INNOVATIVE INTERACTIVE LEARNING STRATEGIES IN TEACHING QUR'AN AND HADITH AT THE MADRASAH TSANAWIYAH LEVEL

Winda Astuti[1], Nurlaili[2]

[1,2]Pendidikan Agama Islam Pascasarjana, Universitas Islam Negeri Fatmawati Soekarno Bengkulu
[1]e-mail: windaastuti0903@gmail.com

Abstract

This study explores a novel integration of technology-based interactive learning strategies in Al-Qur'an Hadith instruction at MTs Harsallakum Bengkulu. Unlike traditional approaches that rely heavily on lecturing and memorization, this model emphasizes active student engagement through digital tools such as interactive videos, quizzes, and group discussions. Using a qualitative Classroom Action Research (CAR) method over two cycles planning, implementation, observation, and reflection data were collected via observations, interviews, documentation, and student assessments. The findings reveal significant progress: student participation increased from 12 to 24, average scores rose from 65 to 82, and notable improvements were observed in enthusiasm, religious behavior, and teacher creativity. The novelty lies in contextualizing Islamic learning with modern technology, making religious education more relevant, participatory, and impactful. This approach not only enhances academic performance but also strengthens Islamic character, demonstrating its effectiveness in aligning traditional religious content with contemporary educational practices.

Keywords: strategy; interactive; qur'an; motivation

Abstrak

Penelitian ini mengusung pendekatan baru dalam pembelajaran Al-Qur'an Hadits melalui integrasi strategi pembelajaran interaktif berbasis teknologi di MTs Harsallakum Bengkulu. Berbeda dari model konvensional yang cenderung berpusat pada ceramah dan hafalan, pendekatan ini menekankan keterlibatan aktif siswa melalui media digital seperti video interaktif, kuis daring, dan diskusi kelompok. Menggunakan metode Penelitian Tindakan Kelas (PTK) dalam dua siklus perencanaan, pelaksanaan, observasi, dan refleks data dikumpulkan melalui observasi, wawancara, dokumentasi, dan penilaian hasil belajar. Hasil menunjukkan peningkatan signifikan: partisipasi siswa meningkat dari 12 menjadi 24 orang, nilai rata-rata naik dari 65 menjadi 82, serta terjadi peningkatan antusiasme, perilaku religius, dan kreativitas guru. Kebaruan (novelty) dari penelitian ini terletak pada pemanfaatan teknologi dalam konteks pendidikan agama Islam, yang mampu menjembatani antara nilai-nilai keislaman dan kebutuhan pembelajaran abad ke-21. Pendekatan ini terbukti tidak hanya meningkatkan hasil belajar secara akademik, tetapi juga membentuk karakter Islami yang lebih kuat melalui pembelajaran yang kontekstual, menarik, dan partisipatif.

Kata kunci: strategi; interaktif; al-qur'a;, motivasi

INTRODUCTION

Education plays a fundamental role in shaping individual character and advancing the progress of civilization. At the personal level, it cultivates moral values, critical thinking, and ethical awareness essential for meaningful social engagement. On a broader scale, education serves as the backbone of a cultured, progressive society that is capable of adapting to the complexities of the modern world. It is not merely a process of knowledge transmission, but also a means of instilling universal values such as honesty, responsibility, tolerance, and empathy values that are crucial for national development (Hermanto, 2022). The success of a nation's socio-economic and cultural advancement largely depends on the quality of its educational system.

To optimize educational outcomes, the learning process must target the holistic development of learners, encompassing cognitive, affective, and psychomotor domains. In this regard, learning strategies play a vital role as pedagogical tools used by educators to deliver content meaningfully and effectively. Learning is no longer expected to be a one-way transfer from teacher to student, but rather a dynamic, collaborative interaction involving multiple stakeholders. Educators are expected to design adaptive, engaging instruction using diverse resources to stimulate student motivation and active participation (Majid, 2012). In the context of Islamic Religious Education (IRE), selecting the appropriate instructional strategies is crucial to not only deliver religious knowledge, but also to internalize and actualize it in students' daily lives (Manshuruddin, 2021).

