# Transformation and Innovation of Digital-Based Islamic Boarding School

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| **Keywords:** Digital Transformation; Learning Innovation; Learning Quality | **Abstract** Digital transformation in education has become a crucial pillar in addressing the challenges of the Fourth Industrial Revolution. This research aims to explore and analyze the digital transformation process and innovative learning practices at two Islamic boarding schools: Al Aqobah Islamic Boarding School and Sakal Calligraphy School, both located in Jombang. The study also examines how these schools integrate digital technology into their educational systems to enhance the quality of learning and prepare students to meet global challenges. Using a mixed-method approach with a case study design, the research seeks to gain a deeper understanding of the digital transformation process and the digital learning innovations implemented in these Islamic boarding schools. The findings of the study reveal several key points: First, The managers of both Islamic boarding schools possess a positive, inclusive, and transformative perspective. Second, The implementation of digital transformation at both schools involves adopting and integrating digital technology across various aspects of education, tailored to the specific takhassus (specialization) of each Islamic boarding school. This digital transformation has driven the emergence of various innovations within each institution. The integration of digital-based learning and innovations in these Islamic boarding schools is progressing effectively, with an average success rate of 77.60%. Third, further, the digital transformation at these Islamic boarding schools has positively impacted the quality of learning, proven by improved student achievement. An average increase in student performance to 85.00% after adopting a digital-based learning approach. Overall, this study highlights the significant role of digital transformation in enhancing educational practices within Islamic boarding schools. |
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| **Kata Kunci:** Transformasi Digital; Inovasi Pembelajaran; Mutu Pembelajaran | **Abstrak:** Transformasi digital dalam pendidikan telah menjadi salah satu pilar utama dalam menghadapi tantangan era revolusi industri 4.0. Penelitian ini bertujuan untuk mengeksplorasi dan menganalisis bagaimana proses transformasi digital dalam inovasi pembelajaran di dua pondok pesantren, yaitu pesantren Al Aqobah dan Kaligrafi Sakal |

*di Jombang. Penelitian ini juga menjelaskan bagaimana ketiga pesantren tersebut mengintegrasikan teknologi digital dalam sistem pendidikan mereka, sehingga mampu meningkatkan kualitas pembelajaran serta mampu mempersiapkan santri menghadapi tantangan global. Penelitian ini menggunakan pendekatan campuran (Mixed Method) dengan metode studi kasus untuk memahami secara mendalam proses transformasi digital dan juga inovasi pembelajaran berbasis digital yang diterapkan dipesantren tersebut.Temuan pada penelitian ini menunjukkan bahwa: Pertama, perspektif pengelola dua pesantren tersebut memiliki perspektif dengan paradigma positif, inklusif dan transformatif. Kedua, implementasi transformasi digital di dua pesantren tersebut dengan mengadopsi dan mengintegrasikan teknologi digital dalam berbagai aspek termasuk pada pembelajaran dengan tingkat dan tahapan yang berbeda-beda serta disesuaikan dengan takhassus masing-masing pesantren. Pesantren Al-Aqobah dengan takhassus Al-Qur'an, Riset dan Bahasa. Pesantren Kaligrafi dengan takhassus Seni Kaligrafi dan Zukhrufah. Transformasi digital ini juga menjadi pendorong munculnya berbagai inovasi di masing-masing pesantren tersebut. Implementasi transformasi dan inovasi pembelajaran berbasis digital di pesantren berjalan dengan baik dengan rata-rata sebesar 77,60 %. Ketiga, Transformasi digital di ketiga pesantren ini telah memberikan implikasi positif dan signifikan terhadap kualitas pembelajaran di pesantren termasuk dalam meningkatkan prestasi santri. Peningkatan prestasi santri setelah melakukan proses pembelajaran berbasis digital dengan rata-rata sebesar 85,00 %.*

## 1. Introduction

The discourse of digital transformation in learning innovation in the digital era[1] is often stated in various seminars and workshops. Based on the fact that the rapid development of technology has a significant impact on human life and also the emergence of digitalization in various sectors including education. Therefore, there is a need for a digital transformation in the world of education today as an effort to improve the ability of teachers and students in mastering digital technology in order to improve the quality of learning and achieve educational goals including in Islamic boarding schools. Therefore, Islamic boarding schools must continue to strive to present digital devices in their education system so that Islamic boarding schools are able to produce a skilled generation who can master practical knowledge as a provision for life in the future.

*Pesantren* as the oldest Islamic educational institution in Indonesia, must take part in this matter because of its unique quality. *Pesantren* are expected to be more able to adapt to the progress of the times. Because in reality education is not something rigid[2] but dynamic[3] and must be able to see every problem from

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[1]The term "digital era" is often used to describe this situation. The condition of the digital era is characterized by the dominance of the internet in almost every field, from economics to art, sports, government, social life, and education, among other fields. See Azhar Kholifah "*Strategi Pendidikan Pesantren Menjawab Tantangan Sosial di Era Digital*", Jurnal Basicedu, Vol. 6, No. 3 (2022), 4967.

[2]This is as Gusdur expressed that the Islamic education learning model is too rigid with an intellectual-verbal approach. See Abdurrahman Wahid, Pesantren Masa Depan (Jatirejo: Pustaka Hidayah, 1999), 157.

various perspectives so that in responding to anything they are able to solve well. This is actually the output expected by Islamic boarding schools, where their students when they enter society are able to provide solutions to every problem they face in the future. And this is in line with the goal of Islamic education which will develop someone to be a perfect personality.[4]

Traditions in Islamic boarding schools that have been practiced for a long time should be renewed and improved. Because of how the world has changed, Islamic boarding school education and teaching must also change and adapt. In this digital era, Islamic boarding schools face challenges that are much tougher than those of the past. Islamic boarding schools are free to decide whether they want to adapt the new changes in order to compete or vice versa, to stick with the old models and systems.[5]

The problem is that not all Islamic boarding schools in this digital era are able to adapt and accept the changes, especially in facing modernism and globalization. Ngatawi El-Zastrow said that Islamic boarding schools currently have three patterns of attitudes in facing modernism and globalization.[6] First, Islamic boarding schools that reject globalization and modernization completely. This type of Islamic boarding school is called *salaf* Islamic boarding school. Second, Islamic boarding schools that fully accept globalization and modernization, both in terms of models, thoughts and references. This type of Islamic boarding school is called modern Islamic boarding school. Third, Islamic boarding schools that selectively accept globalization and modernization. This Islamic boarding school is good, creative and wise in combining Islamic boarding school traditions with the culture of globalization and modernism. This type of Islamic boarding school is known as a semi-modern Islamic boarding school that combines the *salaf* Islamic boarding school system with modern Islamic boarding schools.

In the further developments, the epistemology of Islamic boarding schools was eroded by the emergence of the term virtual Islamic boarding schools or online Islamic boarding schools. This shows that the world continues to change, in the past people had to go to Islamic boarding schools to study religion, in this digital era, now Islamic boarding schools come to the community. So it is not surprising that we currently see the rise of virtual Islamic boarding schools, digital Islamic boarding schools, cyber Islamic boarding schools, online Islamic boarding schools, online religious studies and so on.[7]

This phenomenon at least provides an assumption that Islamic boarding schools in the current digital era no longer need physical buildings (boarding houses, dormitories, mosques). In fact, Zamakhsyari Dhofier mentioned that there are five elements of Islamic boarding schools, namely the presence of Kiai,

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[3]In the concept of maqasidi education, learning should indeed be given a dynamic touch following the development of the times. As the dynamic Qur'an is a guideline in education and learning in the current digital era. See Mohamad Anang Firdaus, Menggagas Pendidikan Maqasidi (Jombang: Pustaka Tebuireng, 2020), 203.

[4]Haidar Putra Daulay, Dynamics of Islamic Education (Yogyakarta: Citapustaka, 2004), 38.

[5]Am Saifullah Aldeia, "Challenges of Islamic Education in the Era of Disruption", BLA Makassar, Ministry of Religion of the Republic of Indonesia, 2021.

[6]Sri Andri Astuti, "Transformation of Education in Islamic Boarding Schools in the 21st Century", Tarbawiyah: Scientific Journal of Education, Vol. 03. No. 02 (December, 2019), 153-155.

