THE TRANSFORMATION OF DIGITAL LEARNING IN STATE ISLAMIC SENIOR HIGH SCHOOLS (MAN) IN MAKASSAR

Syawal Kurnia Putra
Alauddin State Islamic University of Makassar
No.36 H. M. Yasin Limpo Street, Sombu Opu, Gowa Regency, Indonesia
Email: syawalp1@gmail.com

Baso Marannu
National Research and Innovation Agency
No. 8 M.H. Thamrin Street, Jakarta, Indonesia
Email: baso.marannu@brin.go.id

Noor Insyiraah Abu Bakar
Sultan Idris Education University, Malaysia
Sultan Idris, 35900 Tanjong Malim, Perak Darul Ridzuan, Malaysia
Email: insyirah@fpm.upsi.edu.my

Ali Hanafi
Megarezky University
No.43 Antang Raya Street, Antang, Makassar, Indonesia
Email: alihanafilaupe@gmail.com

ABSTRACT

This study aims to explore and analyze the digital learning transformations in State Islamic Senior High Schools in Makassar. In the era of advanced information and communication technology, the digital learning integration becomes an urgent need in the education field, including Islamic schools (madrasahs). This research employs a descriptive qualitative approach with a study case method, which focuses on digital learning transformation in Islamic State Senior High Schools in Makassar. The study was conducted at three locations: State Islamic Senior High School 1 (MAN 1) on Talasalapang street, State Islamic Senior High School 2 (MAN 2) on AP. Pettarani street, and State Islamic Senior High School 3 (MAN 3) on Perintis Kemerdekaan street. The research informants were the principals, vice principals in charge of curriculum, and 30 teachers who teach in grade X, XI, and XII. Data were gathered by purposive sampling method, which included observations, interviews, and documentation. Data were analyzed using the Miles and Huberman model, which includes data reduction, data display, and conclusion drawing. The results of the study show that State Islamic Senior High Schools in Makassar have shifted toward the digital era by implementing web-based learning method. Through this method, students gained easier access to online learning processes through madrasah e-learning platform or Learning Management System (LMS) specifically designed to support education in today's digital era. Technology-based teaching methods are the integral part of instructional strategies, creating more personal and interactive learning experiences. This research highlights the importance of adaptation in technology in madrasah education to improve the quality and effectiveness of learning in the digital era.

Keywords: Digital Learning Transformation, Digital Madrasah, Technology Integration

INTRODUCTION

Technolgical developments and innovations in the last two decades have opened wide opportunities to access space and time without limitations (Soedjono, 2022). This transformation has become a strong foundation for creating a more connected globalization era without geographical boundaries. In this context, the era of globalization is not only marked by international goods and services exchanges,

but also by our entry into a new dimension called digital age.

Digital age brings significant changes in the way people live, work, and interact. Life today differs greatly from the past; almost all human's activities now rely on technology, both on individual and institutional scale (Wiryany et al., 2022). Digital innovation has entered into the line of life, education, economic, social, and even culture, making technology become an inseparable part of the everyday life dynamics.

As time goes by, the advancement of technology continues to grow exponentially, bringing various applications, platforms, and devices which simplify various aspects of life. However, these advancements do not merely present positive impacts. Behind easy and rapid access of information, also exist new challenges and risks, such as disinformation, digital addiction, and technology gap. Therefore, it is crucial to understand that the digital era not only creates a more informative and knowledgeable community, but also supports fundamental shifts in mindset, social structure, and economic system. (Yuniarsih et al., 2023). Awareness of these two sides of advancement is the key to utilize technology wisely and continuously.

The digital era has made significant changes in various aspects of life, including the education sector (Purba & Saragih, 2023). The advancement of information and communication technology has caused crucial shifts in teaching and learning methods. In Indonesia, the implementation of information and communication technology in the education field has become one of the government's top priorities to upgrade the education quality and global competitiveness (Purba & Saragih, 2023).

Every madrasah holds the responsibility to comply with various regulations and conditions issued by the Ministry of Religious Affairs. One of them is the commitment to strengthen the management and improve the competence of the human resources of the principals. This includes developing leadership skills, managing human resources, and boosting overall managerial quality. The purpose of this initiative is to ensure that madrasahs are qualified to operate efficiently and effectively in order to bring high-quality education to the students. (Yuniarsih et al., 2023).

