



The use of Technology towards Science Needs in *Salafi* Islamic Boarding Schools

Muhammad Rizal¹, Muhammad Osama², Saiful Bahri³

¹Geography Education, University of Almuslim Bireuen, Indonesia

²Qalyoub Secondary School in Qalyubia Governorate, Egypt

³Islamic Educational Management, University of Muhammadiyah Jakarta, Indonesia

abizal@umuslim.ac.id

ABSTRACT

Keywords:

Technology;
Science;
Learning;
Dayah Salafi.

The aim of this research is to characterize the scientific educational technology integration system in *Salafi* Islamic boarding schools. The purpose of this investigation is to characterise the phenomenon of scientific education technology integration in *Salafi* boarding schools. Researchers used qualitative descriptive methods. *Santri*, school principals, teachers and *Dayah* leaders were examined. This research was attended by one school principal, four educator, and five grade 10 students of *Dayah Aljamiah* Vocational School and *Dayah* MUDI Bireuen. Interviews, observations and documentation are research tools. Data was obtained through observation, interviews and documentation. Analysis involves collecting, reducing, presenting, and drawing conclusions. This study tested four factors to ensure data accuracy: trustworthiness, transferability, dependability, confirmability. The results of this research show that (1) Aceh's *Dayah Salafi* has integrated science and technology into their environment through vocational schools; (2) *Dayah Salafi Al Jamiah Al-Aziziyah* and MUDI led the Yellow Book learning revolution with learning technologies; and (3) *Dayah* has taught kids that religious and general knowledge are equal. The results of this research show that *Dayah Salafi* teachers in Aceh have made structured efforts to change the way their students learn science and technology.



Article History:

Received: 27-05-2024
Revised : 16-07-2024
Accepted: 19-07-2024
Online : 01-08-2024



This is an open access article under the **CC-BY-SA** license



<https://doi.org/10.31764/ijecca.v7i2.23979>

A. INTRODUCTION

The correlation between Islam and science can be acknowledged from various standpoints. Both Islam and Science exert influence on human people. Both provide strength; science provides man with tools and accelerates the pace of progress; Islam sets the purpose of human endeavours and, at the same time, directs these efforts. Science brings about an outward (material) revolution, and Islam brings about an inward (spiritual) revolution (Lundeto et al., 2021). Science beauties the mind and intellect, and Islam beauties the soul and emotions. Science protects man from diseases, oods, storms and other natural disasters. The term science in Islam is different from science in the modern Western sense today; if science in the West today is understood as the only science and religion, on the other hand, as a belief, then in Islam, science is not only science in the modern Western sense, because religion is also a science, meaning that in Islam the discipline of religion is a science, anxiety and discomfort (Lisnasari et al., 2023). Science harmonizes the world with man, and Islam harmonizes with him.

In Indonesia, technology has penetrated the world of Islamic boarding schools. On the one hand, Islamic boarding schools are synonymous with the teaching of the yellow book, which, with its traditional image, is anti-technology (Tamwif, 2022). However, around the 2000s, this assumption began to shift. Suppose we search for information about the technology of Islamic boarding schools in search engines such as "Google". In that case, we will easily find several Islamic boarding schools that simultaneously provide yellow book learning with technology. Basically, technological advances cannot be separated from the development of the world of education. Islamic boarding schools, as one of the educational institutions in Indonesia, must undoubtedly keep up with developments and be actively involved in advancing technology (Mughtar, 2014). This is because technological progress is part of an effort to build civilization. With the aid of technologies like *Maktabah Syamilah*, the *Dayah Salafi* students of *Jamiah Al-Aziziyah* and MUDI may now efficiently search for a certain theme among three different types of books in under five minutes. This is the smallest component of incorporating technology into the Yellow Book education process.

Islamic boarding schools, as educational institutions with strong roots (indigenous) in Indonesian Muslim society, can maintain their survival system and have a multi-aspect education model (Mustari & Rahman, 2020). The students are educated to become someone who understand religious knowledge and receive natural leadership, independence, simplicity, perseverance, togetherness, equality, and other positive attitudes (Rizal et al., 2023). This capital is expected to give birth to a quality and independent society as a form of Islamic boarding school participation in the success of national development goals while playing an active role in educating the nation as mandated by the 1945 Constitution. *Pesantren* as an educational institution that has strong (indigenous) roots in Indonesian Islamic society, can maintain its survival system and has a multi-aspect educational model (Mustari & Rahman, 2020). The students are educated to become someone who understands religious knowledge and accepts the qualities of leadership, independence, simplicity, perseverance, togetherness, equality and other positive attitudes (Rizal et al., 2023).

This capital is expected to give birth to a quality and independent society as a form of Islamic boarding school participation in the success of national development goals as well as playing an active role in educating the nation as mandated by the 1945 Constitution. Islamic boarding schools in Indonesia are not only as an educational institution but also plays a role as a religious institution which is the basis for the process of social change in society. As time goes by, Islamic boarding schools are in demand not only providing religious education, but Islamic boarding schools are also expected able to compete with other formal educational institutions. With Thus, Islamic boarding schools as Islamic educational institutions have great potential for formation of human resources and potential towards realizing the intelligence of students who are globally competitive (Fakhrurrazi & Sebgag, 2020).

Along with the mainstream development of globalization, Islamic boarding schools face several inevitable social changes in society. In the current era of globalization, Alvin Tofler envisages the creation of the informational society, which is difficult to avoid by countries in the world and on the surface of this earth., including Islamic boarding schools in Indonesia, so the phenomenon of globalization, which is so fast accelerating in various aspects, as a logical consequence of the application of high-tech (high technology) causes the Indonesian nation to be led to a fast and massive interaction pattern with other countries in the world. Information technology, for example, is a new momentum in the communication and association of human civilization. Because in living this life, humans want to be happy in this world and the hereafter (Maimunah et al., 2021). From the changes in science and information technology, it is time for Islamic boarding schools to start evaluating themselves by trying to enter a simple learning system to be more actual so that it will produce graduates who not only master religious knowledge through the yellow book but have a plus point, namely mastering

technology.