[7]Muhammad Syaiful, "Tradisi Pembelajaran Kitab Kuning Pada Pondok Pesantren di Era Digital (Kajian Dinamika Perkembangan Akademik Pesantren Di indonesia)", *Jurnal Penelitian dan Pemikiran KeIslaman*, Vol. 9. No. 1 (2022), 34.

students, boarding houses (dormitories), mosques, and classical books.[8] Also, the Kiai element is not the most important requirement in a virtual Islamic boarding school. It is enough to have an *ustadh* (teacher), *santri* (students) and a book of materials.[9] However, one aspect that is similar between virtual Islamic boarding schools and non-virtual Islamic boarding schools lies in the teaching materials and students or students, although some researchers still doubt the concept of students in virtual Islamic boarding schools.[10] Therefore, Islamic boarding schools as the oldest institutions must not only improve themselves, but must also be able to create new breakthroughs that must be able to embrace and utilize online media. [11]

This new order is what forms a new habitus that adapts to the conditions and social conditions of society so that online learning is very necessary in Islamic boarding schools today, because this has become one of the demands of learning in the current digital era.[12] the problem is, the presence of this technology has quite an impact on the pattern of Islamic boarding school education, in which there is a tradition of *muwajjahah* (face to face) in learning, there is a tradition of *istinbat* (excavating sources and references) through turats books which will then be replaced by the tradition of face to screen (face to screen) and googling.[13] From here, it is necessary for Islamic boarding schools to be wise in responding to this so that Islamic boarding schools do not lose the values and culture that have become their distinctive characteristics.

The contact of Islamic boarding schools with the digital world is currently still seen as keeping a distance that has not been fully implemented. The majority of Islamic boarding schools use digital media more only in the administrative and preaching content realms. So, in the field of learning innovation, it can be said to be stagnant, there has been no significant change over time. In fact, the quality of learning in Islamic boarding schools has decreased. So that the process of transformation and innovation in Islamic boarding schools often experiences obstacles and also the problems in Islamic boarding schools are caused by various internal and external factors.[14]

Given the current digital era, Islamic boarding schools have the right solution. The motto of the Islamic boarding schools that they hold is to hold on to the good old things and take the new things that are better (*al-Muḥāfaẓah 'alā al-*

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[8]Zamakhsyari Dhofier, *Tradisi Pesantren: Studi Pandangan Hidup Kyai dan Visinya Mengenai Masa Depan Indonesia*, (Jakarta: LP3ES, 2011), 79.

[9]Hatta Fakhrurrozi, "Pesantren Virtual: Dinamisasi Atau Disrupsi Pesantren?", *Jurnal Paedagogia*, Vol. 10, No. 1 (2021), 156.

[10]Saifuddin Zuhri Qudsy, "Pesantren Online: Pergeseran Otoritas Keagamaan di Dunia Maya", Living Islam: Journal of Islamic Discourses, Vol. 2, No. 2 (2019), 171.

[11]"Pesantren Online: Pergeseran Otoritas Keagamaan di Dunia Maya", Living Islam: Journal of Islamic Discourses, Vol. 2, No. 2 (2019), 170.

[12]Pembelajaran Daring di tengah Wabah Covid-19 : (*Online Learning in the Middle of the Covid-19 Pandemic*)", Biodik, Vol. 6, No. 2 (2020), 113.

[13]Mukhlisin, M., Isnaeni, F. et al., " Urgensi Literasi Digital bagi *Santri* Millenial di Pondok Pesantren Rahmatutthoyyibah al-Iflahah Gunung Kaler Tangerang.Journal of Community Service (JPKM), Vol. 3, No. 2 (2021), 57.

[14]At least according to researchers, there are seven inhibiting factors. First, inadequate human resources in Islamic boarding schools. Second, many teachers or usta>dh are elderly. Third, teaching methodologies that are still conventional-traditional. Fourth, incomplete facilities and infrastructure. Fifth, policy makers or Islamic boarding school managers who are less adaptive and revolutionary. Sixth, there is still a dichotomy of knowledge. Seventh, the slow pace of development of Islamic education in Islamic boarding schools.

*Qadīm al-Ṣālih wa al-`khdzu bi al-Jadīd al-Aṣlaḥ*). This slogan can be the key to the paradigm and attitude of Islamic boarding schools in facing any situation including in the digital era. In response to this, the transformation and innovation of learning in Islamic boarding schools are only tools, not goals. The goal is to improve the quality of learning that has an impact on the quality of graduates, therefore Islamic boarding schools are expected to have the ability to seriously organize and direct education that is not mediocre.[15] Because the progress of an Islamic boarding school is determined by the Islamic boarding school itself.

Currently, several Islamic boarding schools have made many changes towards digitalization, namely the *al-Aqobah Kwaron* Islamic Boarding School and the Sakal Denanyar Jombang Kaligrafi Islamic Boarding School. Researchers see that the two Islamic boarding schools have their own characteristics. First, the al-Aqobah Islamic Boarding School which was pioneered by KH. Ahmad Junaidi Hidayat in 1997 in Diwek District, Jombang. He is an alumnus of the Tebuireng Islamic boarding school. There are three al-Aqobah Islamic boarding schools in Jombang, the al-Aqobah 1 Islamic Boarding School focuses on science and research, while the al-Aqobah 4 Islamic Boarding School focuses on developing Qur'an and Hadith memorization learning. Meanwhile, the Aqobah International School (AIS) is an Islamic boarding school located in the Ngoro Jombang area which focuses on developing a bilingual Islamic boarding school, namely using two foreign languages, namely Arabic and English.[16]

In the modern Islamic boarding school of Al-Aqobah, it was originally like Islamic boarding schools in general which were still conventional, but now it has changed into a progressive and comfortable place to learn, such as with wifi facilities, and the use of technology in learning media. Long before the Covid-19 pandemic, this Islamic boarding school had implemented the use of technology in learning media. The students who live at the Al Aqobah Islamic boarding school are allowed to use cellphones and laptops which are used as supporting learning facilities. The boarding school even provides laptops and computers for students who do not have laptops so they can use them for learning.[17]

Second, SAKAL Calligraphy Boarding School has a distinctive feature in the development of calligraphy learning with Manhaj Hamidy, SAKAL Calligraphy Boarding School was pioneered by Mr. Atoillah, M.Pd.I in Denanyar Jombang on May 21, 2009. In its learning, in addition to learning calligraphy, students are also equipped with religious knowledge like Islamic boarding schools in general by using *turats* books. Meanwhile, in the learning process, SAKAL Islamic boarding school also opens online classes specifically for *khat* material.[18] Online students at this Islamic boarding school are not only from Indonesia, but also from several Asian countries including Malaysia, Singapore, Thailand and Iraq.[19]

Based on the information above, the researcher is interested in studying further about the perspectives of the managers of the two Islamic boarding schools on digital transformation in their Islamic boarding schools. Furthermore, how is the implementation and its implications for the quality of learning in each of the Islamic boarding schools. The researcher analyzed it using 4 theoretical

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[15]Moch Kalam Mollah, "Rekonstruksi dan Reposisi Pendidikan Islam Dalam Merespon Tantangan Dunia Pendidikan Di indonesia", Nur El-Islam, Vol. 3, No. 2, (October, 2016), 27

[16] https://www. aqobahinternational. sch. id/accessed on April 05, 2024

[17]https://kabarjombang.com/pesantren-pendidikan/mengenal-pondok-pesantren-modern-al-aqobah-jombang/, accessed April 01, 2024

[18] https://sakalkaligrafi.com/, accessed June 03, 2024

[19]Zainul Mujib, Interview, Jombang, June 05, 2024

approaches, namely the *Mindzunnur* paradigm approach, Kurt Lewin's theory of change, SAMR Theory, and Constructivism Learning Theory.

This study contributes a new conceptual model for digital transformation in Islamic boarding schools by proposing five core pillars that integrate educational management, pedagogy, leadership, and religious mission. Unlike previous studies that focus mainly on technology adoption in formal schools, this research situates digital transformation within the unique cultural and spiritual ecosystem of *pesantren*.

## 2. Method

This study aims to obtain a comprehensive understanding of digital transformation in learning innovation at Al-Aqobah Islamic boarding school and Kaligrafi Sakal Islamic boarding school. This study employed a mixed-methods approach using an exploratory sequential design.[20] Qualitative data were first collected through observations, interviews, and document analysis to explore the process of digital transformation in Islamic boarding schools. The findings from the qualitative phase were then used to develop quantitative instruments, and survey data were subsequently collected to measure the level of implementation and its impact on learning outcomes.

The participants of this study included *pesantren* leaders, teachers, administrative staff, and students who were directly involved in the digital transformation process. The research instruments consisted of interview guides to obtain in-depth qualitative information and structured questionnaires to collect quantitative data regarding the implementation level and educational outcomes.

Data analysis was conducted in two complementary stages. Qualitative data were analyzed using thematic analysis procedures, including data reduction, data display, and conclusion drawing, while quantitative data were analyzed using descriptive statistical techniques to identify patterns and trends in the implementation of digital transformation and learning outcomes. The integration of qualitative and quantitative findings provided a comprehensive understanding of the phenomenon under study.

Validity and reliability were ensured through several strategies, including triangulation of data sources and methods as well as member checking for qualitative data. Meanwhile, the quantitative instruments were tested for content validity through expert judgment and for reliability using internal consistency measures to ensure the accuracy and trustworthiness of the results.

