

PESANTREN'S DIGITAL LITERACY: An Effort to Realize the Advancement of Pesantren Education

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Abstract

There are still many digital literacy gaps among pesantren in Indonesia due to maintaining the pesantren culture itself. Pesantren must be able to adapt to the times in the digital era, so they can compete with other educational institutions by utilizing digital literacy. The purpose of this article is to analyze pesantren digital literacy skills as an effort to realize the progress of pesantren education. The method used is library research with descriptive analysis study. The data is analyzed using content analysis and descriptive studies related to digital literacy in pesantren by using data sources from previous studies. The results explain that digital literacy is an opportunity and potential for pesantren education to be developed so that the role of pesantren in society is more advanced and superior. So, pesantren remains adaptive to the developments and demands of the times as needed. The digital literacy can be in the form of critical, creativity, imagination, and creative thinking skills in understanding technological developments so that they can use them well. Pesantren digital literacy is optimized as a form of effort in realizing the progress of pesantren education in Indonesia.

Masih banyak terjadi ketimpangan literasi digital dalam pendidikan pesantren di Indonesiakarena ingin mempertahankan kebudayaan pesantren itu sendiri. Pesantren harus dapat beradaptasi dengan perkembangan zaman di era digital, supaya dapat bersaing dengan lembaga pendidikan lainnya dengan memanfaatkan literasi digital. Tujuan artikel ini adalah menganalisis

kecakapan literasi digital pesantren sebagai upaya untuk mewujudkan kemajuan pendidikan pesantren. Metode yang digunakan studi kepustakaan dengan studi analisis deskriptif. Analisis data menggunakan studi analisis konten dan deskriptif terkait literasi digital di pesantren yang menggunakan sumber data dari penelitian sebelumnya. Hasil penelitian menjelaskan bahwa literasi digital menjadi peluang dan potensi bagi pendidikan pesantren untuk dikembangkan agar peran pesantren dalam masyarakat lebih maju dan unggul. Sehingga, pesantren tetap adaptif terhadap perkembangan dan tuntutan zaman yang sesuai kebutuhan. Bentuk literasi digital dapat berupa kemampuan berpikir kritis, kreativitas, imajinasi dan berpikir kreatif dalam memahami perkembangan teknologi agar dapat memanfaatkannya dengan baik. Literasi digital di pesantren dioptimalisasikan sebagai bentuk salah satu upaya dalam mewujudkan kemajuan pendidikan pesantren di Indonesia.

Keywords: digital; literacy; pesantren

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Introduction

Pesantren (Islamic boarding schools) in Indonesia has been significantly changing over the time. Starting from pesantren that are centered on prayer room, and mosques, to the establishment of pesantren on buildings, ranging from simple to luxurious (Thahir 2015). The students are also diverse, from a few to thousands, from local to international (Aini 2019).

There are approximately 30,495 pesantren in Indonesia in 2021, spread across 34 provinces of Indonesia. The largest distribution of pesantren is in West Java, with 9,310 institutions, followed by Banten with 5,344 institutions, East Java with 5,121 institutions, Central Java with 3,927 institutions, Aceh with 1,286 institutions, followed by the number of students as many as 4,373,694 (Kementerian Agama 2021). This fantastic number of pesantren is one proof of a rapid development in the modern era, which can be indicated by the number of students reaching almost five million (Rusdiansyah 2021).

The modern era presents leaps in digital technology that have brought significant changes to the pattern of life, be it politics, education, or socio-religion in Indonesia (Hefni 2020). Digital technology in society provides various kinds of religious information that can be freely accessed by the

public (Indra 2019). Fakhruroji (2019) explains that the need for religious instructions in modern society will be carried out more virtually, where this interaction reduces religious interpersonal relations. Digital technology in the realm of education is also growing rapidly which changes the pattern and model of education, where knowledge and information are not only transmitted conventionally, but are also transmitted digitally such as email, social media, blogs, video tutorials, and other platforms (Campbell and Evolvi 2020).