Various previous studies have stated the importance of science epistemology, including those presented by Yusuf (2015), emphasizing the importance of Islamic epistemology revelation and *sunnah* as a source that inspires the development of science. It is expected that the development of Islamic epistemology for science will give birth to a generation of Muslims who are pious in the field of religion and experts in the field of science and technology, which in turn will have an impact on the glory of Islamic civilization in the future, it is necessary to carry out a movement of rapprochement and reintegration between religion and science, by doing various ways, including establishing educational institutions oriented to the mastery of science and technology. The research results by Lundeto (2021) stated that for Islamic boarding school institutions to achieve the status of Islamic boarding schools 4.0, it is essential to reform and modernize all aspects of Islamic Religious Education. There are three steps that Islamic boarding schools must take in this 4.0 era: disruptive attitude, self-driving, and reshaping or creating.

This aligns with research by Tamwif (2022), which explains that using information technology can provide benefit to increase the efficiency and effectiveness of the learning process and management of Islamic boarding schools. The existence of technology as information can also help improve Islamic propaganda and preaching in the community. Information technology The facilities and infrastructure in *pesantren* still need to be improved, but that does not mean that Islamic boarding schools must wait until the infrastructure is completed because this can cause Islamic boarding schools' education and learning to lag behind other public schools.

Faizah Lisnasari (2023) added that as it is commonly understood that the existence of technology in education is a blessing for the Muslim education project, this is because the existence of technology has been able to innovate learning, which includes collaboration opportunities in access to education, cooperation networks, and some of the benefits it has. The use of technology in learning is legal. Therefore, this research differs from previous studies, which mainly highlight the use of technology in learning in school-based Islamic boarding schools. At the same time, this study emphasizes the impact of integrating technological facilities in obtaining science in traditional Islamic boarding schools, which has never been studied before.

Therefore, the objective of this research is to initiate additional research to ascertain the process of integrating science and technology into the *Salafi Dayah* of learning the Yellow Book. It is anticipated that this research will be beneficial to students, *Dayah* instructors, and other *Dayah Salafi* leaders in Aceh by utilizing a science and technology approach to study the Yellow Book in *Dayah Salafi*, thereby enhancing the competency of *Dayah Salafi* graduates in Aceh. Considering this context, the researcher directed the inquiry: What is the process of integrating science and technology in the study of the yellow book in *Dayah Salafi*? in order to gather data.

B. METHODS

This purpose of this study was to provide an account of how *Salafi* Islamic boarding schools meet their scientific requirements through the use of technology. The researcher involved 2 *Dayah* Leaders and 1 Vocational School Principal, as well as 4 teachers, and 10 students from *Dayah Jamiah Al-Aziziyah* and MUDI *Bireuen*, all of whom were part of this qualitative descriptive research. The purposive sampling technique was employed to select participants for this study. This technique involves selecting samples based on specific objectives and the conditions that must be satisfied.

Data was gathered by keeping track of things, talking to people, and observing events. This research uses interviews as a data collection instrument participant (Sugiyono, 2015). The

researcher's initial step was to engage in participatory observation, during which she observed the students and *Dayah* instructors, listened to their conversations, and participated in their activities. This is where the researcher participated in the routine yellow book learning activities of the *Dayah* and subsequently documented the students' learning activities, attitudes, and behavior. This information is pertinent to the integration of science and technology into the *Salafi Dayah* of learning the Yellow Book. Then the researcher conducted direct interviews with *Dayah* leaders, vocational school principals, teachers and students regarding the application of technology in learning the Yellow Book, and opportunities for using technology in learning at *Dayah Salafi* as well as the readiness of teachers and students in using digital applications at *Dayah Salafi* The process of learning the Yellow Book. Documentation is utilized to gather information regarding the progress of technological infrastructure implementation in yellow book learning. These three data gathering procedures offer comprehensive and organized information for researchers to comprehend the intricacy and circumstances of events, as well as the viewpoints of research individuals (Bungin, 2006).

There are multiple steps to accomplish the goals of this research. In the first stage, known as "pre-activity," the researcher establishes the study's focus, formulates its aims, gathers background information, chooses data gathering strategies, chooses a subject, and drafts the study's design. The researcher then reached an agreement on a research timeline after obtaining approval from *Dayah's* leadership. The tasks were completed by watching, interviewing, and recording the *Dayah* instructor as she implemented a program to help her students improve their technology skills for learning. There are a number of moving parts to this activity's execution, such as the following: gathering data on teachers' and students' preparedness to use digital applications at *Dayah Salafi*; creating opportunities for students to learn through technology; and preparing technological facilities and media for use in learning the Yellow Book. Methods for acquiring knowledge from the Yellow Book that include recording, observing, and interviewing.

At the data analysis stage, researchers implemented the qualitative analysis methodology devised by Gläser-Zikuda et al (2020), which comprises several phases, including data preparation, data coding, categorization coding, interpretation and interpretation, verification and validation, and report writing. In order to identify emergent themes, a content analysis approach will be employed to analyze all data. This analytical technique is frequently employed in qualitative research and is appropriate for a diverse range of data types. As recommended by Lindgren et al., (2020), this investigation implemented a content analysis methodology to investigate themes concerning the integration of technology into the *Salafi Dayah's* learning of the yellow book.

