Ál-fâhim: Jurnal Manajemen Pendidikan Islam
Volume 7 No. 2. March-September 2025
ISSN: 2656-226X; E-ISSN: 2656-6036
DOI: 10.54396/alfahim.v7i2.2223

Real-Time Monitoring Through Jogja Madrasah Digital in Yogyakarta

Finan Ahsani Taqwim[1], Eki Yulia Susanti[2], Suwadi[3]
UIN Sunan Kalijaga[1,3], Universitas Negeri Yogyakarta[2]
24204092030@student.uin-suka.ac.id[1], ekiyulia.2025@student.uny.ac.id[2], suwadi@uin-suka.ac.id[3]

Abstract: *Real-time systems have been proven beneficial according to literature reviews, but not entirely true in this case. This study aims to investigate the implementation of real-time monitoring through the Jogja Madrasah Digital application in Yogyakarta, generally discussed for all state madrasah in Yogyakarta and then focused on MTsN 3 Sleman. Employing a qualitative research method, the study explores how the application supports real-time monitoring principles. The findings reveal that Jogja Madrasah Digital accommodates all essential principles of real-time monitoring, enabling continuous and immediate tracking of educational processes. However, MTsN 3 Sleman does not utilize these features extensively, citing pedagogical reasons for limited usage. This suggests a gap between technological capabilities and practical adoption in certain educational settings, highlighting the need for alignment between digital tools and pedagogical strategies. Although this study is limited in scope, it is expected to draw attention from the Regional Office of the Ministry of Religious Affairs of Yogyakarta and other stakeholders interested in implementing real-time monitoring technology in educational institutions.*
Keyword: *Madrasah, Monitoring, Real-Time*

Introduction

The main purpose of implementing real-time monitoring in education is to give parents and teachers the opportunity to monitor their children or students. Real-time monitoring focuses on providing immediate data regarding performance or expected outcomes, typically to identify deviations from planned targets[1]. This approach is implemented throughout the course of a program or intervention, with the aim of providing immediate and ongoing feedback to support learning and adaptive improvements in the field. Real-time monitoring involves collecting up-to-date data, promptly reporting evaluation results as the process unfolds, and conducting evaluations at various points in time.

In the context of education, real-time monitoring and evaluation can be used to directly monitor and assess the learning process, enabling teachers and educational administrators to immediately understand students' progress, the effectiveness of teaching methods, and the challenges faced in

[1] Rogers, "Real-Time Evaluation."

|Submitted: Augus 11, 2025 | Accepted: April 1 2026 | Published: April 22, 2026

the classroom. With this approach, adjustments to learning strategies can be made quickly and effectively without waiting until the end of the semester or school year. The implementation of real-time evaluation in education can also support the development of data-driven educational policies, increase the participation of the school community and other stakeholders, and ensure that educational programs run according to their objectives and are continuously improved. This is particularly relevant in dynamic situations such as online learning, curriculum changes, or addressing challenges that arise during the learning process.

A literature review was conducted on the Scopus platform using the keywords "real-time," "monitoring," "evaluation," and "education," with a year filter set to 2021–2025, limited to the subject area "social sciences," in English, and open access. This review yielded 44 articles across various specific fields, such as health education, educational management, and others.

In the field of health and medical education, real-time technology takes the form of a laparoscopic training system that uses AEDS (Augmented Education Delivery System) to provide real-time training in surgical procedures for trainees[2]. In addition, there is a practice of evaluating medical students' clinical skills using video recordings of their performances and a real-time AI system[3]. The HEAL education program combines video-based coaching and reflective portfolios to monitor participants' professional development[4]. The riAniMO program offers virtual and team-based CPR/AED training with real-time monitoring of healthcare providers' performance[5]. This technology is also used in the education sector in general, such as in simulations of visual impairments using XR platforms that introduce real-time visual distortions to teachers[6]. Teachers can better understand the challenges faced by students with low vision and become more empathetic.