The presence of digital technology in the modern era also has an impact on the system and pattern of pesantren education in establishing relations between pesantren and the community (Syarif 2018). Digital technology is certainly a new means of conveying and obtaining religious ideas and opinions, which on the other hand is efficient and used in learning and accessing wider information. However, the presence of digital technology must still be anticipated, especially in pesantren because it can have a negative impact even though the positive impact is superior (Mursidi et al. 2021). The impact is that it can affect the pattern of interaction and learning of students, starting from the *muwajjahah* tradition (face to face) in learning, the *istinbâṭ* tradition (looking for references) through *turâth* books that can be replaced with the tradition of googling and face to screen or the tradition of face to face (virtual) (Das, Halik, and Amaluddin 2016). This negative impact can definitely be minimized by having qualified digital literacy skills so that they can adapt to the world of digitalization.

Digital literacy as a progressive transformation of pesantren literacy needs to be welcomed for the development of students' insight and the advancement of pesantren education, but literacy also needs to be anticipated and guided. It is noticed that not all information in digital literacy is in line with the Islamic values taught in pesantren that emphasizes the moderate Islam (*tawassuṭ*) view. Pesantren digital literacy requires understanding and awareness by its users which is balanced with an analytical attitude towards developing discourses (*critical analytical*) (Eraku et al. 2021). With a smart understanding of utilizing digital literacy in pesantren, it can certainly change the pesantren system towards a more advanced and superior one. The importance of digital literacy for pesantren aims to provide an understanding that digital literacy is very important for the sustainability of Islamic boarding schools, namely improving the quality of Islamic boarding schools so that they can compete both nationally and globally.

Zabidi and Tamam research (2021) find that digital literacy in pesantren is a form of solution to be more open to the changing time so the pesantren will still exist. Ja'far (2019) also finds that pesantren digital literacy is a place for contestation and change in solving problems in the 21st century so that pesantren will be more adaptive to the demands of the times. In this study, pesantren digital literacy is one form of effort in realizing the progress of Islamic boarding school education, so that pesantren must optimize it by developing and honing so as not to be left behind with the changing times in the current digital era.

Digital literacy is as a support for realizing the advancement of pesantren education. Pesantren education is a non-formal educational institution that teaches Islamic religious knowledge which is applicable as a guide for daily life by emphasizing morals in social life. This is reinforced by Law No. 18 of 2019 concerning pesantren, that the purpose of pesantren education is to improve the quality of life of empowered people to meet the educational needs of citizens and the social welfare of the community (Setyawan 2019). The law has strengthened the existence of pesantren so that they need to be developed under the demands of the time.

Digital literacy has experienced developments in the world of education. Initially, it is only the concern in formal education, but now it reaches non-formal education as well. Digital literacy in non-formal education is an interesting topic to study more comprehensively. Pesantren is a form of non-formal education that has a religious basis (Islam) and has a legacy of the oldest Islamic cultural values which until now has been able to continue to develop according to the demands of the changing time. Pesantren has a goal as a solution of educational institution that is seen as always being transparent or open. It needs digital literacy as an effort to realize the progress of education that has skills in understanding technological developments. The purpose of this article is to study for reflection and additional treasures for pesantren as well as readers who are interested in the field of pesantren because, with digital literacy, pesantren can integrate Islamic scientific insights and general knowledge.

This study uses library research, which is a method of collecting data by understanding and studying theories from various works of literature related to research. The library method means data collection techniques by reviewing books, literature, notes, and various reports related to the problem (Mahanum 2021). According to Zed (2004), there are four stages of the library method, namely preparing the necessary equipment, preparing a

working bibliography, organizing time, and reading and recording research materials.

The data are collected by searching for sources and constructing relevant previous studies from 2017 to present, regarding pesantren's digital literacy. It is then processed with content and descriptive analysis. Library materials obtained from various references were analyzed critically and in-depth to support research propositions and ideas (Snyder 2019). In this library research, the researchers pay attention to the steps in researching the literature, collects data, reads, and processes library materials and equipment that must be prepared in the study, its usefulness makes it easier for researchers to obtain data (Fadli 2021).