C. RESULT AND DISCUSSION

1. Implementation of Technology and Science in *Salafi Dayah*

The development of science, especially in information technology, has now dominated world civilization. We can find and see this daily in various institutions, both government and private, national and international, and even in households familiar with information technology (Sunhaji, 2018). *Salafi Dayah* spread throughout the country as Islamic educational institutions are required to be able to play a more active role in order to foster a generation that is responsive, precise and fast in responding to and utilizing technology so that *santri* can have broad insight but still have a corridor of *aqidah* and noble morals (Basari et al., 2023). On this basis, the leadership of Islamic boarding schools MUDI Bireuen Abu MUDI and Dr Tgk Muntasir, MA, agreed to establish SMK Jamia'ah Al- Aziziyah Samalanga with a combination of the *Salafi* Islamic

boarding schools curriculum with the TKJ (Computer and Network Engineering) expertise program as a form of struggle for the community against the state of adolescents (young people) in the surrounding environment.

The existence of *Salafi* Islamic boarding schools with the TKJ expertise program in this SMK is expected to participate in preparing Islamic boarding schools alumni who are ready to use in the world of work and become a necessity as well as to support the preparation of reliable and morally good prospective workers. The curriculum used is the *Salafi* Islamic boarding schools curriculum which integrates the teachings of the yellow book based on Ahl al-Sunnah wa'l-Jamaa'ah (Ritonga, 2021). Dayah Jamia'ah Al-Aziziyah Samalanga is located in Batee Iliiek Village, Samalanga District, Bireuen Regency, Aceh. By building a representative school, it is hoped that it will be able to produce human resources with global insight and inherit the noble values of the Islamic boarding schools so that they become technocrats who have firm faith and praiseworthy morals.

The educational program at the dayah Jamia'ah Al-Aziziyah Samalanga is detailed in this research, namely studying the Yellow Islamic classic Book (*Kitab Kuning*) which is taught directly by the Islamic boarding schools leader (Wulandari et al., 2023), while the general material refers to the national curriculum (Independent curriculum) and is added with local enrichment content and supplementary content in the form of extra-curricular activities, namely Arabic and English language development programs and life skills programs. The curriculum is a very important component in achieving educational goals, while the curriculum applied at the SMK level of this Islamic boarding schools is the independent curriculum. The boarding schools Leader explained that this SMK with TKJ expertise program is a form of integration of science technology and *Salafi* Islamic boarding schools, the hope is that Islamic boarding schools graduates have praiseworthy morals who are able to compete in the business world and the industrial world (Rosyidin & Arifin, 2021).

This is in line with Zulfikar's (2023) statement that the implementation of technological advancements in the Islamic boarding schools curriculum, of course, is very multi-level because this school is based on a *Salafi* Islamic boarding schools in which studying religious science applies formal education, especially technology, but in practice, the Islamic boarding schools leadership strongly supports the TKJ program at SMK. Among the Islamic boarding schools support is the availability of a very strategic environment, community needs in education and student priorities in facing global progress. So that the existence of the *Jamiah Al Aziziyah* Boarding schools for Muslims which carries science and technology in a large portion is considered a new breakthrough in Aceh Province in the world of *Salafi* Islamic boarding schools, where usually student are only focused on religious knowledge based on the yellow book.

The initiator of this Islamic boarding schools concept, Dr. Muntasir, MA as the head of the Dayah Jamiah Al-Aziziyah, he is also the Rector of the Al-Aziziyah Islamic Institute of Bireuen, wanted a Islamic boarding schools that was different from other *Salafi* Islamic boarding schools in Aceh. Acehnese *Salafi* Islamic boarding schools typically do not include any science or technology into their curricula, instead focusing solely on religious academics. Even if there is one, they may not look for interaction with science and technology, not looking for common ground, only at the level of teaching and developing (Jamhari & Asrori, 2022).

Science provides an example such as this an important part of Islamic boarding schools is bridging the gap between religion and science. All knowledge, according to Muslims, originates with Allah (SwT), the Creator. The Qur'an and Allah's origins and laws are inseparable, especially the verses of *kauniyyah* (nature/science). The Islamic boarding schools that initiated the concept

of science technology has the spirit to prove that there is no conflict between religious knowledge and general sciences or science (Yamin et al., 2023). In fact, both are very connected and related.

Before the Qur'an was revealed, the ancient Greeks had discovered theories and sciences, but they were still based on reason and senses, namely the geocentric theory that the earth is the center of the solar system, while the other planets surround the earth, and it turns out that the earth is circling the sun which rotates on its axis (Fakhri, 2010). This knowledge is described by the Qur'an in Surah Yaseen. The Qur'an is the initial guidance where man must search for his potential, seek the truth of the creed and connect it with science with a very simple medium. After the Qur'an was revealed, it changed and raced with the Qur'an and science. Although there were not many discoveries at that time, but at that time, Muslim scholars were very critical, such as Al Farabi, Ibn Sina, al Kindi, Ibn Rushd, Al Ghazali and so on. Even all of these Muslim scientists, do not rule out general knowledge and logic with religion, even though they are more expert in the field of religion (Leli et al., 2021). So that's where the interaction between religion and science comes from.

With the interaction of religion and science, there was a conflict between the theories of scientists and Muslim scientists at that time, because of the decline and wars at that time. Then the sciences were finally separated because of the many contradictions among scientists. Once we understand the connection between faith and reason, it's easy to see why Islamic boarding schools should lead the charge in establishing a foundation for this dialogue. The earliest kind of formal education in Indonesia was provided by Islamic boarding schools, which are founded on Islamic religious principles. Even after this country gained its independence, *Salafi* Islamic boarding schools continued to play an important role in the propagation of Islam (Maulana et al., 2023). Islamic boarding schools, like any other institution, need to be nimble enough to adapt to a changing environment and foster the growth of secular science alongside their religious tenets.