## 3. Results and Discussion
*3.1 Islamic Boarding School Managers' Perspectives on Digital Transformation*

The progress of an Islamic Educational Institution cannot be separated from the paradigm of its management.[21] Managers who have a transformative paradigm and an inclusive perspective will always be open to change. A good perspective will lead to good changes. Conversely, a negative perspective will lead to bad changes. However, this perspective of Islamic boarding school

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[20]Encep Supriatna, , "Transformasi Pembelajaran Sejarah Berbasis Religi dan Budaya untuk Menumbuhkan Karakter Siswa," Jurnal Atikan: Jurnal Kajian Pendidikan, Vol. 2, No. 1 (2012), 23.

[21] Bashori Bashori, "Kepemimpinan Transformasional Kyai Pada Lembaga Pendidikan Islam,"*Al-Tanzim: Journal of Islamic Education Management*, Vol. 3, no. 2 (2019), 73–84. See Also: Mahfudh, M. Konstruksi Kepemimpinan Transformatif di Lembaga Pendidikan Islam. Indonesian Journal of Humanities and Social Sciences, Vol. 3, no. 2 (2022), 131-150

managers can also be adopted by the Islamic boarding school community such as the board of *asatidz*, administrators and students at the Islamic boarding school in order to further accelerate the progress of the Islamic boarding school, including in terms of digital transformation.

Westermen stated that digital transformation is a matter of using technology to transform or change analog or traditional processes into digital ones that are more efficient and effective, meaning that this digital transformation stimulates many innovations that make companies more efficient and effective.[22] Danuri also stated that digital transformation is also a change in the way things are handled using information technology to gain efficiency and effectiveness.[23]

However, these changes must be made by the Islamic boarding school itself. The Qur'an has hinted at changes that Allah SWT will change the fate of a society, if they have tried hard to change their own fate. Allah SWT says in surah al Ra'd verse 11 which reads:

$$\text{اِنَّ اللّٰهَ لَا يُغَيِّرُ مَا بِقَوْمٍ حَتّٰى يُغَيِّرُوْا مَا بِاَنْفُسِهِمْ ... ۝}$$

"Indeed, Allah will not change the condition of a people until they change the condition of themselves.[24]

Efendi is of the opinion that this verse can be interpreted to mean that the condition of a backward or developing people can be changed by Allah SWT, but these people are obliged to try to change it through various means, including changes for progress.[25] In another verse, Allah SWT says in surah al Anfal verse 53 which reads:

$$\text{ذٰلِكَ بِاَنَّ اللّٰهَ لَمْ يَكُ مُغَيِّرًا نِّعْمَةً اَنْعَمَهَا عَلٰى قَوْمٍ حَتّٰى يُغَيِّرُوْا مَا بِاَنْفُسِهِمْ وَاَنَّ اللّٰهَ سَمِيْعٌ عَلِيْمٌ ۝}$$

"This is because Allah will not change a blessing that He has bestowed on a people until they change what is in themselves. Indeed, Allah is All-Hearing, All-Knowing."[26]

This second verse can be understood that humans are told to strive, be pious and grateful to Allah SWT, so that the blessings that have been given to them are not revoked. So the second context is a change from progress to decline. And this can happen because of the actions of humans themselves.[27]

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[22]MA Westerman George, Bonnet Didier, "Leading Digital: Turning Technology Into Business Transformation," (2014), 292.

[23]Muhamad Danuri. "Perkembangan dan Transformasi Teknologi Digital", INFOKAM, Vol. 19, No. 2 (September, 2019), 120.

[24]al-Qur'a>n and Translation, Ministry of Religion of the Republic of Indonesia, (Jakarta: al-Mahira Publishing, 2020), 250. QS Ar-Ra'd, (13) : 11.

[25]Nur Efendi, Manajemen Perubahan di Pondok Pesantren, (Yogyakarta: Teras, 2014), 85.

[26]Al-Qur'an and Translation, Ministry of Religion of the Republic of Indonesia, (Jakarta: al-Mahira Publishing, 2020), 184., QS al-Anfal, (8) : 53.

[27]Nur Efendi, Manajemen Perubahan di Pondok Pesantren 85.

In this context, the perspective of the managers of the two Islamic boarding schools in viewing the use of cellphones, laptops and the like when applied in Islamic boarding schools, they argue that if what is seen is something that is beneficial and maslahah, then the first step is how Islamic boarding schools need to prepare a way to educate the use of cellphones and laptops, so that they can really be used to improve the quality of themselves and the quality of their learning in Islamic boarding schools. Second, Islamic boarding schools need to prepare management of their use time, their arrangements, the purpose of their use, and their evaluation, so that they remain well controlled. Third, it is necessary to prepare a relativity program that encourages the use of these technological tools. This means that there needs to be assignments that are relevant to the use of these technological tools. So that students will view cellphones and laptops as very important and meaningful for them in improving the quality of their learning.

The managers of each Islamic boarding school have considered the maslahah and mafsadah. The management of the Islamic boarding school believes that maintaining maslahah must take priority over mafsadah if it is believed that the use of digital technology has greater maslahah than mafsadah. Each of the Islamic boarding schools above holds the view that they should not deny or eliminate the problems that exist in digital technology.

In general, Islamic boarding schools currently still have concerns about the use of digital technology in their Islamic boarding schools. Perhaps they still adhere to the Fiqhiyyah principle "Dar al-Mafasid Muqaddamun 'ala jalb al-Masalih" (preventing or rejecting damage is prioritized over attracting goodness). This principle is in synergy with the principle "idza ijtama'a al-Halal wa al-Haram, Ghuliba al-Haram" (if the law of halal and haram is combined, then the haram law wins). This means that these two principles are one reason for Islamic boarding schools to prohibit their students from bringing, accessing the internet, cellphones or other digital technology in their Islamic boarding schools. The main reason is to prevent mafsadah or wider damage.

There are at least three major benefits that they consider in implementing digital transformation in their Islamic boarding schools. First, teachers and students learn faster and easier because of unlimited sources. So that students and teachers will explore more media and references on the internet. Second, teachers and students will be trained to be critical of various new things that are developing in the current era. Third, teachers and students will be more creative and innovative, because they find it easier to find inspiration and ideas from digital media.

From here, the author views that the paradigm held by the managers of the two Islamic boarding schools has given birth to a transformative paradigm. This is in line with Mujamil Qomar's opinion, that the transformative paradigm is a model of thinking through changing behavior, traditions, mindsets, work patterns, and lifestyles from negative to positive to constructive. This paradigm has managerial implications, namely training commitment to produce positive behavioral changes, training independence, encouraging the growth of initiative and creativity, encouraging the search for effective strategies, minimizing routine actions, facilitating the development of a transformative culture.[28]

Therefore, the head of the Islamic boarding school needs to have a good mindset in managing the management of his Islamic boarding school, especially in implementing digital transformation. This means that if the management of the

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[28]Mujamil Qomar, *Manajemen Pendidikan Islam Mindhunnur*, (Malang: Intrans Publishing, 2022), 27.

Islamic boarding school exploits and sacrifices humans in the reality of work, this is an adzulumat mindset.[29] So it must be changed by positioning humans well, upholding their dignity and honor, fulfilling their welfare, positive hopes, developing their positive talents as a potential that moves optimally, both for teachers and their students.

Therefore, the transformation of managers or leaders of Islamic boarding schools should be carried out at the earliest, because the position of manager in an Islamic educational institution is a controller and role model, which will later be imitated by other Islamic boarding school communities, namely teachers and students.[30]So that educators or asa>tdiz and students in Islamic boarding schools will also have a good Digital Mindset. In the context of digital transformation, teachers and students are also motivated to increase their digital literacy by reading traditional books or digital-based scientific reading books, accessing learning media, viewing educational content, so that the students have a growing and correct mindset and are open to increasingly broad knowledge, and try to be critical and find solutions to all the problems they face.

Mujamil Qomar believes that Educators must also be transformed in a positive direction such as their intelligence, insight, thinking, enthusiasm, performance, attitude and behavior. If the condition is positive, then it needs to be transformed into all advantages so that there is a better change compared to the previous condition.[31] In the context of Islamic boarding schools, transformation of the ustadz is very important because educators are the spearheads who help condition the success of their students' education, including in terms of digital transformation. Therefore, education on the wise use of digital technology is an important part of education in Islamic boarding schools and also raises public awareness in this digital era.

Researchers see how the two leaders of the Islamic boarding schools above try to continue to encourage their teachers and students to not only have critical thinking, but also encourage them to always develop their talents and abilities in anything, including by increasing digital literacy on the internet. Through digital transformation, various learning innovations have emerged. In addition, various works of creativity from teachers and students have also emerged, including various achievements achieved on a regional, national and international scale.

However, researchers also realize that what we are currently facing is a technological society or digital society that has a way of thinking and living like a robot. They are directed by technology, so that their critical and creative thinking is starting to weaken. Therefore, in fact, technological advances in the current digital era have oppressed humans in many aspects. Including in the aspect of education. Digital technology that should make everything easier including in the aspect of education and learning to be more effective, but because we are oppressed by technology, after the existence of digital technology, we are often more complicated and want to be busy with various features in the technology.