Despite these ideals, the implementation of IRE particularly in Qur'an and Hadith instruction at the Madrasah Tsanawiyah level continues to face numerous challenges. The dominant instructional methods remain traditional, relying heavily on lectures and rote memorization, with limited student engagement. Moreover, the integration of instructional technology is still minimal, due to factors such as limited infrastructure, teachers' low digital literacy, and the lack of professional development opportunities. These constraints have contributed to a decline in student interest and difficulties in contextualizing Qur'anic values in real-life

situations, thereby hindering the formation of strong Islamic character as intended (Ansar et al., 2023).

As a response to these challenges, there is a growing need for innovative and interactive learning approaches that bridge curricular demands, technological developments, and the learning characteristics of today's students. This includes the integration of digital tools such as projectors, educational videos, online platforms, and other interactive media that can enhance student involvement in the learning process. Qur'an and Hadith instruction should not only focus on knowledge acquisition, but also aim to foster affective and psychomotor competencies enabling students to understand, embody, and apply Islamic values in everyday life. Innovative learning environments contribute to a more engaging and emotionally resonant experience, making religious values more relevant and relatable to students (Olivia et al., 2024).

Based on this context, the present study aims to identify and develop an innovative, interactive learning model specifically for Qur'an and Hadith instruction in Madrasah Tsanawiyah. This research focuses on MTs Harsallakum Bengkulu, an Islamic educational institution committed to improving the quality of religious instruction, yet still facing challenges in implementing effective, engaging teaching strategies. Preliminary observations revealed that the existing instructional approach remains largely conventional, dominated by lecturing and memorization, with minimal use of technology or student-centered methods. Technological integration is still limited due to infrastructural barriers and insufficient teacher training. Consequently, student motivation and comprehension of Qur'anic values remain low.

The novelty of this study lies in the contextualized integration of digital interactive tools within Islamic education, specifically in Qur'an and Hadith instruction—a field that has received limited attention in digital pedagogical innovation. The enhancement of Learning Outcomes (LO) was essential, as preliminary classroom observations revealed that students' understanding of Qur'anic and Hadith concepts tended to be superficial, relying heavily on rote memorization without contextual interpretation. In addition, minimal digital

engagement and teacher-centered instructional methods limited students' motivation and participation. To address these issues, this research designed and implemented an innovative learning model that combines technology, active student engagement, and reinforcement of religious values. Empirical evidence from two action research cycles demonstrated notable progress: active participation rose from 40% to 80%, average comprehension scores improved from 65 to 82, and observable growth occurred in enthusiasm, religious conduct, and teacher creativity. These findings confirm that the integration of digital interactive strategies effectively enhances both cognitive and affective learning domains. Moreover, the model not only elevates learning outcomes at MTs Harsallakum but also serves as a replicable framework for other Islamic schools striving to modernize pedagogical practices while maintaining spiritual integrity. Ultimately, the study contributes to fostering deeper Qur'anic comprehension, strengthening students' religious character, and preparing them to navigate the moral and intellectual challenges of contemporary society.

METHODS

This study employed a qualitative approach using the Classroom Action Research (CAR) method to design, implement, and evaluate a technology-based interactive learning strategy in the instruction of Qur'an and Hadith at MTs Harsallakum Bengkulu. The research was conducted in multiple cycles, each comprising four distinct phases: planning, implementation, observation, and reflection. The participants included a Qur'an and Hadith teacher and eighth-grade students enrolled in the subject.

Data were collected through various qualitative techniques, including direct classroom observations, semi-structured interviews with teachers and students, documentation of learning activities, and formative assessments to evaluate learning outcomes. The use of triangulated data sources ensured the validity and credibility of the findings. The qualitative data were analyzed using an interactive model involving data reduction, data display, and conclusion drawing/verification in each cycle. Data reduction was conducted by organizing and summarizing field

notes, interview transcripts, and assessment results to identify relevant themes. The reduced data were then displayed in narrative and tabular forms to highlight observable changes in participation, achievement, enthusiasm, religious behavior, and teacher creativity.