---

[2] Luo et al., "Enhancing Laparoscopic Surgery Training: A Comparative Study of Traditional Models and Automated Error Detection System." https://doi.org/10.1186/s12909-025-07242-3

[3] Tekin et al., "Is AI the Future of Evaluation in Medical Education?? AI vs. Human Evaluation in Objective Structured Clinical Examination." https://doi.org/10.3389/fmed.2026.1752664

[4] Rohlfsen et al., "Health Educators and Academic Leaders: A Developmental, Principles-Focused Program Evaluation Approach for Aspiring Clinician Educators in Graduate Medical Education." https://doi.org/10.4300/JGME-D-24-00904.1

[5] Palmisano et al., "The Effect of a Team-Based Blended Simulation Training Program on Cardiopulmonary Resuscitation on Healthcare Professionals' Perception, Performance, and Costs: A Mixed-Method Study." https://doi.org/10.1186/s12909-024-06543-3

[6] Barbieri et al., "Through Their Eyes: Enhancing Teacher Awareness of Visual Impairments via Extended Reality Simulations (REALTER)." https://doi.org/10.3389/feduc.2025.1634253

Many positive findings were reported in these dozens of articles. The integration of interactive QI/PS platforms has been shown to improve knowledge and attitudes as well as clinical outcomes for patients[7]. VTS-VTA intervention effectively improves medical students' observational skills and performance in real-time observation[8]. Real-time clinical simulations are effective in improving students' practical performance over time[9]. Virtual orthodontic training systems significantly enhance dental students' clinical skills[10].

Real-time technology is widely implemented in the fields of health education and medicine because these fields rely heavily on authentic practical experience and the direct, repeated assessment of skills, such as surgical simulations, diagnosis, and decision-making in emergency situations. Real-time technology (e.g., VR/AR simulations, AI-based monitoring of clinical tasks, remote patient monitoring) enables students to receive instant feedback, practice repeatedly without risk to real patients, and supports the objective assessment of clinical skills[11].

The medical field is generally supported by sufficient funding, so the implementation of technology in this sector remains feasible and can function effectively. Adequate funding enables the use of advanced tools, such as life-size simulations, real-time monitoring systems, and complex digital educational technologies. This situation stands in stark contrast to the reality on the ground in many schools and madrasahs in Indonesia, where budget constraints are the primary obstacle to the implementation of educational technology. The implementation of technology does indeed require significant costs, ranging from the procurement of hardware and software development to training for educators to maximize the technology's functionality[12], as experienced by a madrasah in Kepahiang, Bengkulu[13].

---

[7] Stanley et al., "Integrating a Quality Improvement Experiential Platform into Medical Student Education." https://doi.org/10.1186/s12909-025-06709-7?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle

[8] Ghorbani et al., "The Eagle Eyes: An Intervention Utilizing Visual Thinking Strategies to Enhance the Observation Skills of Medical Students." https://doi.org/10.1186/s12909-025-06642-9

[9] Mellinas-Martínez et al., "Clinical Simulation as an Effective Teaching Model in the Special Needs Dentistry Course." https://doi.org/10.1186/s12909-025-07882-5

[10] Liu et al., "Evaluating a Preclinical Orthodontic Training Using Haptic-Enhanced VR Simulation System: A Longitudinal Study." https://doi.org/10.1186/s12909-025-07036-7

[11] Chowdhury et al., "Medical Education Technology: Past, Present and Future." https://doi.org/10.1177/09760016241256202

[12] Kurnia, "Pendidikan Berbasis Teknologi." https://doi.org/10.55757/tarbawi.v10i2.307

[13] Putri et al., "Inovasi Pemanfaatan Teknologi Informasi Dalam Meningkatkan Efisiensi Manajemen Pendidikan Di Mis 05 Darussalam."

Just because something is expensive doesn't mean it isn't being used; as science and technology advance, they will gradually become more affordable. An example of expensive technology in the Indonesian education sector has been implemented in the classrooms of Computer Science students at the Indonesia University of Education. This technology, based primarily on the Hybrid MobileNetV3-ViT model with token downsampling, enables real-time recognition of students' facial expressions in large classrooms, helping teachers monitor students' emotional states and engagement[14]. This expensive technology still faces challenges, such as facial expressions in the classroom tending to be subtle and less expressive than those in the training dataset, making them difficult to recognize accurately. An example of an affordable real-time technology is Jogja Madrasah Digital, whose implementation will be examined in this article.

