Digital Pesantren: Revitalization of the Islamic Education System in the Disruptive Era

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Abstract

This study aims to identify the system of Islamic education faced by the Pesantren during the period of upheaval. This study is a preliminary qualitative study aimed at analyzing various literature on the critical issues of Pesantrens during the period of disruption. The data obtained in this study were collected using documentation methods and subsequently validated using source triangulation techniques. Data analysis was conducted in three stages: data reduction, presentation, and conclusion formulation. The study revealed the following. (1) Pesantrens will activate the Islamic education system by expanding the scope of the *santri* through extracurricular activities according to the interests and talents of the *santri*. Pesantrens will focus on all areas of life (Internet of Things), big data, and artificial intelligence for information gathering and knowledge transfer. (2) The Role of Pesantrens in an era of disruption following Advances in Science and Technology. Islamic education still depends on three terms – *tarbiyah*, *ta'lim*, and *ta'dib* – and the use of each has many implications. The role of science and technology can be fulfilled through innovation, teaching methods and media. (3) The digital needs of a disruptive age in Pesantrens can make accessing information and knowledge easier for the *santri*. Changes in Islamic education will be examined, particularly the medium of instruction, teaching methods, and the Islamic curriculum in the digital age. (4) Solves the problems of the system of Islamic education in Pesantrens by adapting and restructuring it to the social requirements and challenges of the digital age based on Islamic principles. The strategies of the project are: improving Pesantrens based on values, improving the human resources of Pesantrens, improving the material and technical base of Pesantrens and the development of Pesantren curricula.
Keywords: digital Pesantren; era of disruption; Islamic education system; revitalization.

A. Introduction

Pesantrens are the oldest educational institutions[1], founded hundreds of years ago and deeply rooted in Indonesian society. Pesantren are always present in different situations and contexts, with different characteristics in each case. From a phenomenological point of view, the atmosphere of pesantren life can be seen in the character of the kiai in a value-based view

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[1]Hatta Fakhrurrozi, "Pesantren Virtual: Dinamisasi Atau Disrupsi Pesantren?," *Paedagogia* 10, no. 1 (2021): 153–69.

and the way of life contained in the pesantren.[2] *Kiai*, on the other hand, are charismatic in the eyes of society, especially *santri*. This is because Pesantrens, with idealistic life values, can create dynamics in the surrounding community. So that it is through this sociological experience, pesantren have adapted to the context of modernization.

The pesantren education system provides a platform for continuing education through *uswatun hasanah* for teachers. Pesantrens preserve Islamic traditions, educate future scholars, strengthen society and spread the message of Islam. Pesantrens are expected to continue to inspire the community as centers of Islamic learning and the digital revolution. According to Tarihoran, rapid technological developments have significantly impacted people around the world, especially those born between 1995 and 2014, who are often referred to as Generation Z.[3]

Digital technology is one of the most important factors influencing educational systems today: in the 1980s, digital technology-based visualization began to be widely used as a more effective, efficient, interactive and aesthetic tool.[4] Technology can help *santri* to be more successful in Islamic education, help teachers and influence Islamic education.[5] Industry 4.0 is sometimes called the digital revolution or the era of technological disruption.[6] The application of artificial intelligence is one of the features of Industry 4.0 as a disruptive change.[7] Robots aim to replace human labor in a more economical, efficient and effective way. Similar to Azhar Kholifah's research, learning activities at the Al-Islam Joresan Pesantren begin with digital literacy, followed by learning activities, extracurricular activities, organization, teaching, and *amaliyatu tadris*, which show connectedness and continuity when the pesantren faces a digital society.[8] Digital literacy is said to be the digital facilitation of ICT-based learning practices by teaching *santri* to learn about a subject and find, access, and read journals about that subject. Septian Arif and Isnaeni said that one of the pesantren's strategies in dealing with the digital era is implementing digital communication through websites and social media such as *YouTube*.[9]

The term 'industrial revolution' was first used at the Hannover Fair in Germany in 2011.[10] Previously, the term 'industrial revolution' was popularized by the British economic historian, Arnold Toynbee (1852-1883), to describe the development of the British economy from 1760 to 1840.[11] Since then, educational theorists have frequently used the term

[2]Samsudin and Anis Tyas Kuncoro, "Tradisi Khidmah Dalam Perspektif Pendidikan Islam," *Jurnal Pendidikan Agama Islam Universitas Wahid Hasyim* 10, no. 1 (2022): 298–317.

[3]Nafan Tarihoran et al., "The Impact of Social Media on the Use of Code Mixing by Generation Z," *International Journal of Interactive Mobile Technologies* 16, no. 7 (2022): 54–69, https://doi.org/10.3991/ijim.v16i07.27659.

[4]Susilahudin Putrawangsa and Uswatun Hasanah, "Integrasi Teknologi Digital Dalam Pembelajaran Di Era Industri 4.0," *Jurnal Tatsqif* 16, no. 1 (2018): 42–54, https://doi.org/10.20414/jtq.v16i1.203.

[5]Adri Lundeto, Ishak Talibo, and Shinta Nento, "Challenges and Learning Strategies of Islamic Education in Pesantrens in the Industrial Revolution Era 4.0," *AL-ISHLAH: Jurnal Pendidikan* 13, no. 3 (2021): 2231–40, https://doi.org/10.35445/alishlah.v13i3.1153.

[6]Saeful Anwar, "Revolusi Industri 4.0 Islam Dalam Merespon Tantangan Teknologi Digitalisasi," *At-Tuhfah: Jurnal Studi Keislaman* 8, no. 2 (2019): 16–28.

[7]Ferdinand Eskol Tiar Sirait, "Dampak Revolusi Industri 4.0 Pada Industri Teknologi Komunikasi Di Indonesia: Peluang Dan Tantangan," *Jurnal Penelitian Dan Pengembangan Sains Dan Humaniora Universitas Pendidikan Ganesha* 6, no. 1 (2022): 132–39, https://ejournal.undiksha.ac.id/index.php/JPPSH/article/view/28153.

[8]Azhar Kholifah, "Strategi Pendidikan Pesantren Menjawab Tantangan Sosial Di Era Digital," *Jurnal Basicedu* 6, no. 3 (2022): 4967–78, https://doi.org/10.31004/basicedu.v6i3.2811.

[9]Septian Arief Budiman and Fil Isnaeni, "Penyuluhan Peran Santri Dalam Menjawab Tantangan Dakwah Di Era Digital," *Jurnal Loyalitas Sosial: Journal of Community Service in Humanities and Social Sciences* 1, no. 2 (2019): 104, https://doi.org/10.32493/jls.v1i2.p104-113.