This Classroom Action Research (CAR) was designed to be completed within two cycles because the improvement targets established at the outset were achieved by the end of the second cycle. The indicators of success in this study included: (1) an increase in active student participation to at least 75% of the class, (2) a rise in the average Qur'an–Hadith comprehension score to a minimum of 80, (3) a noticeable enhancement in students' enthusiasm and questioning behavior during learning activities, (4) consistent demonstration of religiously grounded conduct such as discipline and respect, and (5) an increase in teacher creativity through the varied use of instructional methods and media. By the end of Cycle II, all these indicators had been met, demonstrating that the implemented interactive learning strategy effectively improved both cognitive and affective aspects of learning. Consequently, further cycles were deemed unnecessary.

The methodology was designed not only to measure academic achievement but also to capture shifts in student participation, enthusiasm, religious behavior, and teacher creativity providing a holistic evaluation of the learning model. This iterative process aligns with the action research framework, allowing for continuous refinement and contextual adaptation of the instructional strategy within a real classroom setting.

FINDINGS AND DISCUSSION

The observational data were systematically collected using structured observation sheets to capture the frequency and quality of student behaviors during classroom activities, including participation, responsiveness, collaboration, and engagement with learning media. The data were analyzed descriptively to compare behavioral patterns across the pre-cycle, Cycle I, and Cycle II, enabling the identification of progressive changes in classroom dynamics. This approach is consistent with prior studies highlighting the value of structured observation in

examining classroom engagement and competency-based learning (Haddad & Saade, 2024; Oh et al., 2024; Holly, Porter, & Vitale, 2024).

The impact of interactive learning strategies was examined across five key dimensions: student participation, academic achievement, learning enthusiasm, religious behavior, and teacher creativity. Figure 1 presents the number of students actively engaged in Qur'an and Hadith instruction before the CAR, in Cycle I, and in Cycle II, based on data obtained from the Student Activity Observation Sheet through direct classroom observation.
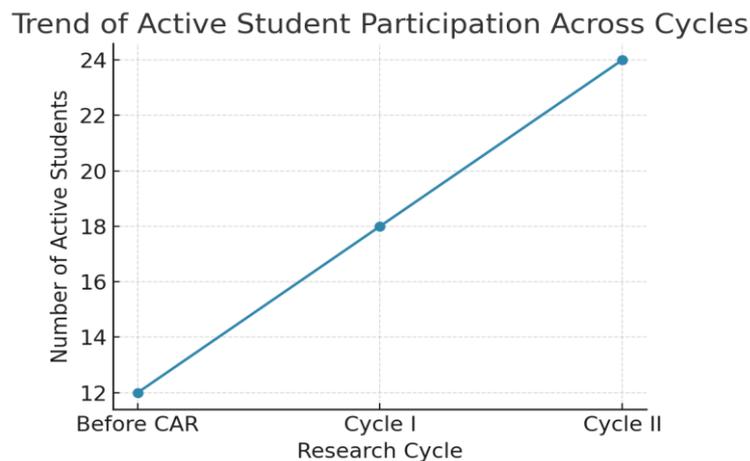

Figure 1 Trend of Active Student Participation Across Cycles

Figure 1 demonstrates a consistent increase in active student participation in Qur'an and Hadith learning, rising from 12 of 30 students (40%) before the Classroom Action Research (CAR) to 18 (60%) in Cycle I and 24 (80%) in Cycle II, as documented through the Student Activity Observation Sheet. This sustained improvement reflects not only quantitative gains but also qualitative behavioral changes, progressing from passive participation before the intervention to responsive engagement in Cycle I and spontaneous, independent collaboration in Cycle II. The findings support Ceylan and Comoglu (2024), who argue that collaborative and goal-oriented learning fosters sustained engagement through structured interaction. The interactive strategies employed—combining group discussions, open-ended questioning, and digital media integration—expanded opportunities for student contribution and supported less confident learners, aligning with socio-constructivist perspectives emphasizing collaboration and