This paper aims to explore the implementation of real-time monitoring technology in madrasahs. Although the studies mentioned above highlight the benefits of real-time monitoring technology, field studies—particularly in madrasahs—reveal a different picture. This technology may not necessarily be beneficial, especially if it conflicts with pedagogical interests. The focus is on understanding how these madrasahs implement technological systems that enable parents to monitor various academic and non-academic aspects of their children's lives directly and effectively. Additionally, this study seeks to identify the factors preventing the technology from achieving its intended objectives. With this understanding, it is hoped that strategic solutions can be identified to ensure the implementation of real-time monitoring technology in madrasahs operates optimally and delivers maximum benefits in improving educational quality.

Methods

This study employs a qualitative approach as its methodological foundation to understand the implementation and effectiveness of the Jogja Madrasah Digital technology in monitoring student attendance and learning activities in real-time. The qualitative approach was chosen because it allows researchers to explore the experiences, perceptions, and input of various involved actors in a deep and contextual manner, in line with Creswell's view that this method focuses on understanding the subjective meanings of participants through direct interaction and narrative data[15]. The primary data collection methods used in this study included in-depth interviews with Jogja

[14] Khaairi, Rasim, and Wihardi, "Facial Expression Recognition of Students in Classroom Using Hybrid MobileNetV3-Vision Transformer with Token Downsampling." https://doi.org/10.47709/brilliance.v5i1.6323

[15] Creswel, *Re[1] J. W. Creswel, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications, 2008.Search Design: Qualitative, Quantitative, and Mixed Methods Approaches*.

Madrasah Digital staff and stakeholders at the madrasah to gather information about operational processes and the challenges they face.

Furthermore, to supplement the qualitative data, the researcher distributed a questionnaire using Google Forms designed with open-ended questions. This form was completed by 84 respondents, all of whom were teachers selected by the madrasah administration. This approach aimed to provide a space for teachers to share rich and diverse opinions, experiences, and suggestions regarding the implementation of digital technology in the context of learning. The data from the respondents provided insights that enriched the understanding of the practical needs and effectiveness of the system's use in the field. Repeated data analysis yielded insights into a specific theme, which are presented in this paper. In addition, the study also involved direct observation at various madrasahs in an effort to gain a firsthand understanding of how the technology is used and how users interact with it, thereby providing a more holistic and valid picture of the phenomenon under study.

Documentation is a crucial component of this research process, carried out through recordings, field notes, and the collection of artifacts during field visits to the madrasah. Documentation assists researchers in verifying data from interviews and observations and provides visual and written evidence to support qualitative analysis. This combination of interviews, open-ended questionnaires, observations, and documentation was systematically designed to obtain comprehensive, in-depth, and authentic data in accordance with the principle of triangulation to enhance the validity of the research results.

Result and Discussion

The first principle in implementing real-time monitoring is establishing indicators. Clearly defined indicators are essential so that the data collected can be interpreted consistently and reliably, and used to compare or combine results from various projects or contexts. In the context of real-time monitoring, indicators enable faster analysis and reporting, allowing decisions to be made based on factual and up-to-date data. Good indicators help guide decision-making and support continuous learning and improvement.

An indicator is a quantitative or qualitative variable that is closely correlated with and serves as a proxy for a characteristic, phenomenon, or change that is difficult to measure directly[16]. Indicators provide a practical way to monitor conditions or changes in meaningful units over time. In other words, indicators simplify the management and understanding of complex systems by presenting a simplified overview based on relevant factors.

[16] Belcher et al., "Indicators for Monitoring and Evaluating Research-for-Development: A Critical Review of a System in Use."

The following principles of real-time monitoring are adapted from Rogers: real-time data, real-time reports, multiple cycles, and sensemaking[17]. Real-time data is data that is collected and processed immediately or shortly after an event occurs. This data is highly current and up-to-date, enabling rapid feedback and decision-making during the implementation process. In the context of evaluation or monitoring, real-time data allows for more timely documentation and reporting compared to data obtained retrospectively after a project is completed.