In this transformative Paradigm, Mujamil Qomar revealed that the transformative approach is shown through the concept of "Mindzunnur". He stated that the transformation process is a process of how to change negative actions into positive, destructive into constructive, so that they become positive-constructive. So that all educational institutions including Islamic boarding schools

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[29]Mujamil Qomar, *Manajemen Pendidikan Islam Mindhunnur*, 70.
[30]Mujamil Qomar, *Pendidikan Islam Transformatif*, (Malang; Madani Media, 2019), 65.
[31]Mujamil Qomar, *Pendidikan Islam Transformatif*, (Malang; Madani Media, 2019), 59.

must also be designed to carry out transformations towards positive-constructive, creative-productive, and dynamic-progressive.[32]

The researcher sees that the paradigm of the management of the Islamic boarding school above, according to the researcher, has a transformative paradigm. However, it is not yet systematic, but is still reactive. This is proven, that the managers tend to be more inclined that the implementation is to adjust the needs as well as to follow the development of the times alone. Therefore, the researcher sees the need for a systematic transformative paradigm (PaTaS).

Researchers try to explore this view from the systematics of tashrif terms in the science of shorof. The science of shorof teaches us how to learn to understand the process of changing the form of the madhi verb to the isim alat. Madhi verb teaches how Islamic boarding schools must look at their past, as an effort towards a more progressive future for Islamic boarding schools. This step is taken as an effort to reflect on improvements in the present and the future. And we can achieve that future if we are currently doing good things. That's why the mudhore' verb has the meaning of hal (now) and mustaqbal (will come). This means that in this digital era, Fauzan said that Islamic boarding schools must immediately change and improve themselves so that the future can also change and be better.[33]

Next, efforts must be made by all elements in the Islamic boarding school to transform. This means that at this stage, it requires a process (masdar) which sometimes the process of change is easy (masdar Mim), and sometimes it is not easy (masdar ghairu mim). This is caused by several factors, both internal and external factors. There is a possibility of resistance that hinders change. And this must be analyzed for its ease and difficulty in its implementation later. And to overcome this challenge, a Leader is needed, in this case the Kiai or caretaker of the Islamic boarding school (failun). Because the Kiai is the determinant of transformation in his Islamic boarding school. This means that the human resources of the Kiai himself must be qualified, and able to become a pioneer in driving change.[34]

The idea and decision to change must be initiated by the Kiai or the manager of the Islamic boarding school. Then it is conveyed to all elements in the Islamic boarding school with various arguments about the importance of change or the implementation of the digital transformation that will be implemented. This stage is carried out to ensure that the Islamic boarding school community as its object (maf'ulun) agrees and accepts to make the change.

After that, the Islamic Boarding School made rules in the form of commands and prohibitions (Amr and Nahi) that must be carried out so that this digital transformation runs well. In addition, this is also in order to encourage and create a good digital transformation culture by always being oriented towards goodness (fiil amr) such as carrying out various interesting learning innovations, making various high-quality products and various supporting features to improve the quality of education in the Islamic boarding school. In addition, the Islamic boarding school also tries to prevent and minimize various things that have the potential to be bad (fiil Nahi) by always conducting evaluations and improvements in all areas to ensure that the change process runs well.

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[32]Mujamil Qomar, *Pendidikan Islam Transformatif*, (Malang; Madani Media, 2019), 186.

[33]Rizky Fauzan, "Pesantren dan Tantangan Perubahan di Era Modern," *Jurnal Manajemen Pendidikan Islam.* Vol. 11, No. 1, (2022), 90.

[34]Ahmad Fauzi, ""Kiai sebagai Agen Perubahan dalam Pendidikan Pesantren," *Jurnal Manajemen Pendidikan,* Vol. 10, No. 2, (2021), 52.

Furthermore, the principle of flexibility must be maintained. How the changes must be able to adapt to time and place (nouns of the times and nouns of food). So when this digital transformation is implemented, the hope is that there will be flexibility in the learning process. With this digital transformation, the principle of flexibility can still be maintained by implementing online or offline learning, and manual or digital learning. These are alternatives that make it easier for teachers and students to teach and learn.

And the most important thing is that the changes made by the Islamic boarding school must be a measuring tool (*isim alat*) as well as a means for the Islamic boarding school to continue to evaluate its learning outcomes as well as a measuring tool for changes in the era. In addition, this digital technology is a tool to improve the quality of education in the Islamic boarding school. This means that the tool (technology) must be ensured to function properly and must always be utilized for the progress of the Islamic boarding school in various aspects and be able to provide benefits to the Islamic boarding school community. In addition, it is also to get good feedback and value for the Islamic boarding school.

From here, the expected changes do not only have a transformative paradigm, but also systematic. So that it does not just change in a flowing way, but is structured in every process of change. This Systematic Transformative Paradigm sees a process of change planned in advance through a structured and organized work system. And if associated with management at least through the Planning, Organizing, Actuating, and Controlling (POAC) process. Planning is at the stages of fiil madhi, and mudhore', Organizing is at the stages of Masdar, fail and maf'ul, Actuating at the stages of fiil amr, fiil nahi and isim zaman and makan, and Controlling at the stage of isim alat. The principle of POAC is as in the principles of Management.

Figure 1 Stages of the Systematic Transformative Paradigm (PaTaS)
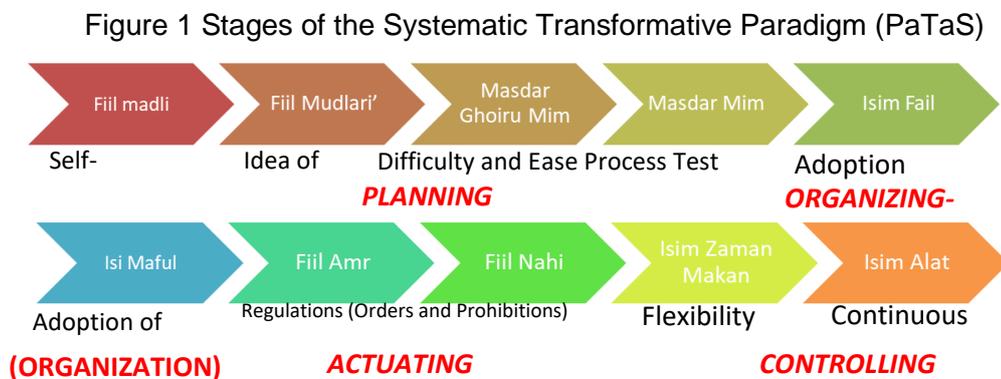


The concept of change management above is in line with the theory of change management put forward by Kurt Lewin by developing a three-stage change model known by the terminology unfreezing, changing/ movement/ cognitive restructuring, and refreezing.

At the unfreezing stage, both Islamic boarding schools realize the importance of digital transformation and try to let go of old methods that may be outdated or inefficient. Islamic boarding school managers understand that the integration of digital technology in the education process can improve the quality of education. The managers of both Islamic boarding schools began to open themselves to various ideas for change that encourage the progress of Islamic boarding schools.

At the changing stage, both Islamic boarding schools began to adopt new technologies, such as the use of online learning platforms, educational management information systems, and digitalization of learning materials. This

can involve teacher training, procurement of technological devices, and changes in teaching methods. At this stage, it is important to involve all elements of the Islamic boarding school from the leadership, teachers, to students so that they understand and are able to adapt to the new technology being implemented.

In the refreezing stage, both Islamic boarding schools try to ensure that the changes that have been made become part of the organizational culture. This means that the use of technology becomes a routine part of the educational process, supported by stable policies and structures. This is because digital transformation in Islamic boarding school learning often requires changes in culture and organizational structure to integrate technology effectively.[35]

### 3.2 Implementation of Digital Transformation and Learning Innovation in Islamic Boarding Schools

The implementation of digital-based learning transformation and innovation at the Al-Aqobah and Kaligrafi Sakal Islamic boarding schools is going well. Both Islamic boarding schools implement it in several aspects, including education, financing, public services and products. In the context of learning, both Islamic boarding schools have implemented various innovative learning approaches.

The digital transformation process at the Al-Aqobah Islamic boarding school and the Sakal calligraphy boarding school was carried out in stages. This is because it is indeed adapting to the times. In theory, there are three times of change that must be carried out by an organization in order to maintain its existence.[36]First, changes made evolutionary when the organization is still in an upward trend position until the glory days. Second, changes made when performance is declining. In this condition, change is needed. Third, the time of change made by the organization when its position has experienced bankruptcy and is almost dead. The changes made at this time are the most difficult changes and fall into crisis management.

Researchers observed that both Islamic boarding schools were included in the first type, namely changes made when the Islamic boarding school was experiencing its trends. The transformation carried out by the two Islamic boarding schools was in order to strengthen its existence. In addition, the changes made by the two Islamic boarding schools were anticipatory and reactive changes. Anticipatory to overcome the decreasing number of students. Reactive in this case is adaptation to the application of digital technology in the Islamic boarding school to improve the quality of learning. Therefore, the changes made by the two Islamic boarding schools were due to the need factor. Needs in various aspects that exist in the Islamic boarding school. Both in administration, payment, and also in learning.