meaningful digital interaction (Akmansyah, 2024; Hapsari et al., 2023; López-Alonso et al., 2010). This approach also reflects the objectives of Qur'an and Hadith education in cultivating knowledgeable and socially responsible learners (Basir et al., 2022) and is consistent with evidence on the effectiveness of media-integrated instruction in enhancing engagement (Chen & Jiang, 2022; Alelaimat et al., 2020). The parallel improvements in enthusiasm, questioning behavior, and responsiveness to visual media indicate deeper cognitive and affective engagement, supporting Ibanez and Pentang (2021) findings on the role of socio-constructivist environments in promoting active and prosocial participation. These results demonstrate that intentionally designed, media-rich interactive strategies can substantially transform student engagement in Islamic education, although further methodological refinements may enhance data reliability. Building on these engagement gains, the following chart illustrates improvements in students' academic understanding as reflected in formative assessment scores.

This chart presents the improvement in students' average formative assessment scores across each cycle. The data were obtained through Formative Assessments designed to measure students' understanding of Qur'an and Hadith content.
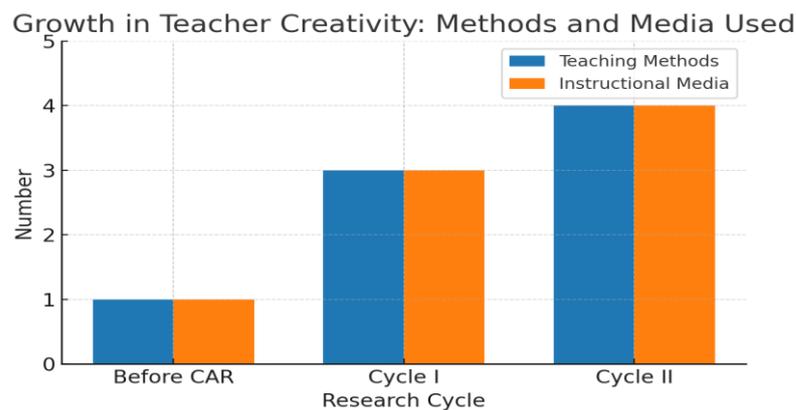

Figure 2 Improvement in Qur'an–Hadith Comprehension Scores

The chart shows a substantial increase in students' average formative assessment scores, rising from 65 before the intervention to 82 by the end of Cycle II. These gains indicate both quantitative improvement and a deeper level of comprehension of Qur'an and Hadith content, suggesting that the instructional

approach supported cumulative learning through progressive conceptual scaffolding. A key contributor to this improvement was the integration of video-based learning and interactive online quizzes, which provided multimodal representations that connected abstract religious concepts to real-life contexts, consistent with prior findings on technology-enhanced Islamic learning (Muttaqin & Rohim, 2022; Ahmadi & Khoiriyah, 2020; Anggraeni & Maryanti, 2021). This trend also aligns with socio-constructivist perspectives emphasizing contextual learning and active interaction, where immediate feedback from online quizzes supports comprehension and engagement, despite limitations in assessing open-ended responses (Çekiç, 2021). By actively engaging with digital materials and applying their meanings in discussion and practice, students demonstrated not only improved knowledge acquisition but also the ability to internalize religious principles in decision-making and behavior.

The visualization below shows the development of three learning environment indicators: enthusiasm, question-asking activity, and response to visual media. Data were collected through the Learning Environment Observation Sheet, which combined direct classroom observations and documentation of learning activities.
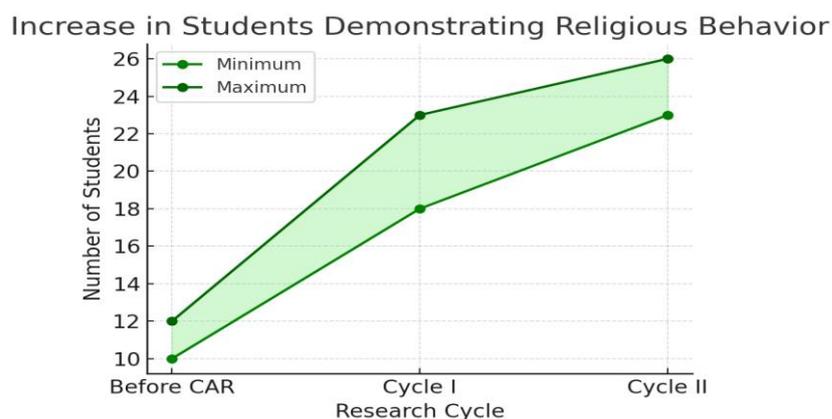