Ministry of Religious Affairs Regulation Number 90 of 2013 on the implementation of Madrasah Education states that facilities and infrastructures are important components to be fulfilled by each madrasah to ensure the smoothness and effectiveness of learning process. In terms of facilities, each madrasah is required to provide a variety of learning support resources, including furniture, educational equipment, learning media, books and other learning resources, and additional necessary equipment. The availability of these facilities plays a crucial role in creating conducive learning environment and supporting the optimization of students' competency achievements.

On the other hand, every madrasah is required to have adequate infrastructure, including land, representative classrooms, a principal's office, teachers' room, an administrative room, a library, laboratories, a canteen, sport facilities, a place of worship, and other facilities supporting the continuity of both academic and non-academic activities. Complete and standardized infrastructure not only support convenient in the learning process, but also boost the quality of education in madrasahs. With adequate facilities and infrastructure, madrasahs are able to operate more systematic, structured, and continued academic, in line with the principles of improving the quality of academic as mandated in the regulation. The utilization of information technology, both as a resource and a learning medium, is considered as an effective strategy in overcoming the limitations of conventional learning methods (Afkari et al., 2022).

Through the Madrasah Education institution, the Ministry of Religious Affairs is committed to accelerating the digital transformation in the education sector. The main focus is on hard work and improving the education quality, as high-quality education can narrow social and economic gaps. In today's digital era, the emergence of a variety of disruptive technology, such as big data, Internet of Things (IoT), Artificial Intelligence (AI), robotics, and blockchains have become a driving force for developed countries to compete in developing their technological strength. By implementing those technologies, the Ministry of Religious Affairs attempts to establish a more adaptive, innovative, and responsive education to the dynamics of the

times. This step is expected to increase the competitiveness and quality of human resources in Indonesia, in line with the global demands and scientific knowledge advancements.

In today's digital era, there is a fundamental change in the learning paradigm, in which the traditional approaches are increasingly transforming into more modern and innovative methods (Wardinur & Mutawally, 2019). The use of technological devices, such as computers, tablets, and smartphones, along with the increasingly widespread internet access, has opened up more new opportunities in the teaching and learning process. These technologies allow more interactive learning, where the students can participate more actively in the learning activities.

In addition, technology plays a role in encouraging collaboration by facilitating interaction and cooperation between students, regardless of being in different locations. Furthermore, technology enables a personalized learning implementation, allowing the learning to be adjusted to the needs of each student. This approach makes the learning process more adaptive and responsive to the different learning styles and paces of each student. (Magdalena et al., 2021). Therefore, the implementation of technology in the education field not only contributes to the modernization of teaching methods, but also enhances the quality and effectiveness of the learning process.

Digital learning offers an opportunity to the teachers and students to gain direct access to a wide range of learning resources from all over the world (Mashudi, 2021). In this context, some learning models that are rapidly developed are e-learning (Muniasamy & Alasiry, 2020), blended learning (Seage & Türegün, 2020), and mobile learning (Ahdan et al., 2020). E-learning refers to the utilization of online platform to access learning materials (Sam & Idrus, 2021), while blended learning integrates an online face-to-face learning method (Nurhadi, 2020). Mobile learning allows the students to learn through mobile devices anywhere and everywhere (Pangalo, 2020).

By implementing various available learning models, it is expected that the dynamic of learning interaction is not only limited to the utilization of learning resources,

but also encouraged students to explore, investigate, and delve deeply into these resources, developing a more holistic and integrated mindset (Anwar et al., 2022). Educational challenges, as stated by Puspitasari (Puspitasari, 2016), includes the need to adapt educational paradigm in order to master science and technology.

The integration of digital technology in all stages of education can increase efficiency. Technology that supports planning, implementation, and evaluation of learning may fasten and simplify various aspects in the education process (Said, 2023).

The implementation of digital technology has the potential to urge innovation in the learning methods. Madrasah may have used various digital tools and platforms to strengthen the students' interaction and engagement (Saputra et al., 2023). By adopting digital technology, madrasah can boost the quality of the learning process. Evaluation supported by technology offers more accurate and timely data, enabling more effective decision-making to improve learning strategies.

In the State Islamic Senior High Schools *(MAN)* in Makassar, the digital transformation not only acts as responses to the demands of the time, but also as an attempt to increase the quality of education, widen the access of information, and prepare the students to face the challenges in the digital age.

Some of the main challenges are limitations in technological infrastructure, the teachers' competencies in using technology, and the students' access to digital devices and internet. In addition, there are also challenges in changing the mindset and learning culture among both teachers and students. The transformation of digital learning paradigm in the State Islamic Senior High Schools *(MAN)* in Makassar is required comprehensive support from various stakeholders, including the governments, educational institutions, teachers, students, and parents. This research aims to analyze the changes in the learning process and its implication in the digital age.