The Islamic boarding schools here plays a very important role in maintaining Allah's knowledge, especially Islamic religion and science, which are actually one. So it is made into a collaboration and fusion. Student in Islamic boarding schools who generally only study religious knowledge, then in this latest Islamic boarding schools concept, are combined with science and science by utilizing technology (Umar et al., 2023). Building pupils' character and religion into a solid, life-changing foundation is the obvious aim, as it will serve as a springboard for future success in the classroom and in global scientific endeavours.

2. Technology Opportunities in Learning

The application of technology is very important in Islamic boarding schools educational institutions considering that in Islam itself must be in touch with each other, now the way to meet itself gets easier with the existence of technology which makes it closer and easier to communicate with each other. In this case, a student's also need to have skills in the use of technological tools, because the interests and talents of students in Islamic boarding schools also need to be honed (Mansir et al., 2021).

Technology itself is very important for those who want to carry out work activities and mutual friendship between families and friends. Technology itself helps *santri* compete with the wider community in the economy. The next character of modernity is flexible and dynamic, which means not standardizing everything or freezing everything (Vebriani et al., 2021). The development of the technological era is increasingly advanced and rapid in the social sphere, technology is now very helpful for the development of a person to interact with each other. Technology is part of the lifestyle of people around the world to find information and absorb

information. The information provided is very important for the progress of thinking of the community itself. In this context, education that makes use of technology is crucial for facilitating learning.

Islamic boarding schools teachers in this case are important to provide insight into learning technology to students in Islamic boarding schools, because Islamic boarding schools activities are learning activities. Technology is very helpful for the development of society to interact with each other and receive information from outside, and there needs to be limits to its use. Information restriction is very important, in order to avoid information that is less useful (Zainal et al., 2022). In the description that has been mentioned, the student's need to be given information about the importance of information and communication technology. In relation to science, ICT is its application. Science is a theoretical level that can improve scientific thinking and be widely integrated, while technology can help students capture positive information and of course religious propagation or *da'wah* can also be more widely reached (Dalimunthe et al., 2023). For example, film, media, journalism, photography, videography, cinematography, graphic design, robotics and so on. So it really needs to be appreciated if there are Islamic boarding schools that can accommodate ICT into their learning.

For example, at *Dayah Jamiah Al-Aziziyah Samalanga Bireuen*, in addition to being equipped with religious knowledge through the recitation of the yellow book and the Qur'an, they are also given a place to be creative, one of which is the Photography Community which is engaged in developing knowledge about photos, videos and films. They have even learned to make live streaming during learning. Then the Islamic boarding schools students and teachers made a Production House that has produced the results of the studies of Islamic boarding schools scholars, even every Friday the Islamic boarding schools students conduct podcasts to discuss crucial religious issues that have not been resolved. Of course, the media for *da'wah* can be more comprehensive. In *Jamiah Al-Aziziyah* Islamic boarding schools, students are also taught writing, journalism, media, and the implementation of other ICT developments. Even some time ago, a Coding training was held in collaboration with the Faculty of Computer Science, Almuslim University.

The coaches, students were taught how to manage websites, coding, even to the level of light hacking. This can be positive because nowadays, accounts on social media are prone to being hacked, and we cannot move if we do not master these things. Another Science Technology Islamic boarding schools in Bireuen Aceh is the MUDI Mesra. This Islamic boarding schools is fairly unique, where the students are a work-ready generation. In the MUDI Mesra, there is a special class consisting of 35 students who are equipped with IT knowledge to develop a creative economy or creative industry in online channels. They are guided to be able to code, computer savvy, websites, and even online businesses. They are trained to build websites, become Marketing CEOs, play Facebook Marketing, and Google AdWords, this class has only been running for a month, so there are no products produced by the students. They are trained to create websites, become CEO Marketing, play Facebook Marketing, and Google AdWords. This class has only been running for a month, so no products have been produced by the students. On the other hand, the digital media assistance schedule for students is carried out for 4 days a week without reducing the regular yellow book learning schedule.

The combination of Islam and Indonesia is not merely a matter of religion and nationality, but the magnetism of *santri* (a representation of Islamic education) towards efforts to advance the country (nationality) is also part of the role of Islamic boarding schools in marrying Islam and Indonesia (Tahir, 2017). The interaction of Islamic boarding schools with science and technology

has something to do with the dualism of education, in this case religious and national education, many accuse it to the Ministry of Religious Affairs, even though what Ministry of Religious Affairs has done is right. The proof is that until now, the community can enjoy the fruits of this policy, for example the development of Islamic schools, Islamic boarding schools, and *diniyah* which can accommodate the children of the Muslim generation to deepen their religion. One can imagine what would happen if religious education was only regulated by the Ministry of Education (Tambak & Sukenti, 2020). How many servings to give. Of course, it cannot be as broad as the Ministry of Religious Affairs in giving its portion. After all, who will take care of madrassas, *diniyah*, Qur'anic Education Parks, and Islamic boarding schools?

Although in this country there are Mass Organizations, such as NU and *Muhammadiyah* that take care of some institutions under their auspices, or are considered affiliated with their organizations, but it cannot reach widely, especially schools established and managed by the private sector (Ni'am, 2015). It can also cause the state to be absent in taking care of religious education widely and thoroughly. And this disrupts the process of integration of Islam and Indonesia in relation to education. The existence of religious and general education can also erode the assumption that non-religious or general science has nothing to do with *ukhrawi* (hereafter) affairs. Meanwhile, religious knowledge is the closest to the afterlife. This kind of dichotomy still occurs in many communities, although the number has decreased compared to the past (Fathurrochman et al., 2020). Therefore, in Islamic schools, Islamic boarding schools, and Islamic universities, general sciences are also taught, such as mathematics, science-technology, social sciences, and others.