Figure 3. Progress of Learning Environment Indicators

The observed increases in learning enthusiasm, question-asking frequency, and responsiveness to visual media indicate a more engaging and motivating classroom environment (Datunsolang & Amiruddin, 2023; Khoriyah & Muhid, 2022). This trend is consistent with findings by Anggraeni and Maryanti (2021),

who reported that video-based learning media enhance students' focus and engagement in Islamic Religious Education, and with socio-constructivist perspectives highlighting the role of interaction in fostering activeness, prosocial behavior, and conceptual understanding (Ibanez & Pentang, 2021). Observational evidence showed that enthusiasm was reflected in sustained attentiveness, increased eye contact, and active participation, while question-asking became more frequent and relevant, and responsiveness to visual media was evident through verbal reactions and follow-up questions, indicating behavioral rather than self-reported improvements (Yang & Zhang, 2024). The use of visual media functioned as both a cognitive scaffold and an affective stimulus, supporting comprehension of abstract religious concepts and stimulating curiosity, in line with Chen and Jiang (2022), and reinforcing evidence that interactive formative tasks contribute to academic engagement and performance.

The following figure depicts the range of students consistently demonstrating behaviors aligned with Islamic values, such as discipline, respect, and responsibility. Data were derived from the Religious Behavior Observation Sheet and supported by semi-structured interviews with teachers and students.
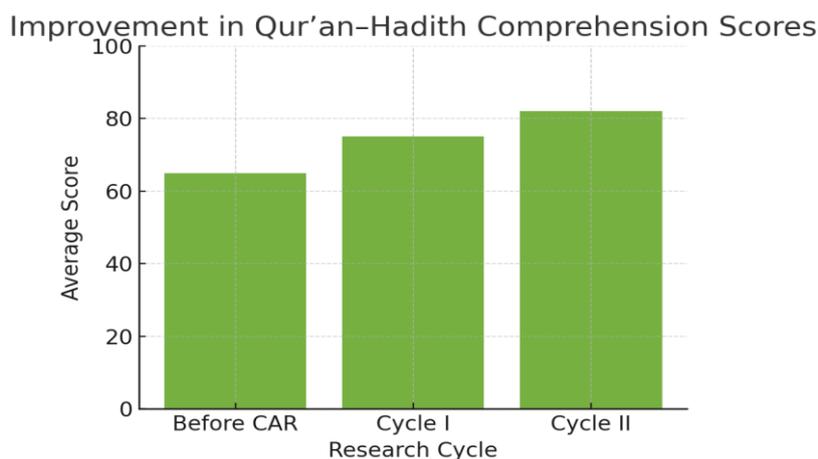

Figure 4 Increase in Students Demonstrating Religious Behavior

Observational and interview data indicate a clear increase in students' religiously grounded behaviors in daily school interactions, demonstrating that the integration of Islamic values in Qur'an–Hadith instruction actively shapes students' attitudes and decision-making rather than remaining theoretical. These findings

support value-based education perspectives emphasizing character formation and moral consistency (Ritonga et al., 2025) and align with evidence that Qur'anic and Hadith-based instruction contributes to the development of a knowledgeable and morally responsible generation (Basir et al., 2022). Interviews further revealed that students internalized these values through teacher modeling, peer interaction, and contextualized classroom practices, reflecting socio-constructivist views that moral learning is strengthened in interactive environments (Ibanez & Pentang, 2021). The consistency of observed behaviors was corroborated through qualitative interview data used to triangulate observational findings, enhancing the validity of the results (Schlunegger et al., 2024; Morgan, 2024). Collectively, these outcomes suggest that embedding Islamic values within instructional design supports sustained character development beyond the classroom context.