Literature Review

The digital transformation becomes the central issue in the educational reform in the modern era, including in the context of Islamic education in madrasahs. The concept of digital transformation is not only limited in the use of

technological devices, but also covers the overall changes in the way of working, mindsets, as well as management and learning strategies in educational institutions (Septya et al. 2024).

In the context madrasahs, this transformation means aligning technology with the Islamic education missions to establish a learning that is more inclusive, efficient, and relevant with the needs of the times.

Digital transformation is carried out according to the needs of the internal organizations or institutions with the aim of improving the services, products, and customer satisfaction (Andita & Rafaela, 2024). This process involves the significant changes that add values to the services and products, in which information and digital technology serve as the main components in that transformation. Digital transformation includes various tools, infrastructures, costs, solutions, and processes (Pratiwi & Riyana, 2023). To achieve optimal result, the strategy for implementing digital transformation needs to be adjusted to the needs of each organization, considering every organization has their own uniqueness.

In the education field, digital transformation enables the development of a more flexible and adaptive learning system. OECD (D'Mello, 2021) emphasized that digital technology supports a more personalized and data-driven learning process, and strengthen the effectiveness in educational management system. In madrasahs, such form of implementation can be seen through the adoption of Learning Management System (LMS) like Moodle (Athaya et al., 2021) or Google Classroom (Widiasanti et al., 2023), the use of audio-visual media in teaching, and the digitalization of academic administration. By using technology, teachers can deliver the materials in more varied ways, students can learn independently and interactively, and principals can make more accurate data-driven decisions.

Digital transformation also opens opportunity to optimize all the resources in madrasahs. These resources include human resources, facilities and infrastructure, funds, and information. Technology enables efficiency in managing these resources. For example, digitizing the administration system reduces the need for administrative staff and speed up the workflow, while e-learning platforms make the students' access to the learning materials easier without limitations of space and time. According to Baqi (Baqi, 2025), the optimalization of resources in digital-based education can be achieved if the technology is used as a strategic tool to strengthen the effectiveness of school and learning managements.

In practice, madrasahs in Indonesia starts showing positive trends in the utilization of digital technology, especially after COVID-19 pandemic which forces quick digital adoption. Research by Zalnur and Basit shows that madrasahs with digital transformations are better prepared to face crisis and more capable to maintain the quality of distance learning (Zalnur & Basit, 2021).

The implementation of technology in madrasahs covers the curriculum digitalization, the use of video-based learning media and online application, as well as the use of computer laboratory and digital library. However, this transformation is not free challenges, such as infrastructures gaps between regions, low levels of digital literacy among teachers, and the lack of continuous training.

Study by Mulyono found that the digitalization of learning has an impact on increasing student engagements and the effectiveness of communication between teachers and students (Mulyono, 2022). Meanwhile, Nurhidayah noted that technology-based training for teachers in madrasahs improves their readiness to use digital media pedagogically (Nurhidayah, 2023). The Ministry of Religion Affairs, through the "Madrasah Digital" program, has even established policy directions to create a technology-based madrasah ecosystem which integrated from the elementary schools *(MI)*, middle schools *(MTs)*, to senior schools *(MA)* levels.

The transformation can be conducted both planned and unplanned. The planned changes involve systematic management, careful plannings, and implementations in line with the pre-established programs. In contrast, unplanned transformation occurs naturally or unpredictably, affected by the dynamic of environmental conditions, technological advancements, and various other contributing factors.

The advancement of digital technology has significantly changed the education landscape, including within the context of madrasahs. One of the main characteristics of digital learning is immediacy of learning, which is the students' ability to gain knowledge directly, quickly, and according to their needs at that time. This concept aligns with Siemens' view in connectivism theory, which emphasizes the importance of quick and flexible access to information as a part of learning process (Jusman & Usman, 2025). In the digital age, immediacy of leaning is possible through various media, such as internet, online learning platforms, interactive multimedia, and mobile-based application.

The role of technology in improving the speed and efficiency of learning is very prominent in digital learning. Jusman and Usman state that educational technologies, such as Learning Management System (LMS), learning videos, and interactive media allows students to access the materials anytime and anywhere, without having to wait for face-to-face schedules (Jusman & Usman, 2025). This is very relevant to the context of madrasah, because students can learn independently outside of school hours. For example, Asrun's study shows that the utilization of digital platform, such as Google Classroom and YouTube in learning Fiqh and Tafsir at madrasahs accelerates the students' understanding of the subject matter, because they can revisit the teachers' explanations according to their needs (Mokodongan, 2021).