A real-time report is a report that is generated and delivered promptly after—or even during—the data collection process. The purpose of this report is to provide immediate feedback to implementers or decision-makers so they can promptly make adjustments or improvements to the program without having to wait for a final evaluation, which typically takes a long time. Real-time reports enable adaptive and responsive improvements in response to the dynamics of the field situation.

A multiple-cycle approach is an evaluation or monitoring process conducted repeatedly (more than once) during the implementation period of a program or activity. Not all real-time monitoring requires a multiple-cycle approach, but it is particularly useful for complex programs that require continuous adaptation during implementation. A multiple-cycle approach helps avoid a one-time evaluation, which may not be sufficient to account for dynamic changes on the ground.

Sensemaking is the process by which various stakeholders collectively interpret, understand, and derive meaning from data or information obtained during monitoring or evaluation. In real-time evaluation, sensemaking involves active dialogue among data users to develop recommendations for action based on a shared understanding. This process is essential to ensure that data is not merely collected and reported, but is also internalized, critically analyzed, and used for effective decision-making and action planning.

These five principles constitute the necessary steps in any implementation of a real-time monitoring system. In the context of expression recognition, as explained in the introduction, indicators serve to specify the types of expression data to be collected and the purpose of that collection. In the context of student attendance, indicators clarify what constitutes an absence and how it differs from being late. The subsequent process is carried out continuously without significant pauses during the data collection and reporting stages. All collected data is then processed into information that can serve as a basis for consideration or reference in subsequent decision-making.

The implementation of the five points above will be examined in the subject of this study, namely the Jogja Madrasah Digital (JMD) application. This application is an initiative of the Regional Office of the Ministry of

[17] Rogers, "Real-Time Evaluation."

Religious Affairs of the Special Region of Yogyakarta to advance madrasahs in Yogyakarta through the digitization of learning. The application supports madrasahs in becoming more adaptable to technological advancements and the current state of education, while also improving digital literacy among students and teachers. JMD's features include uploading learning materials, interactive quizzes, discussion forums, student attendance records, assessments, and other supporting features[18].

Madrasahs in the Sleman and Bantul regions are actively conducting training and capacity-building initiatives on the use of JMD[19]. This training covers the app's features, which include a list of teachers and students, teaching materials, attendance tracking, and digital exams. The platform helps monitor student engagement and promotes integrity during exams by restricting access to other media while exams are in progress. The use of JMD in Islamic Religious Education classes at MAN 3 Bantul has been shown to significantly improve students' reading literacy compared to conventional teaching methods[20].

Real-time functionality in JMD is primarily realized in two key areas: the recording and summarization of student attendance, and the monitoring of assessment scores, which can be accessed quickly and directly, thereby facilitating decision-making and follow-up actions in the learning process at madrasahs.

The attendance systems in several madrasahs using JMD have adopted QR code-based attendance innovations that allow student attendance to be monitored in real-time. Incoming attendance data is automatically stored in the JMD application so that teachers, homeroom teachers, parents, and madrasah officials can monitor it quickly and accurately. This system is also considered to support transparency and improve student discipline.

In addition to attendance tracking, exams and quizzes are conducted in real-time, allowing students' learning progress to be monitored directly on a daily basis. This makes it easier to track students' assessment scores more quickly and accurately, supporting a more efficient evaluation and remediation process. These two features embody the principles of real-time monitoring in the Jogja Madrasah Digital app.

Although many public madrasahs in Yogyakarta have reported significant benefits from implementing this platform, there is an interesting case involving MTsN 3 Sleman, which has deliberately chosen not to use two real-time features of the application: attendance tracking and assessment

[18] Nur Rois, "Implementasi Aplikasi Jogja Madrasah Digital (JMD) Sebagai Media Pembelajaran Bahasa Arab Di Madrasah Aliyah Negeri 2 Kulon Progo."

[19] NSW, "MTsN 10 Sleman Gelar Pemantapan Program Jogja Madrasah Digital"; Sugiyono, "Jogja Madrasah Digital Sebagai Media Penilaian ASAS/PAS MTsN 6 Bantul."