At UIN, for example, there are majors in general sciences, such as civil engineering, economics, socio-politics, Mathematics, mechanical engineering, building engineering, non-Arabic foreign languages, Indonesian, regional languages, and others. Of course, this is good to help the sweet integration process between being a Muslim with a qualified religious insight and being the next generation of the nation that participates in coloring the existing scientific movement (Licorish et al., 2018). Has it been a success? Back again to the implementation. Of course this kind of process cannot happen quickly. It takes a long and sustainable time to be considered a success. But at least a platform to get there has been provided.

The reality of the development of Muslims is still very lacking in studying the Qur'an in relation to scientific studies. Whereas in the Qur'an there are around 800 verses that tell about the universe and that has not been the concern of Muslims. They still focus on verses that talk about Islamic law which only fulfill about 200-300 verses in the Qur'an. It is non-Muslims who actually promote the spirit of studying the Qur'an in terms of science (Hasan & Juhannis, 2024). For this reason, the existence of SMK in *Salafi* Islamic boarding schools can encourage Muslims in Indonesia to pay attention to natural phenomena as part of God's grace that is tucked away in science.

Alumni of this *Salafi pesantren* are expected to be able to guard the great hopes of the *Muslim Ummah*. Three batches have been graduated by this educational institution. They are studying at renowned campuses in the country and even abroad carrying the spirit of the fusion of Islam (Al-Qur'an) and Science as part of efforts to advance Muslims and Indonesia. The presence of SMK in the *Salafi* Islamic boarding schools environment does not just mix the Islamic boarding schools curriculum with general science as in modern or postmodern Islamic boarding schools, but also takes the specificity of studying the Qur'an and hadith combined with natural science, and how the interaction pattern between the two (Edi et al., 2019). This pattern of interaction between religion and science is not found in modern Islamic boarding schools. Foreign language skills,

especially Arabic and English, become a basic prerequisite that cannot be negotiated. They are not only required to have mathematical and philosophical reasoning skills. This is because the future projection is quite large, where the alumni are expected to become scientists of natural science, technology, and doctors who have a strong Qur'anic and religious base (Syarifah, 2023).

Since the *Jamiah Al-Aziziyah* Islamic boarding schools was established on January 19, 2012, it was only in 2018 that this Islamic boarding schools opened a vocational school, so this Islamic boarding schools has become the attention of many people, not only from the Islamic boarding schools community, but also academics, education practitioners, and so on, even many other Salafi Islamic boarding schools in Aceh have now established vocational schools with computer technology majors adopted from this *Jamiah Al-Aziziyah* Islamic boarding schools. They are eager to follow the growth of the application of SMK education in this *Jamiah Al-Aziziyah* Islamic boarding schools, which is one of the schools that initiated the idea of *Salafi* Islamic boarding schools in studying science and technology".

Many prospective scholars, masters, researchers, and other educational institutions want to make *Jamiah Al-Aziziyah* Islamic boarding schools as a research location and comparative study. For some, Islamic boarding schools *Jamiah Al-Aziziyah* is considered as part of a renewable effort that can improve the quality of Islamic boarding schools education. Others argue that *Jamiah Al-Aziziyah* Islamic boarding schools can be an agent of revolutionizing Islamic boarding schools education in the present and future. This is because *Jamiah Al-Aziziyah* implements a learning curriculum that departs from the concept of *Salafi* Islamic boarding schools based on the yellow classical book itself.

Muslims today are in the grip of Western domination in the fields of science and technology. In parallel with this development, there is a setback in the social, moral and civilization aspects which is quite distressing. Nature is in a massively damaged condition and this is also exacerbated. It is suspected to be a negative result of the progress of science and technology itself (Grothaus, 2022). For this reason, *Jamiah Al-Aziziyah* Islamic boarding schools applies science and technology to study the Qur'an and the yellow classical books. It is an endeavor to overcome the complex problems of the world.

3. Readiness of Salafi Islamic Boarding Schools in Science Integration

Since being trusted by the *Al-Aziziyah* Foundation, Dr. Tgk Muntasir has been the leader of the *Jami'ah Al-Aziziyah* Islamic boarding schools in 2012, the first year the Islamic boarding schools was established and inaugurated until now. The leader of this Islamic boarding schools always provides an understanding to the students about the importance of the integration of sciences, that there is no dichotomy between religious sciences and general sciences. All branches of knowledge are equally important for *santri* to learn. The difference is the classification of division and grouping, either in terms of priority or the law of learning as expressed by Imam al Ghazali with the term "*Ihya Ulumuddin*". He grouped the sciences in terms of law, namely *Fardlu 'Ain* and *Fardlu Kifayah*. *Fardlu 'Ain* is clear, while *Fardlu Kifayah* he subdivided, there are *Syar'i* and not *Syar'i*. The *Syar'i* group is further divided, there are praiseworthy, despicable, and permissible (Syamsuar et al., 2023).

If the caregivers of *Salafi* Islamic boarding schools observe Imam Shafi'i's thought, they will find that he is an advocate of scientific integration. He termed it "*Jima' al 'Ilm*" or *Qiyas*. He categorized knowledge into *'Ilm al Dien* and *'Ilm al Dunya*, *'Ilm al Dien* is divided; *'Ammah (Fardlu 'Ain)* and *Khashshah (fardlu Kifayah)*. Likewise, Ibn Khaldun in *Muqaddimah*, which is the first part of his book entitled *al 'Ibr wa Diwan al Mubtada wa al Khabar fi Tarikh al 'Arab wa al 'Azam wa al*

Barbar, he termed it '*Ilm al Shanai*', divided into groups; *Thabi'i*, which is the science of human thought itself such as wisdom or philosophy and *Naqli*, which is knowledge that is only obtained from (*khabar*) information from God and here there is no role of reason at all except to make an analogy. Thus, what has been mentioned by Imam Shafi'i, al Ghazali and Ibn Khaldun that the sciences are all integrated, and there is no dichotomy between the branches of one science with another (Mustamir, 2023).