The integration of digital technology into the madrasah curriculum also plays a vital role in supporting immediacy of learning. Yuningsih found that the use of interactive multimedia in learning Islamic Religious Education not only increases the appeal of learning, but also helps students to understand the materials faster and deeply (Yuningsih & Haeruddin, 2024). Learning religion through digital media can be presented in the form of video, animations, and simulation that relate to students' daily life contexts, increasing the connectivity between theory and practice. This shows that digital learning in madrasah can maintain spiritual and Islamic values while using the modern technology.

Sudarsih states that not all madrasah, especially in rural areas, can have adequate internet connectivity or digital devices (Sudarsih, 2025). This challenge may delay the equal access to quick and immediate learning for all students. Therefore, support from the government and other related institutions in providing digital facilities and training in the use of technology is crucial to ensure all students can equally benefit from digital learning.

The advancement of technology in education should be utilized by the teachers to improve students' potentials, not the other way around. There is a significant difference in the skills to use information technology between millennial students and the previous generations. Therefore, information technology proficiency can be an added value to support the learning process in the classroom (Sari, 2021). When this approach is implemented optimally, the learning process can become more effectively with a wider variety of activities. In contrast, teachers' limitation in using information technology may hinder the use of technology by the students.

Learning in the digital era brings a great potential in realizing immediacy of learning in madrasah. To optimize the potential, it requires synergy from technology, curriculum, human resources, and policies that support digital transformation in Islamic education. Immediacy of leaning not only accelerates the access to knowledge, but also broaden the learning horizon of madrasah students to be more adaptive to the demands of the time.

Learning approach in the digital era should facilitate the students to learn directly and quickly (immediacy of learning), which may reduce the gap between in-school and out-of-school environments. It is important to note that students' learning style in the digital era not limited to conducting research and observing objects within the classroom, but also obtaining and storing diverse information from sources out of the classrooms (Ahmad, 2023). Moreover, millennial students are more accustomed to express their knowledge spontaneously without great planning or preparation, different from students in the past (Rowiya & Natuna, 2022). The combination of these new skills requires an appropriate approach to ensure that the classroom attendance remains important, so that it motivates and encourages the students to complete their tasks better.

The advancement of digital technology has emerged great potential in educational

transformation, including in the madrasah environment. The concept of digital madrasah is not limited to the digitalization of the learning system, but also includes the new paradigm in the implementation of education that is more open, flexible, and inclusive.

Digital madrasah introduces inclusive approach by using digital technology to widen education access to students from various backgrounds (Swandari & Jemani, 2023). This technology integration supports a more interactive and adaptive learning methods. The utilization of digital materials, including learning videos and interactive modules, becomes one of the main characteristics of digital madrasahs (Hafizah, 2023). This approach plays a significant role in addressing challenges related to variety and relevance of learning materials. However, it is important to be aware of the challenges that may arise, such as inequality to technology access and digital proficiency among students.

In the context of digital madrasah, students have opportunity to interact with learning materials through online platform and various multimedia resources (Yaumi & Damopolii, 2019). They can develop their knowledge independently by exploring the available materials, taking part in online discussion, or completing interactive tasks.

Inclusive approach in digital madrasah reflects the social justice principles in education, as stated by Paulo Freire's critical pedagogy theory. Technology is used not merely as an aid teaching tool, but as a transformative instrument which enable active participations by all students without discrimination. In this context, digital madrasah provides a learning room that is adaptive to the needs of students with special needs, students in remote areas, and students from marginalized groups by offering learning materials in various formats (audio, video, interactive text), and flexibility in time and places of learning.

Study by Sudarsih shows that digital technology implementation has increase the female students' participant in rural areas who were previously constrained by social norms and geographical distance (Sudarsih, 2025). Similarly, a study by Sudirman highlights how madrasah digitalization in some regions in Indonesia has helped to reduce the gap in access to education between students from wealthy and poor families through the provision of gadgets and subsidized internet access supported by the government programs and non-governmental organizations (Sudirman et al., 2023).

In addition, digital madrasah also introduces a learning approach that is based on individual needs (personalized learning), allowing the teachers to develop materials and assessment based on the students' individual skill levels. This is in line with the constructive approach in learning theory which emphasizes the importance of the students' active tole in building knowledge through contextual experiences and interactions. With analytical data in digital platform, teachers may evaluate and intervene each student's learning progress more accurately.