[10]Gilberto Marzano and Andris Martinovs, "Teaching Industry 4.0," *Society Integration Education. Proceedings of the International Scientific Conference* 11 (2020): 69, https://doi.org/10.17770/sie2020vol2.4833.

[11]Syahrir Rosli, Mohd Isa Hamzah, and Mohd Edyazuan Azni, "Revolusi Digital: Pengaruh Terhadap Dinamik Masyarakat Serta Kaedah Mengatasinya Dari Perspektif Islam," *QALAM; International Journal of Islamic and Humanities Research* 2, no. 1 (2022): 40–53.

'education in the era of the Industrial Revolution 4.0' to describe how cyber technology is integrated into physical and non-physical learning. Education in the Industrial Revolution 4.0 era is a phenomenon in which the new curriculum adapts to the needs of the Industrial Revolution instead of maintaining the status quo. For example, curricula can leverage IOT (Internet of Things) to open a window into the existing world. Meanwhile, teachers have more reference materials and teaching methods at their disposal.

Amid the development of digitalization of all application-based education, teachers must be more prepared to transfer knowledge to their students. and according to research conducted by Afrianto, by changing the perspective on the role of the teacher and the learning process, preparing for 21st-century competencies, adjusting content and curriculum programs, for example choosing between various existing learning models, and adapting them to millennial students.[12]

The Industrial Revolution 4.0 is the fourth stage in the world industrial revolution which began in the 18th century. Schawab explained that the world has experienced four industrial revolutions.[13] First, the Industrial Revolution 1.0 which was marked by the discovery of the steam engine to support production equipment and involved three inventors: Thomas Saberley, Thomas Newcomb, and James Watt. Subsequently, around the 1840s, factories were established in England to produce various goods. As a result, production was doubled and it was possible to distribute it on a large scale throughout the country. Under such circumstances, the Islamic education system in Pesantrens must deal with rapid changes compared to previous conditions, carry out exceptional work, use future technology, and overcome unimaginable social challenges. To realize it, several skills are needed: (1) literacy, both in the old sense (ability to read, write, count) and in the new sense (data literacy, technology literacy and human literacy);[14] (2) higher order thinking skills (HOTS); (3) 21st-century skills, namely critical thinking and action, collaboration, communication, and creativity. (4) computational thinking skills (combining critical thinking, good computing skills, and technology use).[15]

The digital revolution has created a new world order known as disruption. The 'era of disruption' can be interpreted as a fundamental change in the order of human life. According to Irawan and Firdaus, the era of disruption was marked by the rapid development of technology, including social media, which is the platform of choice for the Indonesian people.[16] Digitalization is a transformation of almost all aspects of life, including social aspects, due to technological advances (especially information technology).[17] Apart from technological disruption, another effect is that *santri* have a better and more comprehensive understanding. According to Sunarto (2017), technological disruption has positive and negative impacts and needs special attention.[18]

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[12]Afrianto, "Being a Professional Teacher in the Era of Industrial Revolution 4.0: Opportunities, Challenges and Strategies for Innovative Classroom Practices," *English Language Teaching and Research* 2, no. 1 (2018): 3, http://ejournal.unp.ac.id/index.php/eltar/article/view/102675.

[13]Anwar, "Revolusi Industri 4.0 Islam Dalam Merespon Tantangan Teknologi Digitalisasi."

[14]Abu Maskur, "Penguatan Budaya Literasi Di Pesantren," *IQ (Ilmu Al-Qur'an): Jurnal Pendidikan Islam* 2, no. 01 (2019): 1–16, https://doi.org/10.37542/iq.v2i01.21.

[15]Titin Masfingatin and Swasti Maharani, "Computational Thinking: Students on Proving Geometry Theorem," *International Journal of Scientific and Technology Research* 8, no. 9 (2019): 2216–23.

[16]Hendri Irawan and Krisbaya Bayu Firdaus, "Resiliensi Pancasila Di Era Disrupsi: Dilematis Media Sosial Dalam Menjawab Tantangan Isu Intoleransi," *Jurnal Paris Langkis* 1, no. 2 (2021): 36–47, https://e-journal.upr.ac.id/index.php/parislangkis.

[17]Samsudin, "Tantangan Lembaga Pendidikan Pesantren Di Era Disrupsi," *Conference on Islamic Studies (CoIS)*, 2019, 224, http://lppm-unissula.com/jurnal.unissula.ac.id/index.php/cois/article/view/8063/3655.

[18]Anwar Rosadi and Mohamad Erihadiana, "Reorientasi Kurikulum Dan Pembelajaran Pendidikan Agama Islam Pada Era Disrupsi Teknologi," *Quality* 9, no. 2 (2021): 231, https://doi.org/10.21043/quality.v9i2.12024.

Pesantren can survive and change with the times.[19] Apart from contributing to society, Pesantrens must innovate and develop with technology and knowledge and continue contributing to the surrounding community. Pesantrens require a rapid flow of information to support the progress and development of the surrounding pesantren environment. In this way, the authors believe that pesantren can utilize technology to strengthen social relations and expand the network of pesantren with a mission to empower the community. As a subculture, pesantren have cultural capital that can be used to improve society. Technology can be a mediator to stabilize social relations. Technology can be used to expand the pesantren network for community empowerment missions.

Nur Chanifah's findings show that pesantren learning media have changed the thinking of kiai and ustadz about the need to balance technology-based learning media with religious knowledge.[20] Siti Badi'ah et al., in their research, argue that Islamic boarding schools can adapt to changing times by applying the concept of digital literacy. Thus, pesantren in the digital era can produce intelligent, technologically literate, and socially disciplined *santri*. The impact of the 4.0 Industrial Revolution era (hereinafter referred to as the 5.0 era) cannot be denied.[21] Of course, according to the author, Islamic education will not be eroded by negative values from the influence of this era because Islamic education adheres to the values of the Qur'an and Hadith.