In its implementation, Al-Aqobah Islamic Boarding School has made several digital-based changes such as digital books (Paperless), digital-based book studies using Google Meet and Zoom media, Live streaming on Youtube, learning at school also uses digital media, digital-based exams, discussions and training with current themes or themes around digital technology. From here, teachers and students are also accustomed to using technology such as making PPT, designing in Canva, making videos in Capcut and several other features. At the Sakal Kaligrafi Islamic Boarding School, the book studies sometimes use the

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[35]Halim, M. *Transformasi Digital dalam Pendidikan: Implementasi dan Tantangan di Pesantren.* (Bandung: Gramedia Pustaka Utama Publisher, 2018), 77.

[36]Muhaimin, et al. *Manajemen Pendidikan: Aplikasi dan Penyusunan Rencana Pengembangan Sekolah/Madrasah,* (Jakarta: Kencana Prenada Media, 2010), 67

Youtube platform as a means of studying for online class students. In learning the khat, students are given more freedom to use learning resources in the form of physical or digital in the form of pdf.

The use of a variety of teaching methods is very urgent in the learning process. Variation of learning materials is a must for educators in today's digital era.[37] Educators in this digital era are also required to frequently create interesting teaching materials.[38]  So that students are also interested in learning and understanding the lessons well. Educators must strive to continue to make various innovations in their learning, including by creating materials or teaching materials that attract students.[39] Therefore, developing interesting and interactive learning materials can increase students' interest in learning and make the learning process more enjoyable.[40]

In digital-based learning, Munir said that digital-based learning innovation aims to increase the effectiveness, efficiency, and accessibility of learning, as well as to facilitate various learning styles of students.[41] Digital-based learning innovations aim to improve student learning outcomes by providing a wider range of learning resources and easier access to information.[42] Innovation enables wider access to education through e-learning and distance learning platforms.[43]

Learning innovations also encourage the development of 21st century skills such as collaboration, communication, creativity, and problem solving.[44] Various innovations were also carried out by the two Islamic boarding schools. At the Al-Aqobah Islamic Boarding School, various innovations have been carried out, including: Billingual book study, comparison of the Amtsilati and Yahtadi methods in learning the Qur'an and Reading the Book, Multiple Intelligence-based Learning, One Day Five Verses, One Hadith, LMS (Learning Management System) using PINTRO. While the Sakal Calligraphy Islamic Boarding School, such as adopting Manhaj Hamidy, online classes, Tahsin Kitabah classes, Zukhrufah and Munamnamat classes, Sakal Store and Sakal Design.

In the Implementation stage, based on the survey results, the digital transformation and learning innovation at the Al-Aqobah and Kaligrafi Sakal Islamic Boarding Schools are running well with an average of 77.60%. Meanwhile, around 22.40% of respondents think that the digital transformation and learning innovation at the Islamic boarding school are less than optimal. This

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[37]Samsul Haq, "Pembelajaran Bahasa Arab di Era Digital: Problematika dan Solusi dalam Pengembangan Media," *Mukadimah : Jurnal Pendidikan, Sejarah dan Ilmu-ilmu Sosial,* Vol. 7, No. 1, (2023), 213.

[38]  Muhammad Naufal Azmi, Hamsi Mansur, Agus Hadi Utama,  , "Potensi Pemanfaatan Virtual Reality Sebagai Media Pembelajaran Di Era Digital, *Jurnal Dimensi Pendidikan dan Pembelajaran*, Vo.12, No. 1, (2024), 212., See also: Hadiyanto, "Strategi Pengembangan Bahan Ajar di Era Teknologi Informasi," *Jurnal Teknologi Pendidikan*, Vol. 8, No. 1, (2015), 65.

[39]Norikmah, "Inovasi Pembelajaran di masa Pandemi: Implementasi Pembelajaran berbasi Proyek Pendekatan imajinasi," *Obsesi : Jurnal Pendidikan Anak Usia Dini*, Vol. 6, No. 5, (2022), 10.

[40]Rosinta, H., Wibowo, E., & Farhurohman, O., "Pengembangan Media Pembelajaran Interaktif Budaya Lokal Banten Berbasis Teknologi Informasi untuk Meningkatkan Minat Belajar Siswa." *Dawuh Guru: Jurnal Pendidikan MI/SD,*, Vol. 3, No. 1, (2023), 20.

[41]Munir. *Pembelajaran Digital*. (Bandung: Alfabeta, 2012), 54.

[42]Setiawan, A. "Pengaruh Pembelajaran Berbasis Digital terhadap Hasil Belajar Siswa di SMA Negeri 1 Jakarta" *Jurnal Pendidikan Teknologi Informasi dan Komunikasi,*  Vol.6, No. 2 (2019), 80.

[43]Allen, IE, & Seaman, J. *Digital Learning Compass: Distance Education Enrollment Report* . Babson Survey Research Group, (2017), 34.

[44]Trilling, B., & Fadel, C. *21st Century Skills: Learning for Life in Our Times.* (San Francisco, CA: Jossey-Bass., (2019), 45.

is due to various factors including the readiness of infrastructure and the readiness of teacher and student resources who are still not technologically proficient.

The researchers also created a questionnaire on the implementation of digital-based Islamic Boarding School Transformation and Innovation in both Islamic boarding schools. The results are as follows:

Table 4.6 Digital Utilization Implementation Questionnaire Table

| No | Description | STB | TB | KB | B | SB |
|---|---|---|---|---|---|---|
| 1 | Utilization of Mobile Phones, Laptops and Digital Technology in Islamic Boarding Schools for Learning | 0.7% | 3.3% | 17.1% | 56% | 22.9% |
| 2 | Implementation of digital or online-based learning in Islamic boarding schools | 1.5% | 2.2% | 14.5% | 57.5% | 24.4% |
| 3 | Digital infrastructure provision can improve learning outcomes | 0.4% | 2.9% | 12.4% | 59.6% | 24.7% |
| 4 | On average, teachers and students have good skills in utilizing digital-based learning applications in every lesson. | 1.1% | 4.7% | 20.4% | 52.7% | 21.1% |
| 5 | Respondents feel enthusiastic when learning using digital | 1.1% | 1.8% | 18.2% | 45.8% | 33.1% |
| **No** | **Description** | **TP** | SJ | J | S | SS |
| 6 | Respondents' intensity in using cellphones or laptops to search for information, reference materials, create PPTs and so on | 0.7% | 0.7% | 17.8% | 46.2% | 34.5% |
| 7 | On average, respondents are able to utilize digital technology to foster ideas, creativity and innovation in learning and working. | 1.5% | 0.7% | 12% | 59.3% | 26.5% |
| 8 | Intensity of Respondents who use digital-based learning media, learning videos in the form of creative content using Canva, Capcut and the like | 6.5% | 4.7% | 31.6% | 33.8% | 23.3% |
| 9 | Respondents' intensity in utilizing social media as a means of exchanging information, sharing ideas and work by creating creative content. | 3.3% | 2.9% | 20.7% | 42.2% | 30.9% |
| 10 | On average, students often discuss or share ideas, work and innovations at Islamic boarding schools. | 1.5% | 1.8% | 15.3% | 52.7% | 28.7% |
| Average Amount | | 1.83% | 2.57% | 18 % | 50.58% | 27.01% |
| Average | | **22.40** | | | **77.60%** | |

Researchers also analyzed it using the theory of technology integration and learning in Islamic boarding schools using the Model SAMR (Substitution, Augmentation, Modification, Redefinition). This model was developed by Dr.

Ruben Puentedura. A model that measures the level of technology integration in learning.[45] The SAMR model can be used to analyze the extent to which digital transformation in Islamic boarding schools only replaces old methods with new technology, or truly changes and redefines learning to be more meaningful and of higher quality.

At the Substitution stage, both Islamic boarding schools are accustomed to changing their learning resources from physical paper-based to digital or paperless, students are accustomed to searching for learning resources through search engines on Google, either in the form of pdf, e-books, or the like. While at the Sakal Islamic Boarding School, teachers are also skilled in writing on KhatBoard media in teaching so that students in the class know how to write khat properly through khatboard media assisted by a projector to display the writing process. In addition, in the calligraphy deposit process, teachers and students are accustomed to using online media in the form of Wa or Email.

At the Augmentation stage, Al-Aqobah Islamic boarding school often conducts learning using various learning applications such as Quiziz and the like, including in the presentation there are additional features in the form of images, audio or video to make it more interesting. In addition, sometimes using online media for learning such as Google Meet or zoom. At the Sakal Islamic boarding school, online media is also often used both to provide information on how to write correctly and also in correcting online students' writing.

In the Modification stage, both Islamic boarding schools sometimes also conduct collaborative learning through digital platforms where students can work together on projects or assignments that were previously impossible in traditional settings. Such as online group discussions or collaboration between students using online forums.