Pesantren's Education in the Digital Age

Pesantren (Islamic boarding school) education in Indonesia when analyzed through functional structural theory has undergone significant changes. Parsons (2017) explains that for a social organization system to survive, the system must have four things or known as AGIL (adaptation, goal attainment, integration, and latency). Adaptation is a system that must get used to the environment as needed. Goal attainment is a system that must be defined in achieving the target. Integration is the system regulating the relationship between the parts that have become components. Pattern maintenance (latency) is a system that must equip, improve, and maintain, cultural patterns that create and sustain motivation. The four components in this theory are implemented into a system of actions. First, behavioral organizations that carry out adaptation. Second, the personality system that carries out the achievement of goals. Third, the social system that copes with the function of integration. Fourth, the cultural system, which carries out the function of maintaining patterns.

Pesantren education based on a functional structure has a solid resistance, because it is under the social structure as an organizational system in the face of change and modernization (Rohmana 2021). This can be seen from the operational concept of the pesantren education system (Muazza et al. 2018). First, the adaptation system carried out by pesantren is very clear which positions it as a religious educational institution (Islamic) which remains the center of *tafaqquh fi al-din* useful in maintaining, developing, and utilizing Islamic sciences (Pramitha 2021). Even the role of values between pesantren and the community is controlled by pesantren. So, in the colonial era, pesantren was an education that adapted a lot to the

people and was not excessive as an educational institution that was integrated into people's lives.

The changes that occur in pesantren today are nothing but to adjust or adapt to the development of science and to meet the demands and needs of the time. The existence of pesantren as an educational institutions managed by *kiai* and *santri* is different from various places in terms of activities and forms (Ritonga, Lahmi, and Hakim 2020). This is evidenced by the existence of several pesantrens that have undergone changes and developed themselves both in the teaching system and curriculum (Ali 2019). On the other hand, there are also pesantrens that still maintain the traditional learning system that has become its specialty. They maintain the teaching of classical Islamic books (usually called as *kitab kuning*) as the core of their education without any integration with general knowledge (Ihsan et al. 2020).

Pesantren education is an educational institution that in fact prints and develops the younger generation as the nation's successor, so it must follow the times to maintain existing and future challenges. The current digital era (industrial revolution 4.0) has given rise to a new phenomenon or called disruptive innovation, which is an innovation that has created new trends and networks so that it can replace the old pattern (Athoillah and Wulan 2019). This means that all patterns and systems in life have assistance from technological sophistication (digital). It is a very fast and fundamental change by ruffling the patterns of the old order to create a new order (Arif et al. 2020). Disruption initiates the birth of new models and systems with innovative and disruptive strategies. The scope of change is very broad from all fields, be it politics, economy, social society, culture, or education.

The impact of disruptive innovation can certainly be felt directly in lifestyle and society in the era of the digital revolution, the development of science and technology, such as the presence of the Internet of Things (IoT), big data, cloud databases, block chain, and so on that have changed the human life pattern. Easier mobility with the development of science and technology and easy internet access encourage the growth of e-commerce which gave birth to online transportation, electronic commerce (Manan 2019). The transition from cash transactions to e-cash or e-money is slowly starting to erode into cash transactions in the life of the digital era. It has come to the world of education, where the learning process has become e-learning by relying on technological sophistication such as virtual classes

through platforms, e-books, scientific journals, and other learning materials so that teachers are only used as facilitators and focus on students (students center). This is definitely an innovation in the world of education in the digital era (Wiranata 2019).

Pesantren education in the digital era after the emergence of the phenomenon of disruptive innovation or digitalization of education will be able to change the pattern of the education system. Teaching and learning activities have changed with digital learning (e-learning) providing a more creative, participatory, diverse, and comprehensive learning experience (Gazali 2018). The existence of information technology has erased geographical boundaries that have triggered the emergence of new ways to produce innovations. Developments in digital technology with Artificial Intelligence (AI) have turned data into information, making it easy and inexpensive for people to obtain it. Now that the world of education has changed a lot, teachers in teaching have given online-based assignments where the search for information is not limited to just textbooks. This can be seen from several pesantren and school libraries already using technology in the form of e-books and other digital sources (Darwis 2020).