B. Findings and Discussion

B.1. Revitalization of the Islamic Education System in Pesantren

Pesantren are always serious and focus on Islamic religious education and character development. However, according to Hidayat and Mustaqim, pesantren must be ready to carry out their mission and function as religious education and character-building institutions in an era of change and freedom.[22] The mission and function of the pesantren – the transmission of Islamic knowledge – must be continued. Pesantren must also continue and preserve Islamic traditions, educate future scholars and strengthen society through the message of Islam. *Santri* are taught to solve problems in an elegant and culturally appropriate way. According to Indriani, efforts to revitalize pesantren's existence include increasing pesantren's digital literacy and building Islamic learning channels.[23]

The paradigm shift in Pesantren will continue to go hand in hand with the pace of technological development. Digital boarding schools will mutate to find the ideal form at a certain time. Conversely, non-digital pesantren will mutate to find an optimal form in response to technological and information developments. The two mutations are related to the needs and demands of the community: Regarding changes in the social order in the 4.0 and 5.0 eras, pesantren may be disrupted, just like the economic disruption experienced by the world's big companies. Therefore, an analytical study of the determinants of digital and non-digital pesantren needs to be carried out and in the end it is necessary to clarify the position of both. Where according to Fakhrurozi, virtual pesantren is a form of pesantren dynamics in the

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[19]Mohammad Darwis, "Revitalisasi Peran Pesantren Di Era 4.0," *Dakwatuna: Jurnal Dakwah Dan Komunikasi Islam* 6, no. 01 (2020): 128, https://doi.org/10.36835/dakwatuna.v6i01.509.

[20]Nur Chanifah et al., "Designing a Spirituality-Based Islamic Education Framework for Young Muslim Generations: A Case Study from Two Indonesian Universities," *Higher Education Pedagogies* 6, no. 1 (2021): 195–211, https://doi.org/10.1080/23752696.2021.1960879.

[21]Nur Rohmah Hayati, "Peran Pesantren Menghadapi Konstelasi Era 4.0," *Islamic Review Jurnal Riset Dan Kajian Keislaman* VIII, no. 2 (2019): 161–74, https://doi.org/10.35878/islamicreview.v8i2.149.

[22]Muhammad Taufik Hidayat Pabbajah and Mustaqim Pabbajah, "Peran Pondok Pesantren Salafiyah Terhadap Revitalisasi Penidikan Islam; Studi Pada Pondok Pesantren Salafiyyah Parappe, Campalagin, Polman," *Jurnal Ilmiah Pendidikan Citra Bakti* 6, no. 2 (2020): 201–10.

[23]Ani Rindiani, Ahmad Nurwadjah, and Andewi Suhartini, "Eksistensi Dan Revitalisasi Pesantren Di Era 4.0," *Al-Wasathiyah* 2, no. 1 (2022): 14–27.

digital era and the Industrial Revolution 4.0 era, its existence will enrich intellectual repertoire and Islamic symbols as a result of crossing between pesantren and the digital world and efforts to help pesantren adapt towards the Industrial Revolution 4.0.

Pesantren digital are not a disruption of pesantren because they cannot change their role in people's lives. The role of pesantren which has been rooted and tested in people's lives for hundreds of years and has protected pesantren from various attempts to strengthen and destroy its existence. Although it is undeniable that there has been a paradigm shift from traditional pesantren to digital Islamic boarding schools, they still develop the potential of *santri* in the form of intelligence,[24] noble character and personality. According to Rohaeni et al., comprehensively produce spiritual,[25] emotional, social,[26] intellectual,[27] kinesthetic[28] and competitive.[29]

The Islamic education system in pesantren must lead to ijtihad from the Qur'an and Hadith. According to Zakiah Daradjat, since it was revealed until the Prophet Muhammad SAW died, Islamic teachings grew and developed through ijtihad which was demanded by changes in social situations and conditions that grew and developed. On the other hand, Islamic teachings have played a role in transforming human life into the lives of Muslims.[30]

Modernity forces pesantren to revitalize their education system by creating a modern educational model that is no longer fixated on the classic teaching system and the *Kitab Kuning*.[31] Meanwhile, with the development of the education system and the renewal of the educational model, not all Pesantrens can do this. Many pesantren maintain traditional and conventional education systems by limiting the teaching of classical books and moral development.

B.2. The Role of Pesantren in the Era of Disruption and Development of Science and Technology

Like pesantren in the era of disruption, the Islamic education system must keep abreast of developments in science and technology through innovation, learning methods and media.[32] So educational institutions need to equip them with qualified teachers. Teachers or

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[24]Mohammad Ilyas, Nashrudin Baidan, and Rohmat Budi, "Exploring The Management Of Spiritual Inteliigance Development In 21 St Century : A Case Of Islamic Boarding House Of," *European Journal of Molecular & Clinical Medicine* 07, no. 07 (2020): 6482–89.

[25]Anie Rohaeni et al., "Management of Noble Moral Education for Madrasah Aliyah Students at Persatuan Islam Boarding School," *Journal of Industrial Engineering & Management Research* 2, no. 4 (2021): 154–71,
https://www.jiemar.org/index.php/jiemar/article/view/174%0Ahttps://www.jiemar.org/index.php/jiemar/article/download/174/134.

[26]Gunik Septiani, "Pengaruh Lingkungan Bagi Kecerdasan Siswa Secara Intelektual, Emosional, Sosial, Dan Spiritual," *Al Hikmah: Journal of Education* 1, no. 1 (2020): 47–58, http://yphn.ac.id/ejournal/index.php/Alhikmah/index.

[27]Wilson Candra et al., "Analysis of The Islamic Leadership, Islamic Work Ethics and Intellectual Intelligence on Employee Performance with Islamic Organization Culture as Moderated Variables," *Journal of Islamic Economic and Business Research* 2, no. 1 (2022): 1–14, https://doi.org/10.18196/jiebr.v2i1.21.

[28]Ida Rianawaty et al., "Model of Holistic Education-Based Boarding School: A Case Study at Senior High School," *European Journal of Educational Research* 10, no. 2 (2021): 567–80, https://doi.org/10.12973/EU-JER.10.2.567.

[29]Emawati and Masyitah, "Ekstrakurikuler Di Pesantren Moderen: Sebuah Upaya Dalam Pembentukan Karakter Santri."

[30]Zakiah Daradjat, *Lmu Pendidikan Islam*, Ed.1 Cet . (Jakarta: Bumi Aksara, 2008).

[31]Muhamad Abdul Manan, "Daya Tahan Dan Eksistensi Pesantren Di Era 4.0," *Jurnal Pendidikan Islam Indonesia* 3, no. 2 (2019): 301–13, https://doi.org/10.35316/jpii.v3i2.135.

[32]Arif Rahmatullah and Syamsul Hidayat, "The Urgence of Values In Islamic Education (Syed Muhammad Naquib Al-Attas Thought Study)," *Tsaqafah* 18, no. 1 (2022): 315–33.

ustadz educate and teach students to use technological devices effectively to prevent the negative effects of technological advances.

Pesantrens as social control in various aspects of life have responded to changes in this digital era with digital literacy.[33] In the context of Pesantren education, digital literacy is used as a support for learning such as to access data, as a source of information, and as a medium in creating media-aware human resources and able to analyze positive content.