At the Redefinition stage, both Islamic boarding schools are also accustomed to creating a learning project between teachers and students by creating various learning videos and creative and educational content uploaded on Youtube, Instagram, Facebook and several other social media platforms. Even in both Islamic boarding schools, innovative works emerged from collaboration between students and teachers.

This SAMR model shows that both Islamic boarding schools have implemented technology to a transformative stage. This is very important, because the application of digital technology in learning aims to develop 21st century skills such as critical thinking, creativity, communication, and collaboration.[46]

### 3.3 Implications of Digital Transformation for Improving the Quality of Learning

According to Sudjana, the quality of learning is the extent to which the learning process can produce positive changes in students, both in cognitive, affective, and psychomotor aspects.[47] Learning quality refers to the effectiveness and efficiency in achieving desired educational goals, as well as the ability to

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[45] Sahronih, S., Suryono, T., Maemuna, S., & Hasanah, D. "Integrasi Teknologi *Augmented Reality* berbasis Model SAMR (*Subtitution, Augmentation, Modification, Redefinition*) dalam Pembelajaran IPA Sekolah Dasar. *Prima Magistra: Jurnal Ilmiah Kependidikan*, Vol. 4, No. 4 (2023), 623.

[46]Handayani, S., & Purwanto, A. "Implementasi Teknologi Digital dalam Pembelajaran untuk Meningkatkan Keterampilan Abad 21". *Jurnal Pendidikan Indonesia*, Vol. 9, No. 1 (2020), 118.

[47]Sudjana, N. *Penilaian Hasil Proses Belajar Mengajar*. (Bandung: Remaja Rosdakarya, 2005), 77.

meet the needs and expectations of learners.[48] The quality of learning is determined by various factors, including teaching methods, educator qualifications, student involvement, and the availability of supporting facilities and infrastructure.[49]

Arifin said that the success of the quality of learning carried out by teachers is always marked by the creativity and activity of a teacher which leads to innovative and participatory teaching methods.[50]The success of learning quality is also measured by the extent of teacher creativity and activity in developing interesting and relevant teaching methods for students.[51]

In Islamic Boarding Schools, the quality of learning refers to the effectiveness and efficiency of the educational process that occurs within the Islamic boarding school environment. This includes how Islamic boarding schools are able to produce graduates who not only master religious knowledge, but also have skills that are relevant to the demands of the times. There are at least several aspects that should be improved to produce quality learning. Among them are curriculum integration, teaching methods, teacher quality, facilities and resources, and learning environment. Therefore, Islamic boarding schools need to hold training for teachers, curriculum development, facility improvement, collaboration with other institutions.[52]

The implications of digital-based transformation and innovation on the quality of learning are not only in increasing the accessibility of teachers and students in learning, but also in increasing the achievements of students in both academic and non-academic fields. This is proven by the various achievements achieved by the Al-Aqobah Islamic boarding school and the Kaligrafi Sakal Islamic boarding school from regional, national to international levels. The achievements of these students began with their access to finding learning resources independently. With the digital infrastructure provided by the Islamic boarding school, it allows students to study independently outside of formal study hours, as well as expanding the scope of materials that can be accessed by students, including resources from outside the Islamic boarding school. In addition, intensive guidance from the instructors and ustadz supports the students' learning achievements.

In general, Islamic boarding schools focus more on religious development without paying proper attention to the potential of their students. Although there are some supporting activities for students. Islamic boarding schools still focus on religious development and morals of students. So it is rare for Islamic boarding schools to have achievements. This is different from Al-Aqobah Islamic Boarding School and Sakal Kaligrafi Islamic Boarding School. In addition to providing their students with religious knowledge, these two Islamic boarding schools also direct their students to hone their skills and talents properly. Various activity programs

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[48]Suryosubroto, B. *Proses Belajar Mengajar di Sekolah*. (Jakarta: Rineka Cipta Publisher, 2009), 99.

[49]Wahyudi, A., & Mahmud, A"Evaluasi Kualitas Pembelajaran di Sekolah Menengah Pertama." *Jurnal Pendidikan dan Pengajaran*, Vol. 20, No. 2 (2013), 117.

[50]Arifin, Z., *Evaluasi Pembelajaran: Teori dan Praktik*.(Yogyakarta: PT Remaja Rosdakarya, 2017), 88.

[51]Sutrisno, B., & Hakim, L. "Peran Kreativitas Guru dalam Meningkatkan Kualitas Pembelajaran di Sekolah Dasar." *Jurnal Pendidikan dan Pengajaran*, Vol. 29, No. 2 (2020), 145

[52]Sutrisno, B. *Pendidikan Pesantren di Era Globalisasi*. (Jakarta: Rajawali Pers, 2020), 97., See also: Rohman, A., & Hasan, M"Pengembangan Kualitas Pendidikan di Pesantren melalui Peningkatan Fasilitas dan Kolaborasi." *Jurnal Pendidikan dan Kebudayaan*, Vol. 24, No. 1, (2022), 123.

that support the achievements of their students are given proper attention with guidance from their respective teachers.

Al-Aqobah Islamic Boarding School for the past three years, the achievements of its students have experienced significant improvements. Based on the following diagram:
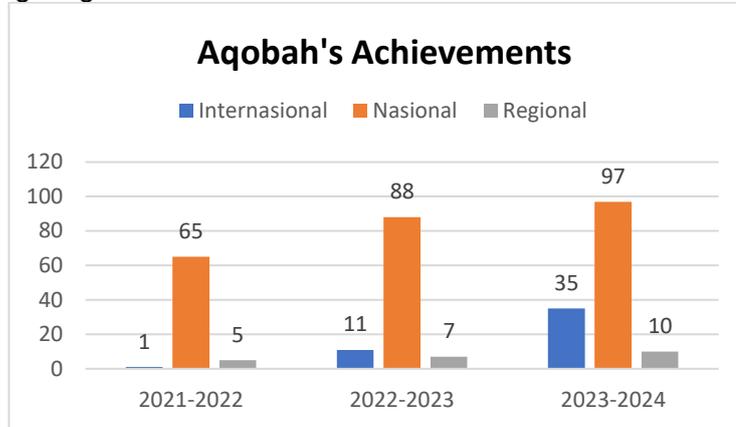


*Figure 2. Al-Aqobah Islamic Boarding School Achievement Diagram*

Based on the diagram, during the past three years, there has been an increase in achievement in the 2021-2022 academic year of 32 medals (1 international level, 31 national level), in the 2022-2023 academic year of 65 medals (11 international level, 53 national level, and 1 regional level), and in 2023-2024 of 77 medals (33 international level, 41 national level and 3 regional level). And currently, the Al-Aqobah Islamic boarding school has received 316 medals from the national and international levels.[53]

Meanwhile, the achievements of the Sakal Calligraphy Islamic Boarding School in the last 3 years have increased significantly as shown in the following diagram:
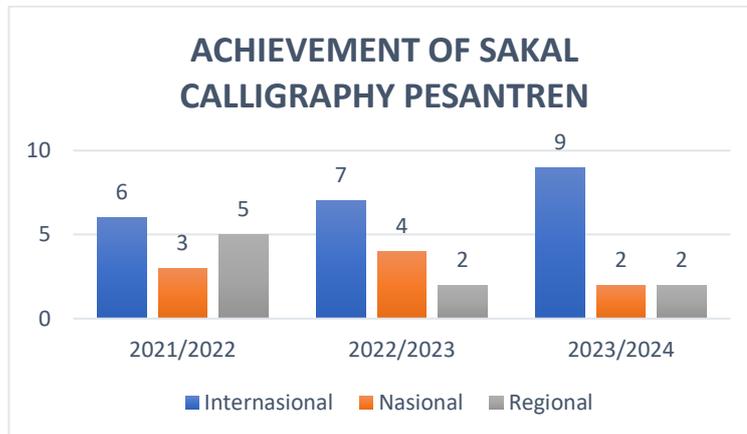


*Figure 2 Graph of Achievements of Sakal Calligraphy Islamic Boarding School*

Based on the diagram, during the past three years, there has been an increase in achievements, especially in international events in the 2021-2022 academic year with 14 medals (6 at the international level, 3 at the national level, and 5 at the regional level), in the 2022-2023 academic year with 13 medals (7 at the international level, 4 at the national level, and 2 at the regional level), and in

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[53]Nila, Interview with Ustadzah at AIS, Jombang May 29, 2024

2023-2024 with 14 medals (9 at the international level, 2 at the national level, and 3 at the regional level).

