fikri), and power that is purely sed on prophecy (qudsi / nabawi) (Labib 2021; Sukawi 2020). rrlis paradigm is what underlies academic and non-academic activities, where the Qur'an becomes a source of scientific

culture and synergises and harmonises with various scientific disciplines to answer the challenges of life's phenomena.

Before discussing scientific integration, the UNSIQ has established itself by integrating various systems within it. This integration can be seen in the integration of Islamic boarding schools and modern education, the development of spiritual, emotional, and intellectual potential, skills between Western and Eastern traditions, the integration of Islam, the state, and Indonesian wisdom, as well as the integration of the four main pillars, namely *kyai* [religious leaders], bureaucracy (*umara'*), entrepreneurs, and academics (Sejarah YPIIQ no date; Sukawi 2016b).

All of these integrations and collaborations are guided by the principles of the *pesantren* tradition. This tradition includes three main principles. Firstly, *al-Muhafadhatu ala al-qadim alsalih wa al-akhdu bi al-jadid al-ashlah* which means guarding over old traditions that are still relevant and integrating them with new, better traditions (Asrohah 2011). Secondly, *tafaqquh fi al-din wa al-takhalluq bi al-akhlaqu al-karimah* which means deepening religious knowledge and having noble character. Thirdly, *thalabu al-'ilmi faridhatun 'ala kulli muslimin wa muslimatin* which means studying is a *fardhu 'ain* obligation for all Muslims (Sukawi 2016a).

From the vision mentioned, one of the main missions carried out by the UNSIQ is to transform the values of the Qur'an in life. The goal of education aimed at by the UNSIQ is to produce human resources who are able to transform the values of the Qur'an creatively and innovatively in order to help provide solutions to the problems of people's lives. The research and service developed also focus on integrating the values of the Qur'an and science to implement Islam rahmatan lil 'alamin [blessing for all creatures] (Administrator no date). This integration is intended to strengthen the scientific base ('ilmiyah) of the academic community in it on the basis of the 'natural' character of the Qur'an as a solution to the dichotomy of general science and religion after the golden age of Islam (Hamzah 2018). In other words, the learning process at the UNSIQ prioritises a spiritual introduction based on the Qur'an to educate students to have a handle on life and in the learning process of other disciplines (Sakir 2016).

The main figure at this university is Kyai Muntaha Hafidz. He took the initiative to establish innovation and scientific development in the Qur'an. One of his ideas was to establish a higher education institution with the characteristics of the al-Qur'an (Firdausa 2019; Sukawi 2020). In the organisation of these various educational institutions, Kyai Muntaha Hafidz placed the Qur'an and al-hadith as his main view of life or worldview (Sari 2006). According to him, this spiritual foundation is the guide for a Muslim in applying the values of science and technology, and has also become the main focus of the education pattern at UNSIQ (Sari 2006). This is where the spirituality understood by the UNSIQ academic community lies. The spirituality that inspires and becomes the foundation for the establishment, management, and development of the UNSIQ is qur'anic-based spirituality (al-ruh al-Qur'aniyah) which is harmonious, synergistic, and integrative (Sukawi 2016a, 2020). This spirit comes from the views, mindset, attitudes, and behaviour of KH. Muntaha alHafidz as the central figure in the establishment of the UNSIO.

From the explanation above, it can be concluded that the scientific basis for integrating modern science and the Qur'an has become the spirit of scientific development at the UNSIQ. This can be seen from the learning outcomes that are carried out and the curriculum that supports them. The various learning achievements of graduates from all study programmes and prescribed subjects make the vision of scientific integration a common awareness of the academic community at the UNSIO.

# A critical reading on research development pattern

As stated in Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers, as professional educators, one of the main tasks of lecturers is to develop science, technology, and art through education, research, and community service. These studies also play an important role in strengthening the scientific base at the UNSIQ which uses the concept of 'Syajarah al-Qur'an'. Several publications and research projects by the UNSIQ lecturers have also begun to strengthen the scientific base. To assist the analysis process, researchers divided the research into three categories of theistic science, namely the research category that seeks the conformity of scientific discoveries with the verses of the al-Qur'an, the research category that focusses on the application of modern science in understanding the verses of the al-Qur'an, and the research category that focusses on revealing character values in the al-Qur'an and their implementation in modern life (Muslih 2016). First and second categories are aimed at illustrating the uniqueness of the al-Qur'an, while the third category focusses on the effect of the al-Qur'an on the user.