Changes and advances in the era of disruption have transformed pesantren into digital pesantren. It is because digital technology has opened a new chapter in human culture. With its immense reach, human interaction in the dimensions of space and time is becoming increasingly limitless. Technological devices are designed to facilitate people in performing various life activities, causing changes in attitudes, behavior and lifestyles that are more efficient and productive, as well as increasingly modern lifestyles. Therefore, activating the Islamic education system through *Kitab Kuning* learning and the learning media in Pesantrens is crucial.

Through the *bandongan* method at salafi Pesantrens, which originally used blackboard media, the *Kitab Kuning* learning program can be made more effective using digital devices and social media. Because the learning was initially carried out by the *santri* who were present at the time of learning, it is hoped that with the revitalization of the *Kitab Kuning* learning system, it can disseminate the knowledge taught in Pesantrens and participate in *dakwah* on social media. This technology-based media also facilitates the transmission or dissemination of knowledge not only to *santri*, but also to the wider community. Pesantrens can positively contribute to the wider community, which can easily access recitation activities organized by the pesantren. They don't have to come to the Pesantren but can access it from their home. Through this social medium, all of the Pesantren's activities and educational activities can be made known to the *santri* parents. There is intensive communication between the Pesantren, the community and the *santri* parents.

Media can be applied by paying attention to various things. Through the use of technology-based learning media in the classroom. By changing how *kiai* and *ustadz* view the need for technology-based learning media. The use of technology-based learning media must be balanced with religious knowledge so that it is not misused and direct control of learning activities as an effort to prevent the negative effects of technology. Thus students' understanding becomes more comprehensive, because they not only study theory but also practice it directly. The students can easily analyze the problems around them related to the material presented by the *ustadz*.

Therefore, it is appropriate for pesantren to have an education, service and communication system as the main improvement choice to meet the needs of students, parents and communities with emotional and cultural connections. Evolution and adaptation refer to the phase of disruption according to the will of society, without eliminating the noble values of traditions passed down from generation to generation. Pesantrens give birth to students, religious experts, and other experts in economics, politics, law, culture, society, art and technology, which are developed seriously because they are essential and primary. Therefore, during the period of collapse, the role of pesantren was in line with the development of science and technology.

B.3. Implications of Digital Pesantrens in the Disruptive Era for the Development of the Islamic Education System

Islamic education faces various and complex challenges, including technical, ideological, social, cultural, economic and political challenges. Other challenges include

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[33]Badi'ah, Salim, and Syahputra, "Pesantren Dan Perubahan Sosial Pada Era Digital."

professionalism, integrity and solidarity.[34] Rapid technological advances make the penetration of technology into the world of education inevitable. *Santri* are increasingly information-oriented, but few of them do not fully understand the use of information technology to access information and deepen their knowledge.

Technological developments in the digital and information society have begun to change the role of pesantren. In addition, there is a lot of Islamic content on social media that does not fully explain its authenticity and academic traditions. It can lead to irrational negative thinking among *santri*.

Digital technology is driving significant changes in Indonesia.[35] The use of digital technology in education begins with the application of technology-based learning in pesantren. According to Taufik, the *santri* need to be equipped with holistic religious knowledge and complete character in order to be able to adapt to the development of modern society and increase their competitiveness while protecting the morality of the younger generation from negative things impact of globalization.[36] In addition to more effective education and better access to information, the digital world is certainly a new medium for receiving and spreading religious ideas and opinions. However, many parties have high hopes for the presence of Islamic boarding schools in digital media. According to Jafar, there are also negative impacts of digital media, influencing student interaction and learning patterns; the tradition of face-to-face learning and the tradition of istimbat (literature study) are replaced by Google, face-to-face or in front of a screen. This negative impact can be minimized by developing digital literacy skills.[37]

The impact of the digital literacy program includes increasing knowledge, computers, communication and media literacy, attitudes towards technology,[38] network skills,[39] core competencies,[40] academic achievement and the results of knowledge and activity assessment,[41] (in this case *dakwah*). In pesantren, the internet has made it easier for *santri* to access information and knowledge, especially Islamic education. *Santri* can overcome the negative impact of the internet by providing knowledge and morals as a filter to prevent negative information from entering the internet. The internet can be an alternative for *santri* to manage better pesantren activities, such as research on new topics. Teachers can teach *santri* how to use technological equipment properly in order to avoid the negative impacts of technological developments.

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[34] Ahdar and Musyarif, "Tantangan Pendidikan Islam Di Indonesia Pada Era Globalisasi," *Jurnal Pendidikan Islam* 17, no. 1 (2019): 13–26.

[35] Mochammad Fahlevi et al., "Cybercrime Business Digital in Indonesia," *E3S Web of Conferences* 125, no. 201 9 (2019): 1–5, https://doi.org/10.1051/e3sconf/201912521001.

[36] Muhamad Taufik, "Strategic Role of Islamic Religious Education in Strengthening Character Education in the Era of Industrial Revolution 4.0," *Jurnal Ilmiah Islam Futura* 20, no. 1 (2020): 86, https://doi.org/10.22373/jiif.v20i1.5797.

[37] Ali Ja'far, "Literasi Digital Pesantren: Perubahan Dan Kontestasi," *Islamic Review: Jurnal Riset Dan Kajian Keislaman* 8, no. 1 (2019): 17–35, https://doi.org/10.35878/islamicreview.v8i1.156.

[38] Ellina Sergeevna Anisimova, "Digital Literacy of Future Preschool Teachers," *Journal of Social Studies Education Research* 11, no. 1 (2020): 230–53.

[39] Garry Falloon, "From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework," *Educational Technology Research and Development* 68, no. 5 (2020): 2449–72, https://doi.org/10.1007/s11423-020-09767-4.

[40] Kyu Tae Kim, "The Structural Relationship among Digital Literacy, Learning Strategies, and Core Competencies among South Korean College Students," *Educational Sciences: Theory and Practice* 19, no. 2 (2019): 3–21, https://doi.org/10.12738/estp.2019.2.001.

[41] Khaira Liza and Erna Andriyanti, "Digital Literacy Scale of English Pre-Service Teachers and Their Perceived Readiness toward the Application of Digital Technologies," *Journal of Education and Learning (EduLearn)* 14, no. 1 (2020): 74–79, https://doi.org/10.11591/edulearn.v14i1.13925.

Digital information that can be accessed easily by *santri* has an impact on addiction to playing gadgets, reducing *santri* creativity in managing information and seeking their own understanding. In the past, *santri* studied many Islamic books and scriptures, but now they are lazy to attend lectures. *Bahstul Masail* is usually conducted under the guidance of an ustaz, but prefers to look for answers on the internet. This phenomenon shows that dependence on information causes a decrease in creativity, interest in learning and *santri* thinking skills.