This chart displays the progression in the number of teaching methods and instructional media used by the teacher in each cycle. Data were obtained through the Teacher Strategy and Media Observation Sheet, sourced from documentation of classroom learning activities.
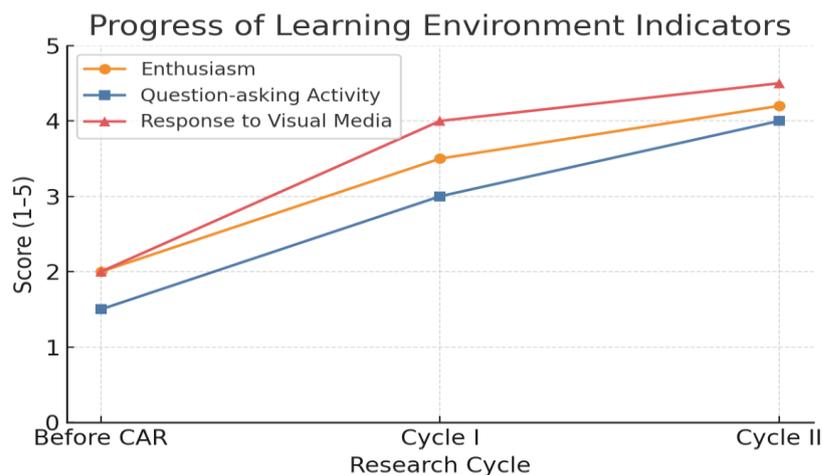

Figure 5 Growth in Teacher Creativity: Methods and Media Used

The documented increase in instructional methods and learning media reflects not only the teacher's creativity but also pedagogical adaptability in addressing students' evolving needs, consistent with interactive learning principles that emphasize strategy variation to sustain engagement and deepen comprehension (Ritonga et al., 2025). The expanded use of video-based resources, online quizzes,

and collaborative platforms aligns with evidence that well-integrated digital formative tools enhance feedback quality, learning analytics, and student motivation (Çekiç, 2021), and supports findings that video-based media in Islamic Religious Education improve focus and accessibility of abstract concepts when quality standards are maintained (Anggraeni & Maryanti, 2021). By diversifying instructional approaches, the teacher applied socio-constructivist principles through multimodal interaction and varied learning representations (Ibanez & Pentang, 2021; López-Alonso et al., 2010), fostering more student-centered Qur'an–Hadith learning experiences.

Overall, the observational data were analyzed descriptively by identifying behavioral trends and changes across cycles, supported by graphical representations to enhance clarity rather than replace narrative interpretation.

Table 1 Development of Learning Aspects in Qur'an–Hadith Instruction Across Research Cycles

No	Learning Aspect	Measurement Indicator	Before CAR	Cycle I	Cycle II
1	Student Participation	Number of actively engaged students (out of 30)	12	18	24
2	Qur'an-Hadith Comprehension	Average score on formative assessments	65	75	82
3	Learning Environment	Enthusiasm (scale 1–5)	2	3.5	4.2
		Question-asking activity (scale 1–5)	1.5	3	4
		Response to visual media (scale 1–5)	2	4	4.5
4	Religious Character Development	Students demonstrating religious behavior	10–12	18–23	23–26
5	Teacher Creativity in Instruction	Instructional methods applied	1 method	3	4
		Types of learning media used	1 medium	3	4

Table 1 summarizes consistent improvements across all learning aspects from the pre-cycle to Cycle II, including student participation, Qur'an–Hadith comprehension, learning environment, religious character development, and teacher creativity. These findings indicate that the interactive and media-integrated instructional strategies effectively enhanced both classroom dynamics and learning outcomes, providing a clear basis for the study's conclusions.