[20] Kholilurrohman, "Pengaruh Penggunaan Website Jogja Madrasah Digital Terhadap Literasi Membaca Bidang Pendidikan Agama Islam Di MAN 3 Bantul."

score monitoring. This madrasah relies on conventional methods with only minor adjustments in technology use. This decision presents an intriguing phenomenon from an educational research perspective, as while technology can directly support learning and evaluation processes, it is possible that certain factors—such as human resource readiness, training, or data management strategies—played a role in this decision-making process.

The attendance feature in the Jogja Madrasah Digital app does indeed allow parents to monitor their children's attendance for each class period in real-time. However, based on interviews with teachers at MTsN 3 Sleman, the use of QR code attendance for every class period is considered ineffective because it takes up valuable time that could otherwise be used for learning activities. Therefore, the practice adopted is to conduct a full attendance check only during the first class in the morning. For subsequent classes, teachers simply count the total number of students and ask other students about the whereabouts of absent peers if the attendance figures appear suspicious. This approach was chosen to save time while maintaining the accuracy of student attendance records. This model reflects the adaptation of technology tailored to on-site conditions and needs, and indicates that the integration of digital features into learning must consider the efficiency and effectiveness of teachers' time in the teaching and learning process.

In addition to these considerations regarding learning efficiency, the operator of Jogja Madrasah Digital at MTsN 3 Sleman also noted that the real-time student attendance monitoring feature provided by the app is not widely utilized by parents. Although active outreach regarding the app's use has been conducted, most parents still prefer to inquire directly with the homeroom teacher via communication platforms like WhatsApp when they wish to check their child's attendance. This indicates that although attendance data and reports are available in real-time, the principle of sensemaking—the collaborative use of data by various stakeholders to derive meaning and make decisions—has not yet been fully implemented.

Under these conditions, key aspects of real-time monitoring—such as multiple cycles and sensemaking—are not being met at this madrasah; multiple cycles are not implemented because full attendance is taken only once in the morning, while sensemaking is not implemented because real-time data is not actively used by parents. Considering these various constraints and on-site needs, MTsN 3 Sleman decided not to use the full real-time attendance features within the Jogja Madrasah Digital platform as an adaptive strategy to ensure that the learning process and attendance management remain efficient and effective.

Another feature of Jogja Madrasah Digital that fundamentally supports real-time monitoring is the student assessment score tracking feature. The app is equipped with a digital assessment system that allows students' test results to appear immediately after the test is completed. This system can be used for midterm and final exams, all of which consist of multiple-choice questions.

When students complete an exam in the JMD app, the system automatically counts the number of correct and incorrect answers, then displays the final score in real-time to the user. With this mechanism, both students and parents can actually find out the assessment results without a significant delay.

Nevertheless, MTsN 3 Sleman has chosen not to activate this real-time grade reporting feature. This decision was based on psychological and pedagogical considerations, particularly regarding the students' mental well-being. The madrasah believes that the instant publication of grades has the potential to have a negative impact on students. There is concern that those who receive high grades may become overly confident, while students with low grades may experience mental stress or lose their motivation to learn. Therefore, the madrasah decided to postpone the publication of grades until the entire evaluation process is complete so that students' optimism and fighting spirit remain intact throughout the exam period.

This practice at MTsN 3 Sleman aligns with Self-Determination Theory, which emphasizes the importance of three basic psychological needs that must be met to foster intrinsic motivation and mental well-being: the need for autonomy (feeling in control of one's own behavior), competence (feeling capable and effective in one's activities), and social connection (feeling connected and accepted in interpersonal relationships)[21]. A recent study on this theory was conducted in China using 593 questionnaires from five universities, showing that the theory remains highly relevant and widely applied, particularly in the fields of education and mental health[22]. A recent study highlights the application of Self-Determination Theory in enhancing students' intrinsic motivation.

Conclusion

The implementation of real-time monitoring in an educational context requires the establishment of clear and well-defined indicators that can facilitate the collection of consistent, reliable, and meaningful data. Key principles such as real-time data, real-time reporting, multiple cycles, and sensemaking—adapted from Rogers—serve as a crucial framework in the monitoring process, ensuring that the data collected can be promptly processed into valid information for decision-making and continuous improvement. The Jogja Madrasah Digital application has implemented these principles through QR code-based attendance tracking and assessment score monitoring, enabling real-time reporting that supports the evaluation process and adaptive learning in madrasahs.