Researchers also conducted a survey related to the improvement of students' achievements in both academic and non-academic fields after conducting a digital-based learning process. The results are as follows:
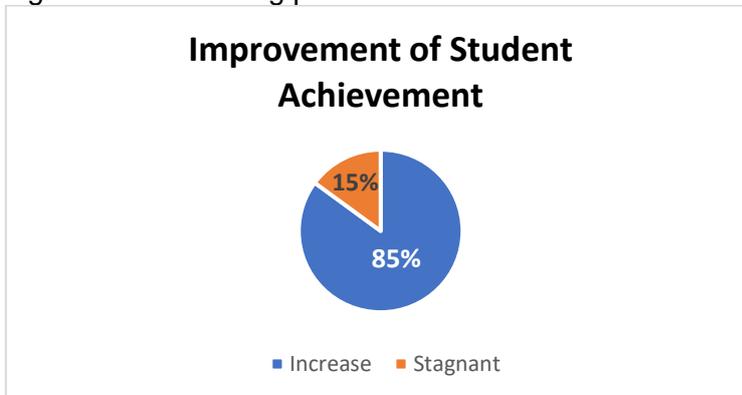


*Figure 4. Graph of Increase in Islamic Boarding School Achievement*

Based on the survey of 275 students, it is evident that 234 students (approximately 85%) experienced an improvement in their achievements after the implementation of digital-based learning. Meanwhile, about 41 students (around 15%) reported that they did not experience any significant improvement after participating in the digital-based learning process.

The various achievements above are inseparable from how Islamic boarding schools encourage their students to continue to excel with the guidance of the right mentors. This is also inseparable from the opening of digital space. In this context, digital technology becomes a tool that expands the scope of this interaction. Technology provides a platform that allows students to collaborate with their peers, share knowledge, and develop understanding through discussion and joint reflection.[54] And this is in line with the theory of learning, the Constructivist Learning Theory, developed by Lev Vygotsky, a Russian psychologist known for concepts such as the Zone of Proximal Development (ZPD) and the role of social interaction in learning. Vygotsky emphasized that learning occurs effectively in a social and cultural context, and how knowledge is built through collaboration.[55]

According to Vygotsky, effective learning occurs in the Zone of Proximal Development (ZPD),[56] where students can achieve new understanding with the help and guidance of more experienced people, namely ustadz. Digital technology allows ustadz to provide this support more effectively through learning tools such as online tutorials, discussion forums, and digital feedback. Various digital platforms, digital applications, online collaborations greatly enable students to explore, experiment, and collaborate, all of which are activities that support constructive learning.

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[54] Vygotsky, LS Mind in Society: The Development of Higher Psychological Processes. (Harvard University Press, 1978), 84.

[55] Yulia Kurniawati "Implementasi Teori Vygotsky dalam Pembelajaran Kolaboratif di Sekolah," *Jurnal Pendidikan dan Kebudayaan* . Vol. 15, No. 2, (2022), 87.

[56] Vygotsky, LS Mind in Society, 85. See also: Rini Yuliati, "Aplikasi Konsep Zona Perkembangan Proksimal (ZPD) dalam Proses Pembelajaran," *Jurnal Pendidikan dan Pengajaran,* Vol. 19, No. 1, (2023), 13.

This constructivist paradigm emphasizes the active role of students in the learning process, where they actively build understanding and knowledge through interaction with the environment, experience, and use of digital technology. This paradigm as the basis for a learning approach is very urgent to be applied in this digital era. Through the application of social constructivism theory, we can understand how technology not only functions as a tool, but also as a medium that enriches the learning process and also facilitates the achievement of more meaningful learning in Islamic boarding schools. This means that digital transformation in Islamic boarding schools involves not only the introduction of new technologies but also profound changes in the way of thinking about learning, traditions, and the role of technology in Islamic education.[57]

From here, the role of technology becomes a means of creating a more interactive learning environment, where students can learn through experiments and discoveries.[58]So that students are able to find various innovations in their work, students can also learn according to their respective learning styles. In addition, teachers are also encouraged to make various innovations in their learning.

### 3.4 Proposed Pillars of Digital Transformation

In this study, the author tries to propose several pillars in digital transformation which are very important to know and apply in Islamic Boarding Schools, namely: Digital Literacy, Digital Mindset, Digital Leadership, Digital Learning, Digital Dakwah.

*Digital Literacy*is digital literacy as an individual's ability to access, understand, create, communicate, and evaluate information through digital technology.[59] Harjono argues that digital literacy is a set of knowledge, skills, and competencies needed to thrive in a technology-dominated culture.[60]Therefore, students in this digital era are expected to be better at utilizing technology to access digital literacy properly, especially religious materials.

Digital Mindset is a mindset that is open to technological innovation and ready to continue learning and adapting to dynamic digital technology.[61] In the world of education, a digital mindset is not only about the use of technology, but also about mental readiness and openness to learn and adapt to ever-evolving technological changes.[62] In this case, it is not about how sophisticated someone is in operating digital tools, but more about attitudes and behaviors that are oriented towards the use of digital technology in carrying out all activities including learning. So that this digital technology can increase the effectiveness of a person's work and tasks.

*Digital Leadership*is a leadership style that focuses on implementing digital transformation in an organization. According to Sabgas and Alp Erdogan, this

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[57]Siti Munawaroh, "Inovasi dan Transformasi Digital dalam Pendidikan Pesantren: Tantangan dan Peluang," *Jurnal Studi Islam dan Pendidikan,* Vol. 9, No. 3, (2023), 55.

[58]Nurul Huda, Integrasi Teknologi dalam Pendidikan Pesantren: Membangun Lingkungan Belajar Interaktif," *Jurnal Pendidikan Islam,* Vol. 14, No. 1 (2023), 47.

[59]Mukhlisin, M., Isnaeni, F. et al., " Urgensi Literasi Digital bagi *Santri* Millenial di Pondok Pesantren Rahmatutthoyyibah al-Iflahah Gunung Kaler Tangerang." *Jurnal Pengabdian kepada Masyarakat* (JPKM), Vol. 3, No. 2 (2021), 212.

[60]Harjono, HS "Literasi Digital: Prospek dan Implikasinya dalam Pembelajaran Bahasa". *Pena : Jurnal Pendidikan Bahasa Dan Sastra*, Vol. 8, No. 1 (2019), 3.

[61]David L Rogers, *Digital Mindset: How to Think in the Digital Age,* (McGraw-Hill, 2021), 78.

[62]Siti Maryam, "Membangun Digital Mindset dalam Pendidikan: Implikasi dan Tantangan," *Jurnal Teknologi Pendidikan,* Vol. 14, No. 2 (2021), 63.

management model allows companies and organizations to digitize their work environment and work culture.[63] So the figure of Kiai in Islamic boarding schools should also have a leadership spirit that focuses on institutional goals so that they can be achieved quickly and easily by providing policies that are oriented towards the quality of Islamic boarding schools. Furthermore, Anis Humaidi in Azhar revealed that the success of Islamic boarding schools in facing the digital era 4.0 lies in the figure of its leader in this case Kiai if in a traditional Islamic boarding school and the manager of the boarding school, either the director or equivalent. [64]

*Digital Learning*namely digital-based learning or using technology.[65] One that is often used is the Blended Learning model, which is a learning model that combines face-to-face learning with e-learning. Blended Learning is a learning model that takes place in class and online. One of the successes of Islamic boarding schools in this digital era is the use of digital technology in all learning.

*Digital Da'wah*is digital da'wah by inviting people to God's path to believe in and implement Islamic law using digital media. In another sense, digital da'wah is a model of teaching Islam through the media.[66]  This preaching model is available anytime, anywhere. This is in accordance with the characteristics of millennial society who are very familiar with gadgets. The preaching content that will be shared can be in the form of text or scripts, images, audio, video, animation and infographics, depending on the type of online content.

If the five pillars of digital transformation above run well, then with Digital Literacy there will be a transformation of the curriculum and learning independence, with Digital Mindset there will be a transformation of the mindset and critical thinking of students, with Digital Leadership there will be a transformation of leadership, with Digital Learning there will be a transformation of learning methods, and with Digital Dakwah there will be a transformation of Islamic boarding school da'wah.[67]  When a concept map is created, the description of the five pillars above will be as follows:

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[63]Evans E.W. Tulungen, David P.E. Saerang, Joubert B. Maramis, "Transformasi Digital: Peran Kepemimpinan Digital," *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi,*Vol. 10, No. 2 (2022). 1116-1123.

[64]Azhar Kholifah, "Strategi Pendidikan Pesantren Menjawab Tantangan Sosial di Era Digital," *Jurnal Basicedu,* Vol. 6, No. 3 (2022), 4973.

[65]Bambang Sucipto and Kustandi, *Media Pembelajaran Manual dan Digital,* (Bogor: Ghalia Indonesia 2011), 79, see also: Endah Yuni Pramesti, , "Penggunaan Digital System (DLS) sebagai Pembelajaran Berbasis Tehnologi di SMP Negeri 5 Surabaya, https://repository.unair.ac.id/74843/3/JURNALFis.IIP.82%2018%20Pra%20p.pdf accessed on January 07, 2023.

[66]Reza Mardiana, "Daya Tarik Dakwah Digital Sebagai Media Dakwah untuk Generasi Milenial*," Komunida: Media Komunikasi dan Dakwah.* Vol. 10 No. 02 (2020), 148-158.