CONCLUSION

The implementation of an interactive, technology-based, and engaging learning strategy proved effective in improving not only students' academic achievement but also affective dimensions such as motivation, enthusiasm, religious behavior, and active participation. The observed enhancements in engagement, formative assessment scores, learning atmosphere, religious character, and teacher creativity indicate that experiential and technology-integrated learning models create an inclusive, dynamic, and enjoyable learning environment. These findings confirm that pedagogical innovations grounded in interactive and media-rich approaches, when aligned with Islamic educational values, can simultaneously strengthen cognitive understanding and character development, thereby contributing meaningfully to the overall quality of Qur'an and Hadith instruction.

REFERENCES

Ahmadi, F., & Khoiriyah, E. S. (2020). Strategi Dan Inovasi Pembelajaran Di Masa Pandemi. *Prosiding Seminar Nasional Pgsd Ust 2020: Inovasi Pendidikan Di Era Milenial*.

Akmansyah, H. (2024). *Implementation Of Al-Qur'an Hadith Learning With The Paikem Strategy On Character Building Of Students At Min 4 Way Kanan*. Https://Www.Attractivejournal.Com/Index.Php/Aj/

Alelaimat, A. M., Ihmeideh, F. M., & Alkhawaldeh, M. F. (2020). Preparing Preservice Teachers For Technology And Digital Media Integration: Implications For Early Childhood Teacher Education Programs.

International Journal Of Early Childhood, *52*(3), 299–317. Https://Doi.Org/10.1007/S13158-020-00276-2

Anggraeni, R., & Maryanti, R. (2021). Implementation Of Video Learning Media In Islamic Religious Education Subjects. *Indonesian Journal Of Multidiciplinary Research*, *1*(2), 257–266. Https://Doi.Org/10.17509/Ijomr.V1i2.37609

Ansar, A., Zakariah, Z., & Nursyalim, N. (2023). Strategi Guru Pendidikan Agama Islam Dalam Mewujudkan Pembelajaran Interaktif, Inspiratif, Menyenangkan, Menantang, Dan Memotivasi (I2m3) Di Smp Negeri 2 Samaturu. *Journal Syntax Idea*, *5*(8).

Basir, Abd., Suri, S., Nirwana An, A., Sholihin, R., & Hayati, H. (2022). Relevance Of National Education Goals To The Guidance Of The Al-Quran And Al-Hadith. *Linguistics And Culture Review*, *6*, 122–137. Https://Doi.Org/10.21744/Lingcure.V6ns5.2088

Çekiç, A. (2021). *A Review Of Digital Formative Assessment Tools: Features And Future Directions*.

Ceylan, E., & Comoglu, I. (2024). Action Research In Initial Efl Teacher Education: Emerging Insights From A Car Project. *Educational Action Research*, *32*(3), 438–453. Https://Doi.Org/10.1080/09650792.2023.2187854

Chen, X., & Jiang, Z. (2022). Teaching Practice For Digital Media Design In The Context Of Media Integration. *Mobile Information Systems*, *2022*, 1–11. Https://Doi.Org/10.1155/2022/4160956

Datunsolang, A. & Amiruddin. (2023). Strategi Pembelajaran Guru Al-Qur'an Hadis Dalam Meningkatkan Minat Belajar Peserta Didik Baru Kelas X Madrasah Aliyah Alkhairaat Bintauna Kabupaten Bolaang Mongondow Utara. *Journal Of Islamic Education: The Teacher Of Civilization*, *4*(2), 153–154.

Haddad, F., & Saade, J. S. (2024). *Performance of ChatGPT on ophthalmology-related questions across various examination levels: Observational study.* JMIR Education, 10, e50842. https://doi.org/10.2196/50842

Hapsari, Y., Rahmi, L., Asoka, E., Devani, F. T., & Utari, M. (2023). Sosialisasi Pemanfaatan Aplikasi Belajar Membaca Al-Qur'an Dan Hukum Bacaan Di Tk Tpa Darul Mujahidin Unit 255 Palembang. *Jurnal Masyarakat Madani Indonesia*, *2*(3), 174–178. Https://Doi.Org/10.59025/Js.V2i3.95

Hermanto. (2022). Strategi Pembelajaran Inovatif Pendidikan Agama Islam Dengan Media Powerpoint Dalam Meningkatkan Mutu Pendidikan Di Smp Negeri 3 Mattirobulu. *Edu-Leadership*, *1*(2).