Pesantren education must open a space for dialogue with the changing time by adopting new values that are relevant and bring benefits in maintaining the existence of pesantren in line with the *fiqhiyyah* principles of "*al-muḥâfaẓah 'alâ al-qadîm al-ṣâliḥ wa al-akhdhu bi al-jadîd al-aṣlah*" (keeping firm and preserving good old values and implementing new values that are much better/relevant). Munifah (2019) explains two main reasons behind the importance of modernizing Islamic education (pesantren), namely: (1) the concept and practice of Islamic education so far have been too narrow, placing too much emphasis on the afterlife, which has created a scientific dichotomy that has been inherited by Muslims since the decline of Islam (12th century); and (2) Islamic educational institutions to date, have not or are not able to meet the needs of Muslims, in facing the challenges of the modern world and the challenges of the Indonesian people and nation in all fields.

For this reason, in facing and leading civil society, the concept of Islamic education and its role in empowering Muslims is needed. Islamic educational institutions are expected to improve themselves. So, they are not only able to become a medium for transmitting culture, knowledge, and expertise, but also as potential and cultural interactions, namely how Islamic educational institutions can develop the potential of children given

by God in the context of preparing them to live their lives. Pesantren education as the basis of Islamic educational institutions needs to transform its education system towards a more advanced one so that it can adapt to the demands of the time in the current digital era (Muid 2019). The old pesantren education pattern needs to be integrated with the new technology-based education because the reality is that many millennial communities have used technology so that it can facilitate the process of obtaining Islamic information and knowledge. One of the efforts that can be developed by Islamic boarding school education is to build and develop pesantren digital literacy so that it continues to exist and is not left behind.

Digital literacy skills in the educational aspect of pesantren in increasing the ability to access and use various sources of information and knowledge in digital form such as e-books, e-papers, e-journals, and operating various computer software are also needed in the development of literacy activities (Kholili 2021). The printed religious texts can be converted into digital form with software such as *al-maktabah al-shâmilah*, *maktabah al-tafsîr*, *I-waris*, *al-Qur'an*, *hadith*, and the like which can help the learning process and accelerate understanding comprehensively. Thus, pesantren education in the current digital era should try to adapt to the demands of the time, namely by integrating technology-based pesantren education systems and patterns. It is done to make the image of pesantren education even better and change the negative paradigm into positive. So, pesantren will remain as a popular institution and contribute greatly to educate the nation's children.

Digital literacy in Pesantren's

The concept of digital literacy emerged along with technological developments (Nash 2020). Çetin (2021) explains that digital literacy is the ability to understand and use information through various digital sources. Digital literacy in pesantren emerged along with technological developments in the world of education, where the media became the infrastructure that provided fast and broad information about certain study subjects and religious discourses. Digital literacy exists as a need for access and management of information that users must have the ability to access, analyze, evaluate, and create a variety of content (Susilawati et al. 2021). In the context of pesantren education, digital literacy is used as learning support, access data and information, information evaluation capabilities, and as a supporting media in a curriculum to encourage the creation of

media-aware human resources and able to analyze content (Khoiri and Bustomi 2020).

Digital literacy as a contestation of change and transformation in the pesantren education model brings a new direction. It must be possessed by students to be able to access information, in the form of news, e-books, journals, or video tutorials that are widely circulated outside the pesantren freely. The presence of digital literacy in pesantren is still a new thing because not all pesantren have the same policies (Makrufi 2017). Meanwhile, several *salaf* pesantren that still rely on the classical tradition limit access to free public information. They prohibit students from bringing portable communication tools (mobile phones and laptops, etc.) as the main devices in digital literacy. However, in some modern pesantren, portable communication devices are allowed to access information more broadly. This policy change can be used as an important milestone in the study of Islamic boarding schools (pesantren studies) which Yazid (2018) explains that pesantren are trying to open themselves to a more transformative and progressive direction, as well as being open to the outside world. This openness is presented to develop the pesantren's *salaf* academic tradition and modern scholarship.