Actually, there are several exact scientific fields taught in Islamic boarding schools such as *Falak* and *Faraid* (the discipline of calculating inheritance in *fiqh*), but the teaching is very minimal, most Islamic boarding Schools teach it only as an additional subject, not including the main learning in KBM like *Nahwu* and *Fiqh*. Likewise, in the field of humanities, teaching history, for example, may still be limited to the Prophetic *Sirah*, such as *Khulashah Nurul Yaqin* by Umar Abdul Jabar. Therefore, Islamic boarding Schools through the *Kitab Kuning* should teach and develop these scientific fields (Jamhari & Asrori, 2022).

Salafi Islamic boarding Schools caregivers must believe that the exact fields and humanities are the same as *Nahwu* and *Fiqh* or others, which have stages of study ranging from basic to high levels so that they can be taught to *santri* according to the level of learning (Minarti & Isroani, 2022). One example of yellow books in the field of mathematics that is very popular, in addition to the book *al Mukhtashar fi 'Ilm al Jabar wa al Muqabalah* by Abu Musa al Khawarizmi, there is the work of Ibn Yasamin, a mathematics expert scholar who lived around the 12th century in the city of Fes Morocco entitled *al Urjuzah al Yasaminiah fi al Jabr wa al Muqabalah* or Poem on Algebra and Restoration in the form of poetry ber-bahr rajaz like nazam Alfiah Ibn Malik in the field of Arabic grammar. He gave a formulation of algebra as he understood it in his time. According to him, algebra is related to numbers, roots, and series of numbers. He also includes the equations made by al Khawarizmi along with ways to solve these equations. On the other hand, Ibn Yasamin provides an explanation of comparison, multiplication and division. There is also a book of late 19th century scholars entitled *Risalah fi 'Ilm al Jabar wa al Muqabalah* written by Sheikh Ahmad zaini Dahlan (Malik, 2023).

Another work, in the field of medicine, was written by Ibn Thufail entitled *Urjuzah fi al Thib*. The poem with a rajaz bar consists of seven thousand seven hundred stanzas. After the *muqaddimah*, Ibn Thufail begins the first discussion of the types of diseases in the head, such as headaches, preventing premature graying of hair, ringworm on the head, earwax, including malaria and other types of diseases including methods of treatment. At the end of the study, Ibn Thufail closes with a discussion of the types of diseases of the body due to external factors and how to treat them and about poisons which are divided into forty chapters (Latif, 2023). And of course there are still many works of previous scholars in the fields of exact sciences and humanities, such as the works of Ibn Sina, Abu Qasim al Zahrawi, al Razi and others.

From here, the world of *Salafi* Islamic boarding schools today has actually integrated exact sciences, humanities and religion with the presence of formal schools in the Islamic boarding schools environment. Either MTs, MA under the Ministry of Religious Affairs, or SMP, SMA and SMK from the Ministry of Education and Culture. However, the emphasis here is on exact and humanities studies sourced directly from the yellow book or (*kutub al Turats*). At least the caregivers of *Salafi* Islamic boarding schools can provide information to the *santri* that the scholars of the past did not just master religious sciences, but they were experts and even became the main founders of the basics of modern sciences. So that a generation of *santri* will be born who have multi-disciplinary scientific insights.

D. CONCLUSION AND SUGGESTIONS

Dayah Salafi as the ivory tower of Islamic knowledge in traditional Indonesian society, must be a pioneer in the study of science and technology. Based on this research, *Dayah Jamiah Al-Aziziyah* and MUDI Mesra in Bireuen were the first *Salafi Dayah* in Aceh to study and apply science and technology in their learning for students by establishing formal vocational schools in the field of Computer and Network Engineering and creating special class programs, so that The leaders of the *Salafi Dayah* are very ready to accept technological advances for the sake of the excellence of their students in the global competitive arena. Islamic boarding school leaders teach students about the importance of integrating science, that there is no dichotomy between religious knowledge and general science, so that *Dayah Salafi* graduates are ready to face technological competition. The author strongly recommends to the leaders of the *Salafi Dayah* in Aceh to be able to apply science and technology studies for their students in learning the Yellow Book or through developing other skills, so that *Dayah Salafi* graduates in Aceh will not experience ignorance in understanding science and technology which continues to develop in Western countries.

ACKNOWLEDGEMENT

The researcher would like to thank the Jamia'ah Al-Aziziyah Islamic Boarding School and the MUDI Bireuen Islamic Boarding School for giving the author the opportunity to collect data. Therefore, researchers want to reveal as much as possible Thank you for the active participation of the resource persons during the research sessions