Holly, C., Porter, S., & Vitale, T. R. (2024). *Grading participation in the classroom: The assumptions, challenges, and alternatives.* Teaching and Learning, 19(1), 27–33. https://doi.org/10.1016/j.teln.2023.06.020

Ibanez, E., & Pentang, J. T. (2021). Socio-Constructivist Learning And Teacher Education Students' Conceptual Understanding And Attitude Toward Fractions. *Indonesian Research Journal In Education |Irje|*, *5*(1), 23–44. Https://Doi.Org/10.22437/Irje.V5i1.12187

Khoriyah, R., & Muhid, A. (2022). Inovasi Teknologi Pembelajaran Dengan Menggunakan Aplikasi Wordwall Website Pada Mata Pelajaran Pai Di Masa Penerapan Pembelajaran Jarak Jauh: Tinjauan Pustaka. *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan Dan Pembelajaran*, *9*(3), 192–205.

López-Alonso, C., Fernández-Pampillón, A., De-Miguel, E., & Pita, G. (2010). "Learning To Research" In A Virtual Learning Environment: A Case Study On The Effectiveness Of A Socio-Constructivist Learning Design. In G. A. Papadopoulos, W. Wojtkowski, G. Wojtkowski, S. Wrycza, & J. Zupancic (Eds.), *Information Systems Development: Towards A Service Provision Society* (Pp. 877–884). Springer Us. Https://Doi.Org/10.1007/B137171_92

Majid, A. (2012). *Strategi Pembelajaran*. Pt Remaja Rosdakarya.

Manshuruddin. (2021). Strategi Inovatif Pembelajaran Pendidikan Agama Islam Pada Masa Pandemi Covid-19 Di Smp Panca Budi Medan. *Jurnal Kajian Islam Kontemporer (Jurkam)*, *2*(1), 16–24.

Morgan, H. (2024). *Using triangulation and crystallization to make qualitative studies trustworthy and rigorous*. The Qualitative Report, 29(7), 1844–1856. https://doi.org/10.46743/2160-3715/2024.6071

Muttaqin, A. I., & Rohim, N. (2022). Penerapan Strategi Pembelajaran Inkuiri Pada Mata Pelajaran Al-Qur'an Hadits Kelas Vii Mts Miftahul Huda Watukebo Blimbingsari. *Tarbiyatuna: Kajian Pendidikan Islam*, *6*(1), 96–98.

Oh, J., Lee, W., Ki, S., Suh, J., Hwang, S., & Lee, J. (2024). *Assessment of preoperative anxiety and influencing factors in patients undergoing elective surgery: An observational cross-sectional study.* Medicina, 60(3), 403. https://doi.org/10.3390/medicina60030403

Olivia, O., Sabri, A., & Sasmi, N. (2024). Analisis Model Pembelajaran Inovatif Dalam Pendidikan Agama Islam. *Holistik Analisis Nexus*, *1*(6), 328–334.

Ritonga Et. (2025). Strategi Pembelajaran Pendidikan Agama Islam: Telaah Dalam Perspektif Al-Qur'an. *Jurnal Inovasi, Evaluasi, Dan Pengembangan Pembelajaran (Jiepp)*, *5*(1), 143–151.

Schlunegger, M. C., Zumstein-Shaha, M., & Palm, R. (2024). *Methodologic and data-analysis triangulation in case studies: A scoping review*. Western Journal of Nursing Research, 46(8), 1–15. https://doi.org/10.1177/01939459241263011

Yang, C., & Zhang, Y. (2024). *Public emotions and visual perception of the East Coast Park in Singapore: A deep learning method using social media data.* Urban Forestry & Urban Greening, 94, 128285. https://doi.org/10.1016/j.ufug.2024.128285