Muhammadiyah Modern Boarding School Sleman, Yogyakarta has mastered the digital literacy. However, it is still far from what is expected because there is a limitation on the duration in using information technology. To find out the digital literacy potential of the students, several indicators must be mastered, namely skills in accessing and operating media activities. The skills have three criteria, namely skills in using media in a low standard, active skills in using and utilizing media (Safitri 2020).

Indicators of skills, especially on the use of computers/laptops and cellphones as well as internet access, consist of ownership of computers/laptops and cellphones; use of computers/laptops and mobile phones in terms of having social media accounts, e-mails and frequently visited sites; downloads and uploads. The indicator of critical understanding competence is the ability to analyze and evaluate news content in the media widely and completely. The criteria for this critical understanding include the ability to understand the content and function of the media, have knowledge of the media and the rules or regulations, and the behavior of media users in utilizing the media. Criteria for critical understanding include the potential of students to news on the mass media or the internet; being able to distinguish the truth of the news contents on

the accepted site; ability to understand the function of social media; and checking the source of the information.

Communicative abilities are skills in communicating and participating through media channels. These are skills in building social relationships to participate in the environment through media channels. In addition, communication skills also include ability in compiling media content. The communicative abilities indicator consists of updating information on the internet. Students must have the ability to analyze and evaluate media content, especially those from digital media, although not comprehensively. Even though students live in dormitories, they can understand the content and functions of the media and use it as a source of information in learning activities (Rosyida 2020). Thus, digital literacy at the Muhammadiyah Modern Boarding School, Sleman, Yogyakarta is already organized because the pesantren has facilitated and provided space. It is just a matter of how the pesantren evaluates the system of digital literacy so it can adapt to technological developments.

Digital literacy at Pesantren al-Anwar 3 Sarang, Rembang, Central Java has been provided with facilities, namely in a 'joint hall' where students, both male and female each has a hall used to access the internet and the required literature. However, the provision of this facility is not without control. Several rules must not be violated, for example, they are not allowed to use a laptop during internal dorm activities and the internet connection (wifi) facility will be automatically cut off during the dorm activity. The security officers also did not hesitate to confiscate android-based cellphones, because from the start it was not allowed. The mentioned pesantren is not only proactive and open to the emergence of technology and realizes the importance of access to information, but also takes preventive actions to maintain the traditions and values of Islamic boarding schools and this is what is then interpreted as pesantren digital literacy. The students are taught to be wise and literate not only in managing information but also in accessing information (Ja'far 2019).

The concept of digital literacy at Pesantren al-Anwar 3 is not only stuck in the understanding of students to be able to manage, access, and analyze information from the digital world. More than that, pesantren holds an important key to setting up a set of rules that educate users of the digital world. Students, for example, told me that his account for access to the internet was blocked because he was using wifi during the pesantren's internal activities. "Loose but tight" as the author calls it. In addressing

digital literacy, pesantren shows that there are leniency and limitations that must be adhered for students in accessing media and using digital literacy (Karomani et al. 2021). Other restrictions are also carried out by keeping the students busy with *turâth* studies such as reciting the Quran and *muhadharah* activities. These restrictions are expected to have an impact on the level of use of digital technology.

Pesantren's Digital Literacy as an Effort for the Advancement of Pesantren Education

Digital literacy is a form transformation that begins with the pattern of pesantren education using *sorogan* (handing out material) and *bandongan* (lectures) then adopting a class and madrasa system to the pesantren curriculum (Safitri 2020). This transformation continues as an adaptation process of pesantren to the education development (Tamami, Zabidi, and Ali 2020). The development of a more progressive pesantren has been explained by Dhofier (2011), that pesantren underwent a massive transformation and peaked in the post-reformation period, where many traditional pesantren (*salaf*) were transplanting knowledge based on the *salaf* book with a modern knowledge-based national curriculum. As a result, there is a diversification of literacy, where pesantren are not only focused on studying *al-kutub al-ṣafrâ'* (*kitab kuning*) as the main textbook of the pesantren (*turâth*) but also *al-kutub al-bayḍâ'* "white book/*buku putih*", magazines and newspapers. This shows the openness of pesantren to progressive contemporary scholarship and its more modern learning tools.