Therefore, the strategy in implementing digital madrasah should be designed holistically, involving teachers training, strengthening the digital madrasah ecosystem, and multi-stakeholder collaboration, including the government, the business sector, and the society.

Conceptual Framework

The digital transformation of learning in madrasahs is a form of adaptation to the demands of the times, which require a fundamental shift in educational approaches. This study is grounded in Siemens' connectivism theory, which emphasizes that learning in the digital era occurs through expansive, accessible networks of information rather than linear teacher-to-student transmission (Jusman and Usman, 2025). In this context, the connection between students and digital learning sources such as Learning Management Systems (LMS), interactive media, and various online platforms is central to constructing contextual and independent knowledge.

Additionally, the study incorporates the constructivist learning theory, which views learners as active agents who build knowledge through direct experiences, exploration, and social interaction (Yuningsih and Haeruddin, 2024). In digital madrasahs, this is reflected in the use of interactive videos, simulations, blended learning, and mobile learning strategies that offer flexible and personalized learning experiences based on students' individual needs (Ahdan et al., 2020; Pangalo, 2020).

The conceptual framework is further supported by Paulo Freire's principles of critical pedagogy, which stress that technology should function as a transformative tool for promoting equitable access to education (Hasanah and Swandari, 2023). In the digital madrasah context, this approach ensures inclusive participation for all students, including those from marginalized or remote areas, by delivering content in various accessible formats (audio, video, and interactive text) and allowing flexibility in learning times and locations.

By integrating connectivism, constructivism, critical pedagogy, this study constructs a comprehensive conceptual framework for analyzing the digital learning transformation in State Islamic Senior High Schools (MAN) in Makassar. This framework enables a holistic understanding of how digitalization not only enhances the technical aspects of education but also reshapes pedagogical strategies, school management practices, and the realization of equity in education. The result is a learning environment that is more inclusive, effective, and responsive to the challenges of the digital age.

RESEARCH METHOD

This study employs descriptive qualitative research (Ridwan et al., 2024). The focus of the study is on the learning transformation in the digital era in State Islamic Senior High Schools in Makassar. The research site is in State Islamic Senior High School 1 (MAN 1) on Talasalapang street, State Islamic Senior High School 2 (MAN 2) on AP. Pettarani street, and State Islamic Senior High School 3 (MAN 3) on Perintis Kemerdekaan street.

The informants in this study include the Principals of the State Islamic Senior High Schools, the Vice Principal in charge of curriculum, and 30 teachers from grades X, XI, and XII. The informants were selected through three aspects, which are leadership, curriculum management, and teaching staff, in order to ensure the depth and diversity of data through a source triangulation approach. Thus, the obtained information will be more accurate, comprehensive, and reflective of the real condition of the learning transformation in the digital era. The data was collected through interview, observation, and literary study methods (Lenaini, 2021). Then, the data

analysis was conducted using Miles and Hubermann model (Agusta, 2003), which are data reduction, data display, and conclusion drawing.

DISCUSSION

Technology-based learning is a significant aspect in the transformation of education in madrasah during the digital era. Madrasah leadership plays a vital role in ensuring that the use of technology in learning is not only implemented separately, but also integrated effectively into the overall curriculum and teaching practices.

One of the learning models worth to be considered is Computer-Based Learning (CBL). In its implementation, the use of Learning Management System (LMS) acts as the key element supporting the effectiveness of computer-based learning. LMS can be accessed offline, enabling students to learn even without internet connection. It is particularly beneficial especially in areas with limited or unstable internet connection. Another advantage of computer-based learning is the possibility of personalized learning experiences.

"With the utilization of this technology, teachers can adapt learning materials and strategies to align with each student's needs and level of understanding." (Interview with DW, 2024)

"In addition, the use od computer-based learning also improve the students' engagement through interactivity offered by the platform, such as online quizzes, simulations, and discussion forums." (Interview with NE, 2024)

However, the implementation of this model faces several challenges that need to be addressed, including the availability of adequate technological infrastructures and the need for comprehensive trainings for teachers in effectively running the system. In addition, the security of data and privacy aspect should also be taking into account in using E-Learning technology.

One of the strengths of the web-based learning is its high level of flexibility. Students can freely access the learning materials without limitations of time and space, as long as internet connection is available. This condition creates a more independent learning process, allowing each individual to adjust learning time and method according to their personal needs and schedule. Therefore, this

model offers freedom and convenience to the students in exploring the learning materials.