---

[21] Ryan and Deci, "Self-Determination Theory and the Facilitation of Intrinsic MOtivation, Social Development and Well-Being."

[22] Yang, Chen, and Zhuang, "Self-Determination Theory and the Influence of Social Support, Self-Regulated Learning, and Flow Experience on Student Learning Engagement in Self-Directed e-Learning." https://doi.org/10.3389/fpsyg.2025.1545980

However, practices at MTsN 3 Sleman indicate that the integration of real-time monitoring technology must be tailored to on-site needs and conditions to be effective and efficient. MTsN 3 Sleman chose to conduct full attendance checks only during the first period and used manual methods for subsequent periods to save instructional time. Additionally, the real-time monitoring feature for assessment scores was not activated due to psychological considerations aimed at safeguarding students' mental well-being during exams, avoiding excessive stress, and maintaining their motivation to learn. This highlights the importance of carefully adapting technology use by taking the user context into account.

MTsN 3 Sleman's decision to postpone the real-time publication of grades is supported by the Self-Determination Theory proposed by Ryan and Deci. This theory asserts that the fulfillment of basic psychological needs—namely autonomy, competence, and social relatedness—is crucial for maintaining students' intrinsic motivation and mental well-being. Recent research in the fields of education and mental health also reinforces the relevance of this theory in the context of modern learning, showing that meeting students' psychological needs can enhance academic perseverance and support their mental well-being when facing academic challenges. Therefore, the integration of digital technology in education should continue to prioritize psychological and social aspects to foster an optimal learning environment.

Bibliography

Barbieri, M, V Pennazio, S P Sabatini, and M Gori. "Through Their Eyes: Enhancing Teacher Awareness of Visual Impairments via Extended Reality Simulations (REALTER)." *Frontiers in Education* 10 (2025). https://doi.org/10.3389/feduc.2025.1634253.

Belcher, Brian M, Rachel Claus, Rachel Davel, and Frank Place. "Indicators for Monitoring and Evaluating Research-for-Development: A Critical Review of a System in Use." *Enviromental and Sustainability Indicator* 24 (2024).

Chowdhury, Plaban Nath, Abhishek Vaish, Bipin Puri, and Raju Vaishya. "Medical Education Technology: Past, Present and Future." *Apollo Medicine* 21, no. 4 (May 24, 2024): 374–80. https://doi.org/10.1177/09760016241256202.

Creswel, John. W. *Re[1] J. W. Creswel, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications, 2008.Search Design: Qualitative, Quantitative, and Mixed Methods Approaches*. *Sage Publications*, 2008.

Ghorbani, N, M Alizadeh, A Sayarifard, A Khajavi, and P Yenawine. "The Eagle Eyes: An Intervention Utilizing Visual Thinking Strategies to Enhance the Observation Skills of Medical Students." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-06642-

9.

Khaairi, Mochamad, Rasim Rasim, and Yaya Wihardi. "Facial Expression Recognition of Students in Classroom Using Hybrid MobileNetV3-Vision Transformer with Token Downsampling." *Brilliance: Research of Artificial Intelligence* 5, no. 1 (2025): 510–20. https://doi.org/10.47709/brilliance.v5i1.6323.

Kholilurrohman, Muhammad. "Pengaruh Penggunaan Website Jogja Madrasah Digital Terhadap Literasi Membaca Bidang Pendidikan Agama Islam Di MAN 3 Bantul." UIN Sunan Kalijaga Yogyakarta, 2024.

Kurnia, Fitri. "Pendidikan Berbasis Teknologi." *Tarbawi : Jurnal Studi Pendidikan Islami* 10, no. 2 (2022): 205–21. https://doi.org/10.55757/tarbawi.v10i2.307.

Liu, L, J Qin, Y Pan, H Wang, X Lu, F Chu, L Wang, A Hao, B Yan, and S Yuan. "Evaluating a Preclinical Orthodontic Training Using Haptic-Enhanced VR Simulation System: A Longitudinal Study." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-07036-7.