The first scientific publication entitled 'The Concept of Gravity in the Perspective of the Qur'an and Science (Study of Surah al-Hajj verse 65)' was written by Muchotob Hamzah and Badriyatul Muniroh who came from the Islamic Education Study Program and the Physics Education Study Program (Hamzah & Muniroh 2016). This study compared the theory of gravity from the perspective of physics with the views of the Qur'an on the theory, especially those mentioned in Qur'an Surah al-Hajj verse 65. This study uses an analysis of the meaning and definition of gravity from a scientific perspective. Then it analysed the interpretation of the verse and its relation to the prevailing theory of gravity. The results of this study indicate that the Qur'an does not explain this concept in detail and only provides a global understanding. If physics learning in high school focusses on physical analysis, it needs to be equipped with the spiritual meaning and wisdom behind these events.

A similar study entitled 'Meteorology in the Perspective of the Qur'an and Modern Science' was written by Nurul Mubin in 2020 (Mubin 2020). Nurul Mubin is a lecturer in the Islamic Education Study Program, Faculty of Tarbiyah and Teacher Science. This research focussed on meteorological studies which include wind, cloud, rain, and lightning phenomena. This study is dominated by the classification of verses related to the phenomena mentioned above and then the interpretation of these verses. The results of this study conclude that various modern scientific discoveries related to natural phenomena have been confirmed by the Qur'an through its verses, both *qauliyah* [written words on the Qur'an] and *kauniyah* [Allah's words that spread out the Qur'an] verses. This also shows evidence of the truth of the revelation of the Qur'an.

Both studies were strengthened by the research 'Science and Technology in the Perspective of the Qur'an' by Asep Sunarko, a lecturer at the Arabic Language Education Study Program, Faculty of Tarbiyah and Teacher Science (Sunarko 2015). The research shows the sources of knowledge and ways of obtaining knowledge, as well as the evidence of knowledge in the Qur'an. This study concludes that the development of science must be in accordance with the guidelines of the Qur'an. If it is not, then it cannot provide benefits to humans and can even cause harm. In addition, knowledge can not only be achieved with the human mind, but it is also necessary to bring the heart to believe and do dhikr [remembering Allah] and dzauq [spiritual feelings] to feel. The three studies above fall into the first category of research by the UNSIQ lecturers which focusses on the study of modern scientific theory in the Qur'an.

The second category of research by the UNSIQ lecturers consists of several scientific publications by the lecturers that focus on the application of modern science in studying the Qur'an and al-Hadith. One of them is a study entitled 'Vector Analysis in the Prayer Movement on Health' conducted by Sri Jumini and Chakimatul Munawaroh from the Physics Education Study Program (Jumini & Munawaroh 2018). This study aimed to analyse the vector in the prayer movement as seen from the standing, takbiratul ihram, ruku', sujud up to salam. After being analysed by vector analysis, the benefits of these various movements were sought from a health perspective. The results of this study indicate that all prayer movements in one raka'at have a number of angles of 3600 and have the same number as the tawaf movement. From a health point of view, all these movements if done properly and perfectly from standing up to greetings (sal m) can provide benefits to the body.

A similar study entitled 'Study of Thought and Backbiting for the Health of the Human Body (Teaching the Concept of Vibration and Waves)' conducted by Nelly Azizah from the Physics Education Study Program also falls into the same category (Azizah 2018). This study aims to show the lessons learned from the prohibition of backbiting and evil suspicion from a health perspective, especially cardiovascular and mental health. This research shows that prejudice and backbiting can cause anxiety and stress that have an impact on physical and mental health. This anxiety can cause high blood pressure and an accelerated heart rate according to the concept of vibration in the body in physics. As for the concept

of waves indicating heart disease that is not immediately resolved, causing the rupture of blood vessels and disrupting the circulatory system.

The next research is a study entitled 'Early Determination of *Fardhu* Prayer Time with Circulation of the Sun', which was carried out by Ahmad Khoiri, a lecturer in Physics Education at the Faculty of Tarbiyah and Teacher Sciences (Khoiri 2017). This research used the deductive method and the *tahlily* [analysing] method. The deductive method is used to derive physical theories from the general to the more specific, and the *tahlily* method is used to explain the related verses of the Qur'an and reveal the meaning behind them. This study concluded that the determination of the beginning of prayer with the circulation of the sun is interconnected between modern science and the Qur'an. In fact, from this research, modern scientific knowledge, especially regarding the circulation of the sun can help a Muslim determine the start of the *fardhu* prayer time.