In addition to its flexibility, web-based learning also enables wider interaction range between students and teachers through various digital platforms. Features such as discussion forums, interactive quizzes, and electronic assignment submissions contribute in enriching the students' learning experiences and boosting their understanding of the learning materials. Through these interaction mechanisms, students can actively engage in the learning process and get immediate feedback from teachers, enhancing the learning effectivity.

To support the efficiency and effectiveness in achieving learning quality standards and the implementation of relevant principles, information and communication technology is utilized. Within the system, the use of information and communication technology in learning can be implemented in the following forms: (1) as a source of information learning that provides various technology-based references. In addition to conventional information sources such as printed books, resource persons, and the surrounding environment, students can also access digital sources such as websites, electronic data, digital modules, videos, e-books, articles, journals, and digital libraries; (2) as a learning aid and media that can be developed and delivered using artificial intelligence, such as virtual laboratory, virtual observation, and virtual simulation; (3) learning outcome, whether in product of project forms, can be delivered through various digital application supporting the presentation and documentation of the students' works; (4) Discussion and collaboration are essential elements in open learning. Through digital technology, students can interactively explore, discuss, and share ideas and knowledge with their peers; (5) Learning in digital madrasah environment can be carried out through fully online learning model or a blended learning approach, which combines face-to-face and online learning methods to increase the effectiveness and flexibility of learning process.

Figure 1. ICT-Based Learning
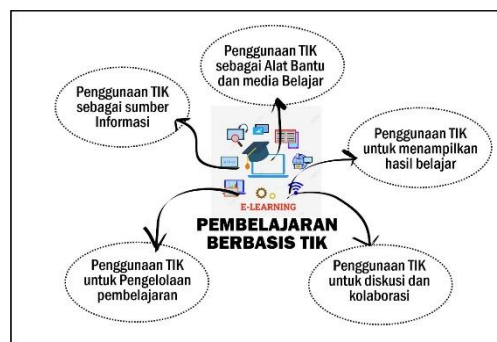
Source: Data Analysis, 2024

Figure 1 explains about Information and Communication Technology; The use of information and communication technology as a resource, The use of information and communication technology as learning aid and media, The use of information and communication to present learning outcomes, The use of information and technology for discussion and collaborations, The use of information and technology for learning management.

Technology integration in the learning process is an important aspect in boosting the effectiveness and relevance of the education in madrasah. By utilizing a variety of technology tools, including educational software, multimedia, and digital resources, madrasah can create a dynamic, diverse, and engaging learning environment for the students.

"Encourages all teachers to utilize the advancement of technology in the teaching and learning process." (Interview with AG, 2024)

Technology integration in learning refers to the systematic and planned implementation and utilization of technology in the teaching process in the classroom. This implementation covers the use of software, hardware, and other various digital media in order to support the learning effectiveness and efficiency.

There were three fundamental principles that should serve as guidelines in the development and utilization of learning technology. First, the implementation of system approach, which highlights the combination of various components in the learning process in order to achieve the objectives effectively and efficiently. Second, learner-centered orientation, which emphasizes the needs, characteristics, and potentials of the students as the main subject in

the learning process. Third, optimization and diversification of learning resources, which aim to optimally utilize various kinds and forms of resources in order to enhance the learning quality.

Figure 2. Technology Integration in Leaning
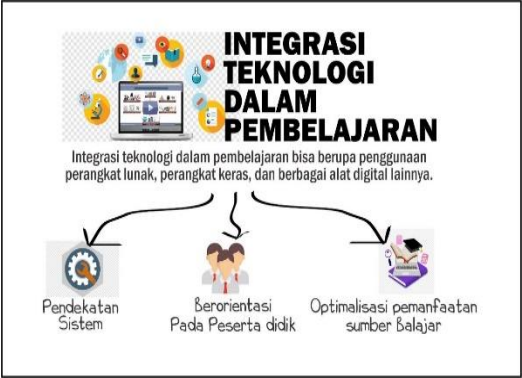
Source: Data Analysis, 2024

Figure 2 explains about Technology Integration in Learning. Technology intergration in learning may be in the form of using software, hardware, and various other digital tools: Systema approach, Learner-centered orrientation and Optimalization of resource utilization.