Luo, Y, J Wang, Z Yan, J He, L Fu, S Wang, Y Han, et al. "Enhancing Laparoscopic Surgery Training: A Comparative Study of Traditional Models and Automated Error Detection System." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-07242-3.

Mellinas-Martínez, I, M P Pecci-Lloret, M R Pecci-Lloret, M G Adánez-Martínez, and J Guerrero-Gironés. "Clinical Simulation as an Effective Teaching Model in the Special Needs Dentistry Course." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-07882-5.

NSW. "MTsN 10 Sleman Gelar Pemantapan Program Jogja Madrasah Digital." MTsN 10 Sleman, 2023. https://mtsn10sleman.sch.id/mtsn-10-sleman-gelar-pemantapan-program-jogja-madrasah-digital/.

Nur Rois, Ikhwan. "Implementasi Aplikasi Jogja Madrasah Digital (JMD) Sebagai Media Pembelajaran Bahasa Arab Di Madrasah Aliyah Negeri 2 Kulon Progo." *KONIPBSA: Konferensi Inovasi Pembelajaran Bahasa Dan Sastra Arab* 4, no. 1 (2024). https://conference.uin-suka.ac.id/index.php/konipbsa/article/view/1603.

Palmisano, F, N Santuari, C Moletta, E Ambrosi, and A Rizzoli. "The Effect of a Team-Based Blended Simulation Training Program on Cardiopulmonary Resuscitation on Healthcare Professionals' Perception, Performance, and Costs: A Mixed-Method Study." *BMC Medical Education* 24, no. 1 (2024). https://doi.org/10.1186/s12909-024-06543-3.

Putri, Neni, Revi Permanasari, Tenti Elizah, Ririn Trinanda, Fadilah Azis, Idi Warsah, and Nurjannah Nurjannah. "Inovasi Pemanfaatan Teknologi Informasi Dalam Meningkatkan Efisiensi Manajemen Pendidikan Di

Mis 05 Darussalam." *Ar-Risalah Media Keislaman Pendidikan Dan Hukum Islam* 22, no. 1 (2024): 033. https://doi.org/10.69552/ar-risalah.v22i1.2372.

Rogers, Patricia. "Real-Time Evaluation." *Monitoring and Evaluation for Adaptive Management* 4 (2020). https://www.betterevaluation.org/monitori.

Rohlfsen, C, J Hall, M C Howell, D M Hershberger, A K Ashford, R Mullane, N Gollehon, T Custer, H Thompson, and P R Armijo. "Health Educators and Academic Leaders: A Developmental, Principles-Focused Program Evaluation Approach for Aspiring Clinician Educators in Graduate Medical Education." *Journal of Graduate Medical Education* 17, no. 4 (2025): 497–505. https://doi.org/10.4300/JGME-D-24-00904.1.

Ryan, Richard M., and Edward L. Deci. "Self-Determination Theory and the Facilitation of Intrinsic MOtivation, Social Development and Well-Being." *American NPsychologist* 55, no. 1 (2000): 68–78.

Stanley, A S, R M Kronlage, M J Reid, H G Rains, C J Kalynych, M N Lossius, J A Taylor, and C K Holland. "Integrating a Quality Improvement Experiential Platform into Medical Student Education." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-06709-7.

Sugiyono. "Jogja Madrasah Digital Sebagai Media Penilaian ASAS/PAS MTsN 6 Bantul." Kankemenag Bantul, 2024. https://bantul.kemenag.go.id/index.php/jogja-madrasah-digital-sebagai-media-penilaian-asaspas-mtsn-6-bantul.

Tekin, M, M O Yurdal, Ç Toraman, G Korkmaz, and İ Uysal. "Is AI the Future of Evaluation in Medical Education?? AI vs. Human Evaluation in Objective Structured Clinical Examination." *BMC Medical Education* 25, no. 1 (2025). https://doi.org/10.1186/s12909-025-07241-4.

Yang, Yanhua, Jianfeng Chen, and Xin Zhuang. "Self-Determination Theory and the Influence of Social Support, Self-Regulated Learning, and Flow Experience on Student Learning Engagement in Self-Directed e-Learning." *Frontiers in Psychology* 16 (2025). https://doi.org/10.3389/fpsyg.2025.1545980.