Digital literacy in pesantren has a foothold as a bridge to integrate between pesantren academics and the world outside the pesantren and provides a wider space to manage as much information as possible and as the best as possible. Pesantren education must give freedom to *santri*/students or *ustadz* to choose whatever literature they study as their reference and insight into Islamic studies and pesantren (Mukhlisin et al. 2021). However, digital literacy must have a critical point, namely the massiveness of Islamism, hoaxes, and religious conservatives wrapped in religious studies, so they must be smarter and wiser in using and utilizing information obtained through digital (Musa, Hamid, and Ishak 2021b). The dead point of digital literacy in pesantren is when students or *ustadz* are unable to manage and filter the existing Islamic discourse, then at a certain point, digital literacy will be more dominant than *turâth* literacy developed by Islamic boarding schools (Hafidzi 2020). This means that pesantren must

be more responsive and adaptive in managing the policies of the pesantren itself so that there are no misunderstandings that result in fatality for the pesantren.

Digital literacy is part of the real-world contestation. This contestation is as mentioned by Musa et al., (2021a) as a medium for organizing and expressing the closeness of young people in Indonesia. There is a religious pattern of organizing this is done by broadcasting and forwarding religious studies, short lectures, aphorisms, Islamic motivations, reflections, Islamic inspiration, to invitations to *hijrah* (migrate). Masfupah (2019) assesses that this model of Islamic studies in the media is a strategy to reach a broad audience. This can be seen from Habib Husein Ja'far Al-Hadar's digital da'wah, known as "Islam is a religion of love and compassion". His da'wah targets young people, so it is very relevant to use digital as a medium of da'wah such as YouTube, Twitter, Facebook, and Instagram platforms that reach thousands and even millions viewers. This da'wah strategy has proven to be effective in spreading Islamic ideas, thus giving rise to religious fundamentalism which is characterized as a phenomenon of millennial or urban communities supported by social media.

The religious fundamentalism and exclusivism that dominate the media and digital literacy have been responded by millennials in pesantren, such as the number of content creators among students, da'wah from *kiai*, or pesantren which are uploaded on social media (Setyaningsih et al. 2018). This includes the form of providing a narrative about Islam that is tolerant, inclusive, and embracing all community groups, and has deep national insight (Syahputra 2020; Isnawati and Yusuf 2021). Discourse contestation of digital space where personal activities in the digital space are not born as it is but as an effort to contest space in which a person responds, narrates, counters discourses that exist in the real world in a different space. In the discourse of contestation, the opinion of a figure will be used as a reference for actions and choices of discourse that are voiced. Discourse like this then affects literacy patterns for followers, both conventional literacy (printed book) and digital literacy (Rifauddin, Ariyanti, and Pratama 2020).

The contestation of this digital space requires digital literacy were at the same time, the digital world becomes an important medium for certain groups to narrow Islamic teachings, spread hate speech, intolerance, and hoaxes through social networks and videos (Rahman 2019). By honing digital literacy, it can be used as an important medium for counter narration, giving a new color to the spreading Islamic discourses

(In'amurrohman 2019). The existence of literacy and digital space contestation shows that pesantren and religious education institutions, especially Islam, are not only the focus of learning but also as production houses of discourse that are active in responding to social issues.

The concept of digital literacy in pesantren has a basis set out in Law No. 18 of 2019 Article 16 paragraph 1 "Pesantren carries out educational functions based on the uniqueness, traditions, and educational curriculum of each pesantren". It is added in paragraph 2 "the educational function of pesantren as referred to in paragraph (1) is intended to form students who excel in filling Indonesia's independence and can face the time" (Mustofa 2020). This concept certainly reinforces for pesantren to utilize digital literacy in realizing pesantren education that is more adaptive to the developments and demands of the time so that they are not left behind even though they still maintain their culture.