In order to support technology-based learning, the implementation of madrasah in digital era is required the provision of adequate digital infrastructure and facilities. This includes: (1) Internet access, which refers to the availability of internet connection in every digital-based educational institution which plays a crucial role in supporting the learning process and accelerating the transfer of information for students under the supervision of teachers; (2) Digital library or E-Library, which acts as the center of digital-based learning resource by offering various learning materials in the forms of e-book, learning videos, and applications to support the teaching and learning process; (3) Digital class, which is a learning space integrated with information and communication technology, including facilities such as Wi-Fi, LCD projectors, and internet access to support interactivity in learning; (4) Computer/Multimedia Laboratory, which acts as the center of the development of digital learning materials and a mean to producing technology-based learning contents.

The integration of technology in learning not merely about the use of technological tools, but also involves the changes of paradigm in the teaching and learning approaches.

"Keep motivating and supporting digital transformation." Similarly, according to Evi, *"Hopefully, digital transformation, especially in madrasahs, can increase the effectiveness of learning, so that it contributes to the advancements of the education sector." (Interview with HS, EN, 2024)*

Teachers need to act as active learning facilitators, encouraging students to be independent, critical, and creative in facing the challenges of the digital world.

State Islamic Senior High Schools *(MAN)* in Makassar City has shifted into the digital era by implementing Web-Based Learning models. Through this approach, students gain easy access in the process of online learning through platforms like madrasah E-Learning or Learning Management System (LMS) designed specifically to supports distance education.

Figure 3. Digital Product State Islamic Senior High Schools Makassar

State Islamic Senior High School 1 Makassar	State Islamic Senior High School 2 Makassar	State Islamic Senior High School 3 Makassar
Madrasah E-Learning application, learning process, and daily evaluation	SIPADU , used for Madrasah's guest satisfaction survey	Quipper Application, related to the learning activities, madrasah evaluation
Madrasah Digital Report Cards	E-Learning/Google Classroom	SIMANGGA , used for all incoming correspondence activities
AzZahra CBT Application, used for students' final tests	Digital Report Cards	Digital Report Cards
	CBT (Computers-Based Test)	
	Internal Curriculum Application, Guestbook records, and other reports.	
	Internal Public Relation Application	

Source: Data Analysis, 2024

State Islamic Senior High School 1 *(MAN 1)* Makassar

State Islamic Senior High School 1 (MAN 1) Makassar has entered digital era with innovation steps which enrich the learning experiences of the students. By using technology, MAN 1 embraces modern learning approaches, but also effectively facilitates the learning processes and evaluations daily.

"One of the breakthrough steps adopted by MAN 1 is the use of Madrasah E-learning application." (Interview with MS, 2024)

This application enables students to access learning materials anytime and anywhere through their digital devices. As a result, learning is not limited to the classroom,

but it can also occur at home or elsewhere according to each learner's preferences. In addition, the E-learning application also facilitates the daily evaluation process by providing interactive exercises and quizzes than can help student to understand the materials.

To simplify the reporting process and improve transparency, Islamic State Senior High School 1 *(MAN 1)* has adopted a digital report card system. Through this platform, parents and students can easily access students' academic progress in real time. This creates a more open communication channel between the school, students, and parents, enabling them to collaborate in supporting the students learning.

In addition, MAN 1 also uses technology in the implementation of final exams for students through AzZahra CBT (Computer Based Test) application. By using this technology, the exam runs more efficient and offers more accurate results.

Students answer the exam questions digitally and get the result immediately after finishing the exam. This not only reduces administrative burden on teachers, but also provides a more dynamic and interactive exam experience for the students.

> *"By utilizing Madrasah E-Learning application, digital report card, and Az-Zahra CBT, MAN 1 Makassar has taken progressive step in facing the challenges in education in this digital age."* *(Interview with DW, 2024)*

The use of these applications in MAN 1 not only boost the efficiency and effectiveness of the learning process, but also offers convenience for teachers and students in managing academic activities. By using E-Learning, the teaching and learning process can be carried out smoothly, even through online settings. Digital report card provides transparency and easy access for students and parents. Meanwhile, AzZahra CBT application ensure that final exams are conducted with high standards and accurate results.

Thus, MAN 1 is not merely a place to learn, but also an innovation center which inspire the development of education in the Makassar City and in throughout Indonesia.

State Islamic Senior High School 1 *(MAN 1)* Makassar

MAN 2 Makassar has evolved into a dynamic and innovative educational center with the implementation of advanced technology which improves the learning experiences and manages the administrative process more efficiently. One of its main milestones is the use of *SIPADU (Sistem Pelayanan Terpadu)*, a platform for integrated data collection and guest satisfaction surveys. With *SIPADU,* MAN 2 can systematically evaluate the quality of services given to the guests of the Madrasah, so that it can continuously improve.