B.4. Challenges and Strategies for the Islamic Education System in Pesantrens in Responding to the Digital Era

The unprecedented acceleration of technology has influenced conflicting patterns of social consciousness, which are reflected in the education system. As the oldest educational institution,[42] Pesantrens must adapt and restructure to the social demands and challenges of the digital era. The Pesantren as an educational institution based on Islamic principles.[43] Has demonstrated his ability to adapt to change as a pioneer of the educational model.[44]

Opportunities for Islamic education in pesantren in the era of digital disruption can be used as an asset that has proven to be an advantage amid a global order. Meanwhile, challenges can be used as a basis for developing the strengths and evaluating the various deficiencies that have so far surrounded Islamic education. At the same time, as the largest educational institution, pesantren provides capital for forming religious communities. This institution has produced many leaders in the past, present and future. Many of its graduates are involved in nation-building. The mission of Pondok Pesantren is very effective in educating generations of believers and building the nation, because the main focus is faith and knowledge.

Facing the era of digitalization and disruption, the strategy for Islamic education in pesantren is: *First*, strengthening values-based Islamic boarding schools, remaining grounded in the Qur'an and Hadith as the foundation and main goal of Islamic education.[45] It remains rooted in the concepts of *tarbiyah, ta'lim,* and *ta'dib* so that it functions to develop human potential as a whole.[46] *Second,* human resources in pesantren must be improved. Quality human resources are very important for national development.[47] Pesantren are not only centers where *santri* learn religious values, but also places where *santri* can be empowered, educated and enriched.[48] Pesantren are an alternative educational option for the community,[49] as well as

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[42] Fakhrurrozi, "Pesantren Virtual: Dinamisasi Atau Disrupsi Pesantren?"; Dewi Fatmawati and Ahmad Rifa'i, "Kurikulum Pesantren Ideal Di Era Digital," *Syntax Literate ; Jurnal Ilmiah Indonesia* 6, no. 6 (June 20, 2021): 2689, https://doi.org/10.36418/syntax-literate.v6i6.3111; Ihin Solihin, Aan Hasanah, and Hisny Fajrussalam, "Core Ethical Values of Character Education Based on Islamic Values in Pesantrens," *International Journal on Advanced Science, Education, and Religion* 3, no. 2 (2020): 21–33, https://doi.org/10.33648/ijoaser.v3i2.51.

[43] Fatmawati and Rifa'i, "Kurikulum Pesantren Ideal Di Era Digital."

[44] Titis Thoriquttyas and Farida Hanun, "Amplifying the Religious Moderation from Pesantren: A Sketch of Pesantren's Experience in Kediri, East Java," *Analisa: Journal of Social Science and Religion* 5, no. 02 (2020): 221–34, https://doi.org/10.18784/analisa.v5i02.1147.

[45] Eniwati Khaidir and Fitriah M. Suud, "Islamic Education in Developing Students' Characters At As-Shofa Islamic High School, Pekanbari Riau," *IJIEP: International Journal of Islamic Educational Psychology* 1, no. 1 (2020): 50–63.

[46] A Baharuddin, "Digital Revolution and the Renewed Mechanism of Religious Discourse," in *Proceedings of the Proceedings of the 19th Annual International Conference on Islamic Studies, AICIS 2019, 1-4 October 2019, Jakarta, Indonesia* (Jakarta: EAI, 2020), https://doi.org/10.4108/eai.1-10-2019.2291708.

[47] Khaidir and Suud, "Islamic Education in Developing Students' Characters At As-Shofa Islamic High School, Pekanbari Riau."

[48]A. Syafi' AS and Ainun Najib, "Strategi Pembelajaran Lembaga Pendidikan Pesantren Dalam Mengahadapi Era Digitalisasi (Studi Kasus Di Pondok Pesantren Minhajut Thullab Jombang)," *Sumbula* 7, no. 2 (2022): 313–37.

supporting students and contributing to community development. *Third*, classroom learning is carried out as in traditional pesantren. However, without tables and chairs, students feel comfortable and do not feel any obstacles due to the lack of facilities according to technological developments.[50] Develop smart classrooms and smart learning as an absolute prerequisite for developing digital-based Islamic education in Islamic boarding schools. Siddiq et al. state that the more modern a society is, the more organic its forms of social solidarity are and the more it tends to abandon mechanical solidarity.[51] *Fourth,* pesantren curriculum development. That is, the values of pesantren are assumed to be the core values of curriculum development as a paradigm shift through the management of pesantren.[52] Thus, the development of the pesantren curriculum must be under the times. According to Muluk et al., curriculum development has a central role in educational reform related to new technological and social changes, including changes in the needs of *santri*.[53] For the success of educational outcomes, it is important to periodically review and re-develop the curriculum in line with the progress of Islamic education in pesantren in the era of disruption. According to Mas'ud, et al., pesantren teach Islamic subjects informally in their chosen curriculum.

Future pesantren digital can change how people think about religious education into a form of society that will adapt to various technological developments. Rapid exchange of information can influence Islamic *dakwah* activities and shape the character of a wise Muslim. In the era of disruption, the opportunities and challenges of Islamic education can be exploited as a digital power in the future. Therefore, apart from understanding the *Kitab Kuning*, *santri* must also master technology. Advances in technology today are so powerful that people should not be complacent with the rapid development of technology.

C. Conclusion

The conclusions that can be drawn from this study are as follows. (1) Pesantrens activate the Islamic education system by expanding the scope of students through extracurricular activities that suit the interests and talents of students. Pesantrens will focus on all areas of life (Internet of Things), big data, and artificial intelligence for information gathering and knowledge transfer. (2) The Role of Pesantrens in the Age of Disruption following Advances in Science and Technology. Islamic education still relies on three terms – *tarbiyah, ta'lim*, and *ta'dib* – and their use has many implications. The role of science and technology can be fulfilled through innovation, teaching methods and media. (3) The digital needs of the era of disruption in Pesantrens can make it easier for students to access information and knowledge. Changes in Islamic education will be studied, especially teaching media, teaching methods, and Islamic curricula in the digital era. (4) Solve the problems of the Islamic education system in Pesantrens by adapting and restructuring them to meet the social needs and challenges of the digital era based on Islamic principles. The project strategy

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[49]Mohammad Ahyan Yusuf Sya'bani, "Culture of Religious Moderation Through the Actualization of Islamic Education Wasatiyyah to Improve Religious Reconnection and Tolerance in Indonesia," *Proceedings of the 1st UMGESHIC International Seminar on Health, Social Science and Humanities (UMGESHIC-ISHSSH 2020)* 585 (2021): 528–36, https://doi.org/10.2991/assehr.k.211020.075.