Another piece of research applied to community service activities is 'Design of a Mobile Verifier for Sacrificial Animals Using a QR Code Based on the ZXING Library' (Baihaqy, Asnawi & Fatimah 2020). This research was conducted by M. Alif Muwafi Baihaqy, Muhammad Fuat Asnawi, and Siti Fatimah from the Informatics Management Program and Informatics Engineering Program. This research facilitated the process of buying and selling sacrificial animals and minimised human error, and has implications for losses suffered by consumers and traders. With this system, there can be detailed animal data and track records are based on Android mobile.

The third category of research is research that focusses on the formation of the Qur'anic character. The first research entitled 'The Growth of Islamic Character through Physics Learning based on Science-Islam Integration' was conducted by Ahmad Khoiri, Qori Agussuryani, and Hartini from the Physics Education Study Program (Khoiri, Agussuryani & Hartini 2017). This study applied physics learning to class IX students of al-Qur'an Vocational High School based on the integration of science and Islamic values and reflection on the results of the evaluation of learning. This study showed that learning based on Islamic-science integration can improve student learning outcomes, attitudes, and social attitudes. Moreover, the character values that are instilled during the learning process require students to have an Islamic character in the form of honesty.

The next research is a study entitled 'Growing Scientific Attitudes Through Thematic Studies of Science QS *al-Mu'minun* Verses 12–14 Using Journal Qur'an Techniques' conducted by Desy Putri Hanifah from the *Madrasah Ibtidaiyah* Teacher Education Study Program (Hanifah 2020). This research is the result of a reflection on science courses and the Qur'an in the 6th semester of the Islamic Elementary School Teacher Education study program. The verse that becomes the object of the research is the verse that explains the origin

of human events. This study concluded that the technique of al-Qur'an journalling can be an alternative to studying the Qur'an thematically according to the branch of science. During the learning process, there are several attitudes that are well stimulated, such as gratitude, obedience, faith, and so on, as well as scientific attitudes such as honesty, confidence, scepticism, curiosity, and so on.

Another similar study entitled 'Internalization of Character Values in Learning 'Ilm al-Ashwat (Case Study Against Arabic Language Education Students UNSIQ Wonosobo)' was conducted by Chairani Astina and Rifqi Aulia Rahman from the Arabic Language Education Program (Astina & Rahman 2018). This study analysed the character values contained in the 'ilm al-Ashwat [Arabic phonology] course that supports the achievement of the UNSIQ spirit, namely qur'ani, transformative, and humanist. This study concludes that the character values that are internalised in the first semester student in Arabic Language Education Program at the UNSIQ are divided into two categories. The first is the character values implied in the learning methods such as self-confidence, responsibility, love of reading, respect for achievement, and curiosity. The next set of character values is further implied in the learning materials which include honest, disciplined, communicative, and religious attitudes.

From the explanation above, it can be concluded that the research projects in the first category focus on proving the facts of modern science in the Qur'an. This research model can be said to be a beginner research model because it only contains a definition of a concept from a scientific discipline and compares it with verses in the Qur'an that have similar problems. In fact, not infrequently, because the Qur'an is global and not a book of science. This research model is in line with the thinking model of Harun Yahya and Maurice Bucaille, which is directly referred to by the majority of research in category one. This model aims to determine the suitability of scientific findings with the verses in the Qur'an (Muslih 2017). In this case, when the Qur'an and science introduce the same issue, many parties conclude that the two can be brought together and even merged. In this phase, many commentators leave the realm of science and enter the realm of scientific findings and methodologies. On the other hand, there are also scientists who bring their findings and methodologies to the area of the Qur'an and look for verses that justify these findings or those findings that strengthen the 'truth' of the Qur'an (Muslih 2017). In fact, science is something that has the potential to be wrong and the Qur'an is an area where there is no doubt about it. From this, if the findings change because of other findings that have accumulated, then the verses of the Qur'an that support these findings are wrong and need to be corrected. In this first study, the majority of researchers came from Islamic scholarship or from the perspective of the Qur'an, namely from the study programmes of Islamic Education and Arabic Language Education, although there were still collaborative efforts with Physics Education lecturers.