MAN 2 has also adapted in digital era through the implementation of E-Learning and Google Classroom. The use of this platform enables students to access the learning materials online, communicate interactively with teachers and other students, and submit the tasks more efficiently. This creates a more flexible and interactive process, in which the students can adjust their pace and learning method to their preferences and individual characteristics.

Digital report card system is another characteristic feature in MAN 2. By using this technology, students, parents, and teachers can easily access and monitor the students' academic progress in real-time. It offers a more open and effective communication between the school and home, and gives a clear overview of the student achievements.

To assess the students' understanding more efficiently, MAN 2 uses CBT (Computer Based Test). With digital test formats, students can take the tests more confidently and teachers can generate the results faster. This improves the efficiency in exam management and offers more modern exam experiences for the students.

> *"In addition, MAN 2 also uses internal application to manage various administrative aspects, such as guestbook records and other reporting tasks."* *(Interview with SN, 2024)*

It helps optimize the school's administrative process, so the staff can focus on the educational developments.

By integrating advanced technology into various operational aspects, MAN 2 Makassar boosts its reputation as an educational institution which is innovative and adaptive to the dynamics of the times. By integrating technology into every aspect of education, MAN 2 not only prepares their students for digital future, but also creates a dynamic and innovative learning environment for future generations.

Using all these applications, Islamic Senior High School 2 *(MAN 2)* shows its commitment in integrating technology to increase the quality of education and services. This integrated system not only simplify the administration and learning process, but also ensures that all activities run more efficiently and transparently. Students, teachers, and parents are can directly feel the benefits from the applied technology, which contributes to improving the quality of the education in this school.

State Islamic Senior High School 3 *(MAN 3)* **Makassar**

MAN 3 Makassar has taken a step forward to the digital era by introducing a variety of technological innovations which changes the learning and administration process. One of the ultimate innovations is the use of Quipper, a platform which shifts the way the students learn and are assessed.

The Quipper application has become the backbone of the learning activities in MAN 3. Through this platform, teacher can easily create and share learning materials, tasks, and quizzes to the students online. Students can also access the materials anytime and anywhere through their devices. This enables a more interactive and dynamic learning process, where the students can adjust the learning pace to their abilities and use methods that align with their learning preferences.

Apart from being a learning tool, Quipper is also used as evaluation at the madrasah. Teachers can create online tests and quizzes easily, and the results can be generated automatically by the system.

"It saves teachers' time and effort in evaluating the students' progress, allowing them to focus on providing more personalized guidance to those who need it." (Interview with IH, 2024)

In the administrative side, MAN 3 has introduced *SIMANGGA (Sistem Administrasi MAN 3)*, a platform used to manage all the incoming correspondence activities. With SIMANGGA, the administration process becomes more efficient and structured. Correspondence between schools and other parties can be well-managed, minimizing the risk of information loss and ensuring smooth school operations.

By adopting technology in the learning process, MAN 3 has established an environment of education that is modern and responsive to the development of the times. This implementation not only broadens the students access to various learning resources, but also enhances more interactive, interesting, and enjoyable learning experiences. Teachers can also be more effective in delivering teaching and guidance to students, resulting in an overall improvement in the quality of education.

By continuously improving and updating the technology used, MAN 3 is committed to keep upgrading education in Makassar City and preparing students to become reliable and competent future leaders in the ever-evolving digital era.

CLOSING

State Islamic Senior High Schools (MAN) in Makassar have created a comprehensive guideline related to the learning objectives, learning materials, recommended teaching methods, and evaluation process, taking into accounts the continuous advancement of technology. Namely 1) Learning objectives are adjusted to the developments of technology, ensuring relevance and effectiveness in the digital context; 2) Learning materials are integrated with various digital technology resources, offering access to wider and more up-to-date information; 3) Technology-based teaching methods become an integral part of teaching strategy, enabling more personalized and interactive learning experiences for the students; 4) Learning evaluations are carried out automatically, allowing the teachers to track the students' progress in real-time and adjust the teaching approaches based on accurate data. Data analysis tools help the teachers in monitoring the student development and learning outcomes more effectively; and 5) Digital learning curriculums and models provide more detailed schedules, concept maps, and lesson plans, enabling the teachers to plan and organize teaching better. This structure helps to ensure that all the important topics are covered and students receive a comprehensive education.

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