[50]AS and Najib, "Strategi Pembelajaran Lembaga Pendidikan Pesantren Dalam Mengahadapi Era Digitalisasi (Studi Kasus Di Pondok Pesantren Minhajut Thullab Jombang)."

[51]Rd Siti Sofro Sidiq et al., "Virtual World Solidarity: How Social Solidarity Is Built on the Crowdfunding Platform Kitabisa.Com," *Webology* 18, no. 1 (2021): 192–202, https://doi.org/10.14704/WEB/V18I1/WEB18083.

[52]Mukhamad Ilyasin, "Transformation of Learning Management: Integrative Study of Pesantren Curriculum," *Dinamika Ilmu* 20, no. 1 (2020): 13–22, https://doi.org/10.21093/di.v20i1.2006.

[53]Safrul Muluk et al., "Developing Generic Skills at an Islamic Higher Education Institution Curriculum in Aceh, Indonesia," *Higher Education, Skills and Work-Based Learning* 9, no. 3 (2019): 445–55, https://doi.org/10.1108/HESWBL-06-2018-0064.

is: improvement of values-based Pesantrens, improvement of Pesantren human resources, improvement of the material and technical base of pesantren's and development of pesantren's curriculum.

References

Afrianto. "Being a Professional Teacher in the Era of Industrial Revolution 4.0: Opportunities, Challenges and Strategies for Innovative Classroom Practices." *English Language Teaching and Research* 2, no. 1 (2018): 3. http://ejournal.unp.ac.id/index.php/eltar/article/view/102675.

Ahdar, and Musyarif. "Tantangan Pendidikan Islam Di Indonesia Pada Era Globalisasi." *Jurnal Pendidikan Islam* 17, no. 1 (2019): 13–26.

Anisimova, Ellina Sergeevna. "Digital Literacy of Future Preschool Teachers." *Journal of Social Studies Education Research* 11, no. 1 (2020): 230–53.

Anwar, Saeful. "Revolusi Industri 4.0 Islam Dalam Merespon Tantangan Teknologi Digitalisasi." *At-Tuhfah: Jurnal Studi Keislaman* 8, no. 2 (2019): 16–28.

AS, A. Syafi', and Ainun Najib. "Strategi Pembelajaran Lembaga Pendidikan Pesantren Dalam Mengahadapi Era Digitalisasi (Studi Kasus Di Pondok Pesantren Minhajut Thullab Jombang)." *Sumbula* 7, no. 2 (2022): 313–37.

Asari, Hasan, and Zainal Abidin. "Kitab Kuning and Training of Ulama: The Experience of Madrasah Al Qismul Ali Jalan Ismailiyah Medan." *MIQOT: Jurnal Ilmu-Ilmu Keislaman* 44, no. 1 (2020): 93. https://doi.org/10.30821/miqot.v44i1.750.

Badi'ah, Siti, Luthfi Salim, and Muhammad Candra Syahputra. "Pesantren Dan Perubahan Sosial Pada Era Digital." *Analisis: Jurnal Studi Keislaman* 21, no. 2 (2021): 349–64.

Baharuddin, A. "Digital Revolution and the Renewed Mechanism of Religious Discourse." In *Proceedings of the Proceedings of the 19th Annual International Conference on Islamic Studies, AICIS 2019, 1-4 October 2019, Jakarta, Indonesia*. Jakarta: EAI, 2020. https://doi.org/10.4108/eai.1-10-2019.2291708.

Budiman, Septian Arief, and Fil Isnaeni. "Penyuluhan Peran Santri Dalam Menjawab Tantangan Dakwah Di Era Digital." *Jurnal Loyalitas Sosial: Journal of Community Service in Humanities and Social Sciences* 1, no. 2 (2019): 104. https://doi.org/10.32493/jls.v1i2.p104-113.

Candra, Wilson, Naelati Tubastuvi, Suryo Budi Santoso, and Eko Haryanto. "Analysis of The Islamic Leadership, Islamic Work Ethics and Intellectual Intelligence on Employee Performance with Islamic Organization Culture as Moderated Variables." *Journal of Islamic Economic and Business Research* 2, no. 1 (2022): 1–14. https://doi.org/10.18196/jiebr.v2i1.21.

Chanifah, Nur, Yusuf Hanafi, Choirul Mahfud, and Abu Samsudin. "Designing a Spirituality-Based Islamic Education Framework for Young Muslim Generations: A Case Study from Two Indonesian Universities." *Higher Education Pedagogies* 6, no. 1 (2021): 195–211. https://doi.org/10.1080/23752696.2021.1960879.

Daradjat, Zakiah. *Lmu Pendidikan Islam*. Ed.1 Cet . Jakarta: Bumi Aksara, 2008.

Darwis, Mohammad. "Revitalisasi Peran Pesantren Di Era 4.0." *Dakwatuna: Jurnal Dakwah Dan Komunikasi Islam* 6, no. 01 (2020): 128. https://doi.org/10.36835/dakwatuna.v6i01.509.

Djazilam, M. Syukron. "Relevansi Sistem Pendidikan Pesantren Tradisional Dalam Era Modernisasi." *Al-Insyiroh: Jurnal Studi Keislaman* 5, no. 1 (2019): 89–105. https://doi.org/10.35309/alinsyiroh.v5i1.3398.

Emawati, Emawati, and Istiqamahtul Masyitah. "Ekstrakurikuler Di Pesantren Moderen: Sebuah Upaya Dalam Pembentukan Karakter Santri." *DAYAH: Journal of Islamic Education* 5, no. 2 (2022): 278. https://doi.org/10.22373/jie.v5i2.13453.

Fahlevi, Mochammad, Mohamad Saparudin, Sari Maemunah, Dasih Irma, and Muhamad Ekhsan. "Cybercrime Business Digital in Indonesia." *E3S Web of Conferences* 125, no. 201 9 (2019): 1–5. https://doi.org/10.1051/e3sconf/201912521001.

Fakhrurrozi, Hatta. "Pesantren Virtual: Dinamisasi Atau Disrupsi Pesantren?" *Paedagogia* 10, no. 1 (2021): 153–69.

Falloon, Garry. "From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework." *Educational Technology Research and Development* 68, no. 5 (2020): 2449–72. https://doi.org/10.1007/s11423-020-09767-4.

Fatmawati, Dewi, and Ahmad Rifa'i. "Kurikulum Pesantren Ideal Di Era Digital." *Syntax Literate ; Jurnal Ilmiah Indonesia* 6, no. 6 (June 20, 2021): 2689. https://doi.org/10.36418/syntax-literate.v6i6.3111.