[67]Transformative Da'wah in Islamic boarding schools has at least five dimensions: tila>wah dimension, tazkiyah dimension, ta'li>m dimension, isla>h dimension, ihya' dimension. From these five da'wah formations, it is hoped that they will be able to bring enlightenment that has a transformative spirit, so that the da'wah trilogy is realized (formation, restoration and maintenance, and change of Islamic society). See Ahmad Shofi Muhyiddin, "Dakwah Transformatif Kiai : Studi terhadap Gerakan Transformasi Sosial KH. Abdurrahman Wahid" dalam *Jurnal Ilmu Dakwah,* Vol. 39, No. 01 (2019), 5.
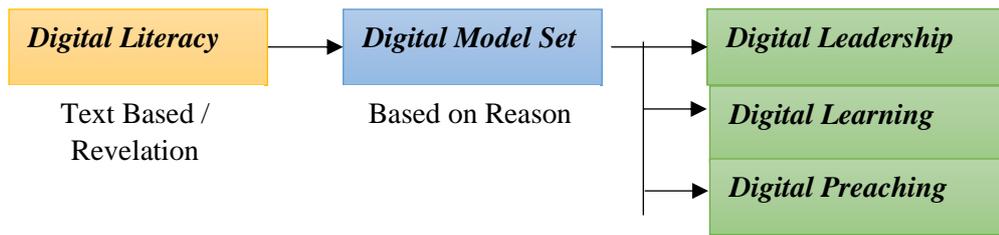
*Figure 5. Pillars of Digital Transformation*

From the above scheme, it is clear that the main pillars of digital transformation are Digital Literacy and Digital Mindset. The combination of the two will later give birth to three other pillars, namely Digital Leadership, Digital Learning, and Digital Dakwah. Digital literacy in the framework of text-based theology or revelation can be understood as the ability to utilize digital technology to deepen the understanding of religion and other sciences. For example, the use of digital applications to access the Qur'an, interpretations, hadiths, and religious studies, or the ability to filter information in digital media according to the principles of religious teachings. Digital literacy in this context requires ethics in the use of technology, such as ensuring that the sources of information used are trustworthy and in accordance with religious teachings.

The purpose of this digital literacy is how to foster the spirit of learning of students in learning both religious and general knowledge. From here, it is very likely to be able to change the mindset of students who are not only good at reading yellow books and studying religion, but also able to solve problems and also have the ability and skills to face the dynamics of change in society. And with this correct mindset, management skills, teaching skills and preaching skills will be created very well.

The author also tries to connect the five pillars above with the concept of the obligatory characteristics of the Prophet, namely Siddi>q, Amanah, Fa{tonah and Tabli>gh as follows:

Table 5.2 The Meaning of the Pillars of Digital Transformation in the Obligatory Attributes of the Prophet

| Five Pillars | The Characteristics of the Prophet | Meaning |
|---|---|---|
| *Digital Literacy* | *S{iddi>q* | The ability of students to find the right sources |
| *Digital Mindset* | *Fat{onah* | The ability of students to think well to solve problems |
| *Digital Leadership* | *Trust* | The ability of students to carry out their duties very well |
| *Digital Learning* | *Tabli>gh* | *Ustadh*'s ability to deliver material well |
| *Digital Preaching* | *Tabli>gh* | The ability of students to preach in society |

The characteristics of the Prophet above must also be possessed by students in utilizing their digital technology. And this becomes a digital etiquette for students, where it is mandatory to understand the good and bad of digital technology and be aware of the potential it creates. Therefore, these four characteristics must become the character and principles of students in using their digital media.

*First, Siddiq* is the awareness of students about how to use their digital media, how to convey accurate and correct information and the most important thing is that the information or message sent is the same as the information or message received, there is no manipulation and lies in the content of the information or message. Because nowadays, people often say something, but not from the original source. In fact, they use the name of influential people such as national figures, scholars, let alone the Prophet Muhammad SAW, and his companions, even though it is their own expression. In essence, the concept of Shiddiq teaches the importance of honesty and truth in all things. In digital transformation, honesty includes sharing information accurately, avoiding the spread of fake news (hoaxes), and providing honest feedback on various digital platforms

*Second, Trust* is the awareness of students to be responsible for what they have posted, the awareness to use their media and digital devices for good, the awareness to convey something that must be conveyed, keep something that must be kept secret, maintain the trust and originality of the information or message. In addition, the concept of Amanah in the use of digital technology is how to protect personal data and sensitive information, and use technology in a way that does not harm or harm others. Included in this is how the use of technology must also pay attention to its impact on the environment and society in general.

*Third, Fathonah* is the awareness of students in conveying information in accordance with the development of the times, and also to whom the message is delivered. Not to everyone. This is a way that students must do to be smarter in utilizing their digital devices and media. In addition, the concept of Fatonah encourages the development of intelligence and skills in various areas of life. In the digital era, this includes developing digital literacy, the ability to utilize technology effectively, and the ability to adapt to ongoing technological changes.

*Fourth, Tabligh* is the *santri*'s self-awareness of the obligation and certainty that the information or message is conveyed correctly from the right source, the right media, the right way and to the right object and on target. In the context of digital technology, the concept of *Tabligh* is how *santri* are able to make a positive contribution in cyberspace by sharing useful, educational, and inspiring content. This also involves good and respectful communication in online interactions.

By understanding and applying these ethical concepts in the use of digital technology, Muslims can ensure that digital transformation is carried out with deep moral and spiritual principles. This helps maintain the integrity and values of Islam in various aspects of modern life, including in the rapidly evolving digital world.

With the various analyses above, the author sees the importance of digital transformation in Islamic boarding schools to produce various innovations, especially in learning. In addition, it will also improve the quality of learning and the quality of social change of students towards a more progressive direction. And this must start from the paradigm of an inclusive and transformative Islamic boarding school community. However, in its implementation it must also be systematic so that the paradigm is not only reactive in responding to changes in this digital era.

As the digital transformation carried out by the Al-Aqobah Islamic boarding school, the Mambaul Hikam Islamic boarding school and the Sakal calligraphy Islamic boarding school in Jombang. The success of the digital transformation in these Islamic boarding schools can be seen from at least three attitudes of the Islamic boarding school in facing challenges in this digital era, namely adaptive,

innovative and collaborative attitudes. So the three Islamic boarding schools can be categorized as modern Islamic boarding schools that are adaptive, progressive, innovative and collaborative (APIK).

Adaptive Islamic boarding schools are Islamic boarding schools that are able to adapt to changes in the times, both in terms of technology, learning methods and social challenges. These adaptive Islamic boarding schools do not only adhere to tradition, but are also able to accept and utilize technological advances in their education. From this adaptive attitude, collaboration and innovation will be born in Islamic boarding schools. Progressive Islamic boarding schools are Islamic boarding schools that strive to produce a generation that not only understands religious teachings in depth, but is also able to make a positive contribution to the wider community in the context of social, economic and technological developments that continue to develop.

An innovative Islamic boarding school is an Islamic boarding school that is able to create anddevelopnew things in learning methods, management, financial systems including the use of technology in learning. Collaborative Islamic boarding schools are Islamic boarding schools that strive to establish cooperation with various parties, both from government elements, educational institutions, industry and communities. Through this collaboration, Islamic boarding schools will expand their reach, improve the quality of education, and open up opportunities for innovation in various fields.

Thus, adaptive, progressive, innovative and collaborative Islamic boarding schools are Islamic boarding schools that are able to maintain their traditional values well as well as Islamic boarding schools that are able to face current and future challenges with various more open and creative strategies, including digital transformation strategies in education in Islamic boarding schools.

## 4. Conclusion

The transformation and innovation of digital-based Islamic boarding schools implemented at Al Aqobah Islamic Boarding School and Sakal Kaligrafi show that the integration of technology in the world of Islamic boarding schools can accelerate the education process and expand the scope of learning. Al Aqobah Islamic Boarding School, with the application of digital technology, has succeeded in improving the quality of teaching and facilitating students' access to various sources of knowledge, both in the field of religion and other skills, such as digital calligraphy taught at Sakal Kaligrafi. Innovation does not only include teaching through digital platforms, but also the provision of online learning materials, as well as the development of learning applications that can be accessed anytime and anywhere. This has a positive impact in terms of educational affordability, increasing student participation and improving the quality of learning in Islamic boarding schools. However, challenges remain, especially in terms of technological infrastructure and training for teachers to make the most of technology. A strong commitment from the *pesantren* and support from various parties are needed to ensure the sustainability and success of this digital transformation.

Overall, the digitalization of Islamic boarding schools at Al Aqobah Islamic Boarding School and Kaligrafi Sakal has proven that with the right innovation, Islamic boarding schools can become educational institutions that are relevant to the development of the times without ignoring traditional values. In the future, the development of digital-based educational technology in Islamic boarding schools needs to continue to be encouraged to improve the quality of religious education and the skills of students in this digital era.

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