REFERENCES

- Basari, D. J., Sebgag, S., Noval, S. M. R., Mudrikah, A., & Mulyanto, A. (2023). Human Resource Management Model in Islamic Boarding School-Based Private Madrasah Tsanawiyah. *Nidhomul Haq: Jurnal Manajemen Pendidikan Islam*, 8(1), 14–30. <https://doi.org/10.31538/ndh.v8i1.2884>
- Bungin, B. (2006). *Metodelogi Penelitian Kualitatif: Aktualisasi Metodologis ke Arah Ragam Varian Kontemporer*. Depok: Rajawali Pers. <https://opac.perpusnas.go.id/DetailOpac.aspx?id=632438>
- Dalimunthe, M. A., Pallathadka, H., Muda, I., Manoharmayum, D. D., Shah, A. H., Prodanova, N. A., Mamarajabov, M. E., & Singer, N. (2023). Challenges of Islamic education in the new era of information and communication technologies. *HTS Teologiese Studies / Theological Studies*, 79(1), 1–6. <https://doi.org/10.4102/hts.v79i1.8608>
- Edi, K., Supriyati, & Ramadhan, S. B. (2019). Model of Forum Islamic Boarding Schools Application Based on Enterprise System. *IOP Conference Series: Materials Science and Engineering*, 662(2). <https://doi.org/10.1088/1757-899X/662/2/022082>
- Faizah Lisnasari, S., Widiyarti, G., Jainab, J., Sari Rezeki, U., & Suciawati, H. (2023). Rethinking Technology-Based Islamic Boarding School Education Management. *Tafkir: Interdisciplinary Journal of Islamic Education*, 3(2), 228–244. <https://doi.org/10.31538/tijie.v3i2.239>
- Fakhri, J. (2010). Sains Dan Teknologi Dalam Al Qur'an Dan Implikasinya Dalam Pembelajaran. *Ta'dib*, 15(1), 122–142. <https://jurnal.radenfatah.ac.id/index.php/tadib/article/view/70>
- Fakhrurrazi, F., & Sebgag, S. (2020). Methods of Learning Kitab Kuning for Beginners in Islamic Boarding School (Dayah). *Nazhruna: Jurnal Pendidikan Islam*, 3(3), 296–310. <https://doi.org/10.31538/nzh.v3i3.838>
- Fathurrochman, I., Ristianti, D. H., & Arif, M. A. S. bin M. (2020). Revitalization of Islamic Boarding School Management to Foster the Spirit of Islamic Moderation in Indonesia. *Jurnal Pendidikan Islam*, 8(2), 239–258. <https://doi.org/10.14421/jpi.2019.82.239-258>
- Gläser-Zikuda, M., Hagenauer, G., & Stephan, M. (2020). The Potential of Qualitative Content Analysis for Empirical Educational Research. *Forum Qualitative Sozialforschung*, 21.

- <https://doi.org/10.17169/fqs-21.1.3443>
- Grothaus, C. (2022). Collaborative Online Learning across Cultures: the Role of Teaching and Social Presence. *Qualitative Research in Education*, 11(3), 298–326. <https://doi.org/10.17583/qre.10474>
- Hasan, K., & Juhannis, H. (2024). Religious education and moderation: A bibliometric analysis. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2023.2292885>
- Jamhari, & Asrori, S. (2022). the Making of Salafi-Based Islamic Schools in Indonesia. *Al-Jami'ah*, 60(1), 227–264. <https://doi.org/10.14421/AJIS.2022.601.227-264>
- Latif, M. (2023). Ibn Thufail and His Contributions in the Field of Islamic Philosophy: Thoughts and Developments. *Jurnal Adabiyah*, 23, 1–17. <https://doi.org/10.24252/jad.v23i1a1>
- Leli, Sunarya, P. A., Lutfiani, N., Lestari Santoso, N. P., & Ajeng Toyibah, R. (2021). The Importance of Technology to the View of the Qur'an for Studying Natural Sciences. *APTISI Transactions on Technopreneurship*, 3(1), 58–67. <https://doi.org/10.34306/att.v3i1.142>
- Licorish, S. A., Owen, H. E., Daniel, B., & George, J. L. (2018). Students' perception of Kahoot!'s influence on teaching and learning. *Research and Practice in Technology Enhanced Learning*, 13(1). <https://doi.org/10.1186/s41039-018-0078-8>
- Lindgren, B.-M., Lundman, B., & Graneheim, U. (2020). Abstraction and interpretation during the qualitative content analysis process. *International Journal of Nursing Studies*, 108, 103632. <https://doi.org/10.1016/j.ijnurstu.2020.103632>
- Lundeto, A., Talibo, I., & Nento, S. (2021). Challenges and Learning Strategies of Islamic Education in Islamic Boarding Schools in the Industrial Revolution Era 4.0. *AL-ISHLAH: Jurnal Pendidikan*, 13(3), 2231–2240. <https://doi.org/10.35445/alishlah.v13i3.1153>
- Maimunah, I., Huda, M., Haque, A., & Zubaidah, Z. (2021). Islamic Boarding School at University: A Strong Pathway for Integrating Religion and Science. *J-PAI: Jurnal Pendidikan Agama Islam*, 8(1), 37–50. <https://doi.org/10.18860/jpai.v8i1.15361>
- Malik, A. (2023). The Resilience of Literacy Culture in Salafi Jihadis Pesantren; Study on Traditional Islamic Boarding School in Indonesia. *Journal on Education*, 6(1), 121–137. <https://doi.org/10.31004/joe.v6i1.2925>
- Mansir, F., Street, B., District, K., & Yogyakarta, D. I. (2021). *the Response of Islamic Education To the Advancement of Science in the Covid-19 Pandemic Era in the Islamic Boarding Schools Respon Pendidikan Islam Terhadap Kemajuan Sains Era Pandemi Covid-19 Di Pesantren / Sekolah Islam*. 8(1), 20–27. <https://doi.org/10.24252/auladuna.v8i1a2.2021>
- Maulana, U. I. N., Ibrahim, M., & Email, M. (2023). *Implementasi Total Quality Management Perspektif Hensler dan Brunell di Pondok Pesantren Salafiyah Muhammad Zaki Mubarak , Saiful Fuad , Nur Kholid*. 9(2), 104–113. <https://doi.org/10.26594/dirasat.v9i2.3690>
- Minarti, S., & Isroani, F. (2022). Salaf Islamic Boarding School Education Curriculum in The Modern Era. *Edukasi Islami: Jurnal Pendidikan Islam*, 11(2), 891–910. <https://doi.org/10.30868/ei.v11i02.3171>
- Muchtar, J. R. N. (2014). Indonesian Pesantren and Community Social Change: Moderate Islam's Use of Media and Technology as Tools for Community Engagement. *The Journal of Religion and Popular Culture*, 26. <https://doi.org/10.3138/jrpc.26.3.323>
- Mustamir, A. (2023). Interpretation of Santri Salaf From Islamic Boarding School (Pesantren) National Narratives. *Fikroh: Jurnal Pemikiran Dan Pendidikan Islam*, 16, 104–112. <https://doi.org/10.37812/fikroh.v16i2.890>
- Mustari, M., & Rahman, M. T. (2020). *Transferring Technology in a Religious Based School (A Case in West Bandung)*. 429(Icasseth 2019), 276–281. <https://doi.org/10.2991/assehr.k.200402.065>
- Ni'am, S. (2015). Pesantren: The miniature of moderate Islam in Indonesia. *Indonesian Journal of Islam and Muslim Societies*, 5(1), 111–134. <https://doi.org/10.18326/ijims.v5i1.111-134>
- Ridwan, T., Ibrahim, N., & Sumantri, M. S. (2019). Islamic boarding school learning organization: Analysis of learning dynamic, organizational transformation and application of technology. *International Journal of Engineering and Advanced Technology*, 8(5), 1054–1056. <https://doi.org/10.35940/ijeat.E1149.0585C19>