The second category of research focusses on the application of modern science to studying the Qur'an and al-Hadith. This research model appears to be a continuation of the first category of research and applies modern scientific theory to analysing verses of the Qur'an or al-Hadith. Other forms of research show the application of modern science such as the science of the sun's circulation and the use of QR codes in selecting sacrificial animals. This second research model is practical and applicable, and allows modern science to run side by side without the need to compare theories in science to be confirmed by the verses of the Qur'an. This second model of research is mostly done by lecturers in Physics Education, Information Management, and Informatics Engineering study programmes. Unlike the two previous research models, the third research focusses on the formation of the Qur'anic character from various disciplines taught, both in courses and high school subjects. This research model tries to reveal the Qur'anic character values contained in learning activities. This research model strengthens the Qur'anic spiritual base which is the spiritual basis at the UNSIQ as enshrined in the example of Kyai Muntaha al-Hafidz. This research model is dominated by lecturers from the Faculty of Tarbiyah and Teacher Science.

From this analysis, the first model of research can be categorised as basic research to stimulate communication and dialogue between the Qur'an and science. The second model of research can be categorised as research that becomes auxiliary hypotheses in the encounter of science and the Qur'an. The third research model is also a supporting hypothesis for the formation of Qur'anic characters in the learning process that runs at the UNSIQ. In addition, research on the theme of scientific integration is still limited to a few study programmes. As the researchers found, the majority of themed research came from the Faculty of Tarbiyah and Teacher Science, especially the Physics Education Study Program. As for other science faculties, such as the Faculty of Technology and Computer Sciences, the Faculty of Medical Sciences, the Faculty of Economy, the Faculty of Language and Literature, and the Faculty of Communication and Social-Politics Sciences, there is still a lack of research on the theme which indirectly supports the scientific base at the UNSIQ.

On the other hand, these works have only appeared in the last 5-10 years. When compared with the UNSIQ which has been established since 2001, the direction of research development and strengthening of the unique scientific base of the UNSIQ are quite late. Two major seminars were also held in 2017 and 2018. The above studies also ranged from 2010 and above. Thus, this is a special concern for the development of the UNSIQ in the future, especially in order to strengthen the scientific base so that it can become a scientific paradigm and animate all study programmes in it. This is in line with the reflection of Mahfudz Junaedi, Dean of the Faculty of Syariah and Law UNSIQ 2017-2021 who said that this university needed to sharpen the methodology for integrating modern science and the Qur'an systematically. According to him, the scientific base at the UNSIQ needs to be reconstructed in order to lead to changes in the ongoing

process of an integrated curriculum that needs to be enriched with research that strengthens the scientific base at the UNSIQ (Junaedi 2017).

#### Conclusion

From the beginning of its establishment and the name it carries, the UNSIQ has prioritised the integration between modern science and the Qur'anic Science. This is inseparable from the historical side of the founder and also from the needs of the people, which indicates the existence of this scientific integration. Al-Qur'an is placed as the basis of character in the development of science and technology. The synergy initiated also combines science development based on a harmonious-synergistic-integrative paradigm that emphasises the integration of East-West civilisation and combines the traditional wisdom of Islamic boarding schools with modernity in the university system. However, in order for the scientific base to become a scientific paradigm, it must meet the requirements. From the author's observations, the scientific base at the UNSIQ has been structured in an awareness that supports the establishment of a distinctive academic tradition and scientific culture. This is reflected in the achievements of graduates that have been declared and also in the curriculum that has been set. However, research as an auxiliary hypothesis has not been widely carried out by the academic community in it as the work of lecturers discussing this theme is still minimal. Existing research is also still limited in certain faculties and is not evenly distributed. This could be because there is no research development plan that supports the strengthening of the UNSIQ's unique scientific base or the existing research development plans that have not been properly socialised to all academic staff and implemented in their academic works. Therefore, as a consequence of building scientific buildings, it is necessary to reactivate the spirit of research with the theme of integrating science and the Qur'an in various disciplines as stated in the UNSIQ's vision so as to be able to build a unique scientific paradigm of the UNSIQ. As a suggestion, establishing a scientific paradigm needs to consider the possibility of its implementation in various research and scientific studies. Apart from that, socialisation and shared perceptions of academic staff are the most important things in unifying thinking paradigms so that the various research produced mutually strengthens the scientific paradigm and not vice versa, actually weakening the prevailing scientific paradigm as happens in Malaysia and Islamabad.

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#### **Competing interests**

The authors have declared that no competing interest exists.

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#### Authors' contributions

M.M. and Y.K.Y. contributed to the implementation of the research and the writing of the manuscript. S.H. and A.A.M. contributed to the implementation of the research and the analysis of the results.

#### **Ethical considerations**

This article followed all ethical standards for research without direct contact with human or animal subjects.

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#### Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

#### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors, and the publisher.

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