Hayati, Nur Rohmah. "Peran Pesantren Menghadapi Konstelasi Era 4.0." *Islamic Review Jurnal Riset Dan Kajian Keislaman* VIII, no. 2 (2019): 161–74. https://doi.org/10.35878/islamicreview.v8i2.149.

Ilyas, Mohammad, Nashrudin Baidan, and Rohmat Budi. "Exploring The Management Of Spiritual Inteliigance Development In 21 St Century : A Case Of Islamic Boarding House Of." *European Journal of Molecular & Clinical Medicine* 07, no. 07 (2020): 6482–89.

Ilyasin, Mukhamad. "Transformation of Learning Management: Integrative Study of Pesantren Curriculum." *Dinamika Ilmu* 20, no. 1 (2020): 13–22. https://doi.org/10.21093/di.v20i1.2006.

Irawan, Hendri, and Krisbaya Bayu Firdaus. "Resiliensi Pancasila Di Era Disrupsi: Dilematis Media Sosial Dalam Menjawab Tantangan Isu Intoleransi." *Jurnal Paris Langkis* 1, no. 2 (2021): 36–47. https://e-journal.upr.ac.id/index.php/parislangkis.

Ja'far, Ali. "Literasi Digital Pesantren: Perubahan Dan Kontestasi." *Islamic Review: Jurnal Riset Dan Kajian Keislaman* 8, no. 1 (2019): 17–35. https://doi.org/10.35878/islamicreview.v8i1.156.

Khaidir, Eniwati, and Fitriah M. Suud. "Islamic Education in Developing Students' Characters At As-Shofa Islamic High School, Pekanbari Riau." *IJIEP: International Journal of Islamic Educational Psychology* 1, no. 1 (2020): 50–63.

Khoeriyah, Munganatl. "Heutagogy in the Course of Pesantren Education (Case Study At Pesantren Salaf Al-Luqmaniyyah)." *Sunan Kalijaga International Journal on Islamic Educational Research* 3, no. 1 (2019): 66–79. https://doi.org/10.14421/skijier.2019.2019.31.07.

Kholifah, Azhar. "Strategi Pendidikan Pesantren Menjawab Tantangan Sosial Di Era Digital." *Jurnal Basicedu* 6, no. 3 (2022): 4967–78. https://doi.org/10.31004/basicedu.v6i3.2811.

Kim, Kyu Tae. "The Structural Relationship among Digital Literacy, Learning Strategies, and Core Competencies among South Korean College Students." *Educational Sciences:*

Theory and Practice 19, no. 2 (2019): 3–21. https://doi.org/10.12738/estp.2019.2.001.

Liza, Khaira, and Erna Andriyanti. "Digital Literacy Scale of English Pre-Service Teachers and Their Perceived Readiness toward the Application of Digital Technologies." *Journal of Education and Learning (EduLearn)* 14, no. 1 (2020): 74–79. https://doi.org/10.11591/edulearn.v14i1.13925.

Lundeto, Adri, Ishak Talibo, and Shinta Nento. "Challenges and Learning Strategies of Islamic Education in Pesantrens in the Industrial Revolution Era 4.0." *AL-ISHLAH: Jurnal Pendidikan* 13, no. 3 (2021): 2231–40. https://doi.org/10.35445/alishlah.v13i3.1153.

Mahfudh, Adzhal Arwani, and Hery Mustofa. "Klasifikasi Pemahaman Santri Dalam Pembelajaran Kitab Kuning Menggunakan Algoritma Naive Bayes Berbasis Forward Selection." *Walisongo Journal of Information Technology* 1, no. 2 (2019): 101. https://doi.org/10.21580/wjit.2019.1.2.4529.

Manan, Muhamad Abdul. "Daya Tahan Dan Eksistensi Pesantren Di Era 4.0." *Jurnal Pendidikan Islam Indonesia* 3, no. 2 (2019): 301–13. https://doi.org/10.35316/jpii.v3i2.135.

Manshur, Fadlil Munawwar. "Typical Literary Works of Pesantren on Righteousness Teaching within Cultural Transformation." *Journal of Social Studies Education Research* 11, no. 4 (2020): 114–48.

Marzano, Gilberto, and Andris Martinovs. "Teaching Industry 4.0." *Society Integration Education. Proceedings of the International Scientific Conference* 11 (2020): 69. https://doi.org/10.17770/sie2020vol2.4833.

Mas'ud, Ali, Ah Zaki Fuad, and Ahmad Zaini. "Evolution and Orientation of Islamic Education in Indonesia and Malaysia." *Journal of Indonesian Islam* 13, no. 1 (2019): 1–20. https://doi.org/10.15642/JIIS.2019.13.1.21-49.

Masfingatin, Titin, and Swasti Maharani. "Computational Thinking: Students on Proving Geometry Theorem." *International Journal of Scientific and Technology Research* 8, no. 9 (2019): 2216–23.

Maskur, Abu. "Penguatan Budaya Literasi Di Pesantren." *IQ (Ilmu Al-Qur'an): Jurnal Pendidikan Islam* 2, no. 01 (2019): 1–16. https://doi.org/10.37542/iq.v2i01.21.

Muluk, Safrul, Habiburrahim Habiburrahim, Teuku Zulfikar, Janice Orrell, and Mujiburrahman Mujiburrahman. "Developing Generic Skills at an Islamic Higher Education Institution Curriculum in Aceh, Indonesia." *Higher Education, Skills and Work-Based Learning* 9, no. 3 (2019): 445–55. https://doi.org/10.1108/HESWBL-06-2018-0064.

Nugroho, Haryo Aji, Winarno Winarno, and Rizki Parahita Anindi. "The Implementation of Panca Jiwa In Pesantren Agro Nur El Falah Salatiga." *Indonesian Journal of Religion and Society* 3, no. 1 (2021): 1–9. https://doi.org/10.36256/ijrs.v3i1.126.

Nurul Romdoni, Lisda, and Elly Malihah. "Membangun Pendidikan Karakter Santri Melalui Panca Jiwa Pondok Pesantren." *Jurnal Pendidikan Agama Islam Al-Thariqah* 5, no. 2 (2020): 13–22. https://doi.org/10.25299/al-thariqah.2020.vol5(2).4808.

Pabbajah, Muhammad Taufik Hidayat, and Mustaqim Pabbajah. "Peran Pondok Pesantren Salafiyah Terhadap Revitalisasi Penidikan Islam; Studi Pada Pondok Pesantren Salafiyyah Parappe, Campalagin, Polman." *Jurnal Ilmiah Pendidikan Citra Bakti* 6, no. 2 (2020): 201–10.