- Ritonga, M. (2021). The Existence of Yellow Books (Kitab Kuning) as the Sources of Islamic Studies at Islamic Boarding Schools Within the Industrial Revolution Dialectics. *SSRN Electronic Journal*, 3516–3523. <https://doi.org/10.2139/ssrn.3752816>
- Rizal, M., Zulfikar, T., Syabuddin, & Iskandar. (2023). Learning of Islamic Material in Dayah-Based Senior High. *Edureligia: Jurnal Pendidikan Agama Islam*, 07(01), 65–75. <https://doi.org/10.33650/edureligia.v7i1.6031>
- Rosyidin, M., & Arifin, I. (2021). Integration of Islamic and Indonesian Education in the Perspective of KH. Salahuddin Wahid. *Jurnal Pendidikan Agama Islam*, 18(2), 227–256. <https://doi.org/10.14421/jpai.2021.182-02>
- Sugiyono. (2015). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R & D*. Bandung: Alfabeta <https://inlisite.uin-suska.ac.id/opac/detail-opac?id=20670>
- Sunhaji, S. (2018). The Integration of Science-Technology and Living Environment through Islam Religion Education Learning at Adiwiyata-Based Junior High School in Banyumas Regency. *Dinamika Ilmu*, 18(2), 179–193. <https://doi.org/10.21093/di.v18i2.1179>
- Syamsuar, Al-Fairusy, M., Junaidi, & Mulia, M. (2023). Settlement of Islamic Sharia Violations in the Perspective of Teungku Dayah and Local Wisdom Values on the West Coast of Aceh. *Jurnal Ilmiah Peuradeun*, 11(3), 985–1004. <https://doi.org/10.26811/peuradeun.v11i3.995>
- Syarifah, A. U. (2023). The Role of Islamic Boarding Schools in the Digital Age. *International Conference on Islamic ...*, 195–204. <http://103.142.62.229/index.php/icis/article/view/1461>
- Tahir, S. Z. Bin. (2017). Multilingual teaching and learning at Pesantren Schools in Indonesia. *Asian EFL Journal*, 2017(98), 74–94. <https://dlc.dlib.indiana.edu/dlcrest/api/core/bitstreams/2e885028-4e1c-4b98-94fa-2f749852c84d/content>
- Tambak, S., & Sukenti, D. (2020). Strengthening Islamic behavior and Islamic psychosocial in developing professional Madrasah teachers. *Cakrawala Pendidikan*, 39(1), 65–78. <https://doi.org/10.21831/cp.v39i1.26001>
- Tamwafi, I. (2022). Islamic Boarding Schools in the Middle of Digitalization : A Comprehensive Study of the Impact of Information Technology on Teaching and Learning Methods. *Remittances Review*. 6588, 596–605. <https://remittancesreview.com/menu-script/index.php/remittances/article/view/638>
- Umar, T. M., Chaerowati, D. L., & Drajat, M. S. (2023). Digital Literacy of Santri Through Islamic Boarding School Culture. *KnE Social Sciences*, 2023, 380–392. <https://doi.org/10.18502/kss.v8i18.14238>
- Vebriani, N., Utomo, S., & Suad. (2021). The use of technology in learning can improve discipline. *Journal of Physics: Conference Series*, 1823(1). <https://doi.org/10.1088/1742-6596/1823/1/012100>
- Wulandari, M. C., Rodliyah, S., & Abidin, Z. (2023). Policies of Leaders of Boarding Schools in the Development of Educational Institutions. *EDUTECH: Journal of Education And Technology*, 6(3), 873–887. <https://doi.org/10.29062/edu.v6i3.568>
- Yamin, M., Basri, H., & Suhartini, A. (2023). Learning Management in Salaf Islamic Boarding Schools. *At-Tadzkir: Islamic Education Journal*, 2(1), 25–36. <https://doi.org/10.59373/attadzkir.v2i1.10>
- Yusuf, M. Y. (2015). Pesantren Sains: Epistemology of Islamic Science in Teaching System. *Walisongo: Jurnal Penelitian Sosial Keagamaan*, 23(2), 283. <https://doi.org/10.21580/ws.23.2.280>
- Zainal, S., Manumanoso Prasetyo, M. A., Aziz Yaacob, C. M., & Jamali, Y. (2022). Adopting Pesantren-Based Junior High School Programs: the Pesantren Change Its Educational System Without Conflict. *Jurnal Ilmiah Islam Futura*, 22(2), 260–276. <https://doi.org/10.22373/JIIF.V22I2.13525>