The use of digital literacy in non-formal educational institutions, especially in pesantren, requires massive stages. All of this requires various needs such as qualified Human Resources (HR), maximum facilities and infrastructure, and other supporting components. So, the role of UNESCO has four classifications of digital literacy-based learning that can be adapted into pesantren education (Zabidi and Tamam 2021). The first is a starting step where new students are introduced to learning through application tools and software as well as other digital devices. Learning in pesantren is still conventional but already has awareness in literacy, so the emphasis is on technology (ICT) and the basic skills of students. Second, applying (implementation), pesantren already has an effort in teaching students by utilizing digital-based software or software in an aspect of management.

Third, infusing (filling), pesantren must be able to integrate digital literacy into curriculum. The curriculum combine the taught material with the reality. Likewise, pesantren has implemented digital-based technology in learning and administration. Fourth, transforming, activities in pesantren are learner-centered where all activities are student-centered so that digital has become a natural or comprehensive part of every activity in pesantren with optimal results. The four classifications must be applied in pesantren education so utilizing digital literacy will not be failed. This way, the role of pesantren will remain a priority for the community, which is not left behind.

Pesantren education, whether it be students, *ustadz*, or managers, also really need digital literacy to support the progress of the pesantren itself.

There are three categories of digital/internet use among pesantren (Manan and Bajuri 2020). First, pesantren that can fully utilize the internet/digital to support activities, both for administrative purposes and teaching-learning purposes. Second, pesantren that partially utilize the internet/digital only for administrative purposes, while students, in general, are not allowed to access the internet unless they have obtained permission from the pesantren administrator (administrator or caregiver). Third, pesantren do not utilize or provide internet/digital facilities for both administrative purposes and learning activities.

Digital literacy by pesantren is certainly part of the effort in realizing the advancement of pesantren education itself. Pesantren must continue to adapt by understanding the development of an era that has advanced with technological sophistication (Dakir, Zubaidi, and Hasanah 2020). Digital literacy is present as a provision for pesantren managers to have good digital literacy competencies. The hope is that with an understanding of digital literacy, pesantren will not become a place for all forms of disinformation or misinformation that result in fatalities in utilizing digital so that a fact-checking method is needed through various tools to be safe (Falih, Sarika, and Hananto 2020). The optimization and urgency of digital literacy for pesantren are very important for the needs of the pesantren itself, be it management, learning, and infrastructure (facilities). So, pesantren education must develop creative capacity, mental capacity, intellectual capacity, and religious capacity well. Thus, if Islamic boarding schools are able and maximal in developing digital literacy skills as a form of effort to transform Islamic teachings and the formation of Islamic morals, they will still be given and accepted by society in the digital era.

Conclusion

In the current digital era, pesantren as part of the educational institution sector must participate in the digital transformation process. This is important because the education sector is the producer of the nation's future generations. Islamic boarding school education as a subculture has a uniqueness that has taken root and lives and develops amid society in carrying out its educational function, da'wah function, and community empowerment function. So, the role of pesantren is important to instill faith and piety to Allah, sow a noble character, and adhere to the teachings of *Islam rahmatan li al-'alamîn* which is reflected in the attitude of humility, tolerance, balance, moderation, and other noble values of the

Indonesian nation through education, Islamic da'wah, exemplary, and community empowerment within the framework of the Unitary State of the Republic of Indonesia (NKRI). So, in the digital era, pesantren education needs to optimize digital literacy as a form of effort to realize superior pesantren education.

Digital literacy in pesantren is a form of transformation of traditional educational patterns by integrating modern educational patterns, so that pesantren are not left behind. There are three categories of internet use among Islamic boarding schools as a form of optimizing digital literacy. First, Islamic boarding schools that can fully utilize the internet to support pesantren activities, both for administrative purposes and teaching-learning purposes. Second, Islamic boarding schools that partially uses the internet only for administrative purposes, while students, in general, are not allowed to access the internet unless they have obtained permission from the pesantren administrator (manager or caregiver). Third, Islamic boarding schools that do not use or provide internet facilities for both administrative purposes and learning activities. Thus, the urgency of digital literacy needs special attention for the pesantren itself so that they can be adaptive the changing time. On the other hand, pesantren must also be more critical in utilizing digital literacy to be more contributive in solving complex problems in the 21st century, so that the urgency of pesantren digital literacy can be used as an effort to realize the advancement of education.

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