Putra, Pristian Hadi. "Tantangan Pendidikan Islam Dalam Menghadapi Society 5.0." *Islamika : Jurnal Ilmu-Ilmu Keislaman* 19, no. 02 (2019): 99–110. https://doi.org/10.32939/islamika.v19i02.458.

Putrawangsa, Susilahudin, and Uswatun Hasanah. "Integrasi Teknologi Digital Dalam Pembelajaran Di Era Industri 4.0." *Jurnal Tatsqif* 16, no. 1 (2018): 42–54. https://doi.org/10.20414/jtq.v16i1.203.

Rahmatullah, Arif, and Syamsul Hidayat. "The Urgence of Values In Islamic Education (Syed Muhammad Naquib Al-Attas Thought Study)." *Tsaqafah* 18, no. 1 (2022): 315–33.

Rahtikawatie, Yayan, Saifuddin Chalim, and Teti Ratnasih. "Investigating The Role of Religious Leadership at Indonesia's Pesantrens in The Sustainability of School Management." *Eurasian Journal of Educational Research* 2021, no. 96 (2021): 51–65. https://doi.org/10.14689/ejer.2021.96.4.

Rianawaty, Ida, Suyata, Siti Irene Astuti Dwiningrum, and Bagus Endri Yanto. "Model of Holistic Education-Based Boarding School: A Case Study at Senior High School." *European Journal of Educational Research* 10, no. 2 (2021): 567–80. https://doi.org/10.12973/EU-JER.10.2.567.

Rindiani, Ani, Ahmad Nurwadjah, and Andewi Suhartini. "Eksistensi Dan Revitalisasi Pesantren Di Era 4.0." *Al-Wasathiyah* 2, no. 1 (2022): 14–27.

Rohaeni, Anie, Iim Wasliman, Deti Rostini, and Yosal Iriantara. "Management of Noble Moral Education for Madrasah Aliyah Students at Persatuan Islam Boarding School." *Journal of Industrial Engineering & Management Research* 2, no. 4 (2021): 154–71. https://www.jiemar.org/index.php/jiemar/article/view/174%0Ahttps://www.jiemar.org/index.php/jiemar/article/download/174/134.

Rosadi, Anwar, and Mohamad Erihadiana. "Reorientasi Kurikulum Dan Pembelajaran Pendidikan Agama Islam Pada Era Disrupsi Teknologi." *Quality* 9, no. 2 (2021): 231. https://doi.org/10.21043/quality.v9i2.12024.

Rosli, Syahrir, Mohd Isa Hamzah, and Mohd Edyazuan Azni. "Revolusi Digital: Pengaruh Terhadap Dinamik Masyarakat Serta Kaedah Mengatasinya Dari Perspektif Islam." *QALAM; International Journal of Islamic and Humanities Research* 2, no. 1 (2022): 40–53.

Samsudin. "Tantangan Lembaga Pendidikan Pesantren Di Era Disrupsi." *Conference on Islamic Studies (CoIS)*, 2019, 224. http://lppm-unissula.com/jurnal.unissula.ac.id/index.php/cois/article/view/8063/3655.

Samsudin, and Anis Tyas Kuncoro. "Tradisi Khidmah Dalam Perspektif Pendidikan Islam." *Jurnal Pendidikan Agama Islam Universitas Wahid Hasyim* 10, no. 1 (2022): 298–317.

Septiani, Gunik. "Pengaruh Lingkungan Bagi Kecerdasan Siswa Secara Intelektual, Emosional, Sosial, Dan Spiritual." *Al Hikmah: Journal of Education* 1, no. 1 (2020): 47–58. http://yphn.ac.id/ejournal/index.php/Alhikmah/index.

Sidiq, Rd Siti Sofro, Ashaluddin Jalil, R. Willya, and W. Achmad. "Virtual World Solidarity: How Social Solidarity Is Built on the Crowdfunding Platform Kitabisa.Com." *Webology* 18, no. 1 (2021): 192–202. https://doi.org/10.14704/WEB/V18I1/WEB18083.

Sirait, Ferdinand Eskol Tiar. "Dampak Revolusi Industri 4.0 Pada Industri Teknologi Komunikasi Di Indonesia: Peluang Dan Tantangan." *Jurnal Penelitian Dan Pengembangan Sains Dan Humaniora Universitas Pendidikan Ganesha* 6, no. 1 (2022): 132–39. https://ejournal.undiksha.ac.id/index.php/JPPSH/article/view/28153.

Solihin, Ihin, Aan Hasanah, and Hisny Fajrussalam. "Core Ethical Values of Character Education Based on Islamic Values in Pesantrens." *International Journal on Advanced Science, Education, and Religion* 3, no. 2 (2020): 21–33. https://doi.org/10.33648/ijoaser.v3i2.51.

Sya'bani, Mohammad Ahyan Yusuf. "Culture of Religious Moderation Through the Actualization of Islamic Education Wasatiyyah to Improve Religious Reconnection and Tolerance in Indonesia." *Proceedings of the 1st UMGESHIC International Seminar on Health, Social Science and Humanities (UMGESHIC-ISHSSH 2020)* 585 (2021): 528–36. https://doi.org/10.2991/assehr.k.211020.075.

Tarihoran, Nafan, Eva Fachriyah, Tressyalina, and Iin Ratna Sumirat. "The Impact of Social Media on the Use of Code Mixing by Generation Z." *International Journal of Interactive Mobile Technologies* 16, no. 7 (2022): 54–69. https://doi.org/10.3991/ijim.v16i07.27659.

Taufik, Muhamad. "Strategic Role of Islamic Religious Education in Strengthening Character Education in the Era of Industrial Revolution 4.0." *Jurnal Ilmiah Islam Futura* 20, no. 1 (2020): 86. https://doi.org/10.22373/jiif.v20i1.5797.

Thoriquttyas, Titis, and Farida Hanun. "Amplifying the Religious Moderation from Pesantren: A Sketch of Pesantren's Experience in Kediri, East Java." *Analisa: Journal of Social Science and Religion* 5, no. 02 (2020): 221–34. https://doi.org/10.18784/analisa.v5i02.1147.

Yayan Musthofa, M. Asy'ari, and Habibur Rahman. "Pembelajaran Pesantren Virtual: Fasilitas Belajar Kitab Kuning Bagi Santri Kalong." *TADRIS: Jurnal Pendidikan Islam* 16, no. 1 (2021): 58–70. https://doi.org/10.19105/tjpi.v16i1.4543.