Universitas Muhammadiyah Sumatera Barat, Padang, West Sumatera, Indonesia
Ruhama : Islamic Education Journal
p-ISSN:2615-2304, e-ISSN:2654-8437// Vol. 9 No. 1 Mei 2026, pp. 01-16
https://doi.org/10.31869/ruhama.v9i1

Development of Wordwall Learning Media Based on Student Characteristics in Sejarah Kebudayaan Islam at Madrasah Ibtidaiyyah

Wan Tasya Luthfiah Anwar[a, 1], Siti Halimah[b, 2], Haidir[c, 3]
[abc]Universitas Islam Negeri Sumatera Utara, Indonesia
[1]wantasyaluthfiahanwar@gmail.com,[2]sitihalimah@uinsu.ac.id,[3]haidir@uinsu.ac.id*

ARTICLE INFO

Article History:
Received: 2026-05-01
Revised: 2026-05-11
Accepted: 2026-05-18
Published: 2026-05-18

***Corresponding Author:**
Name: Wan Tasya Luthfiah Anwar
Email: wantasyaluthfiahanwar@gmail.com
Phone/WA:

ABSTRACT

This study aims to develop and evaluate Wordwall-based learning media tailored to student characteristics in Islamic Cultural History at Madrasah Ibtidaiyyah Swasta Azrina Medan. Focus on Wordwall learning media development enables this research to address the need for innovative digital tools in Islamic education. This research employed the Research and Development (R&D) method, following the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model. Data were collected through observation, interviews, questionnaires, and tests, using both qualitative and quantitative analysis. Initial findings indicated a dominance of visual and kinaesthetic learning styles among students. Research findings indicate that: 1) The development process successfully followed the five stages of the ADDIE model; 2) Expert validation yielded a score of 91.66% from both media and material specialists, categorising the media as "highly feasible"; 3) The effectiveness test showed significant improvement in student learning outcomes, with N-Gain scores in limited trials reaching 0.87 (87% effectiveness) for auditory/visual styles and 0.88 (88%) for kinaesthetic styles. In broader trials, N-Gain scores reached 0.93 (93%) for visual, 0.92 (92%) for auditory, and 0.86 (86%) for kinaesthetic styles, all falling within the "highly effective" category; 4) Practicality tests resulted in average scores of 3.5 from teachers and 3.4 from students, both classified as "highly practical". The developed character-based Wordwall media for the Sunan Kalijaga material was found to be valid, practical, and highly effective in improving student learning outcomes at Madrasah Ibtidaiyyah.

Keyword
Islamic cultural history; learning media development; madrasah ibtidaiyyah; student characteristics; wordwall

Abstrak

Penelitian ini bertujuan untuk mengembangkan dan mengevaluasi media pembelajaran berbasis Wordwall yang disesuaikan dengan karakteristik siswa pada mata pelajaran Sejarah Kebudayaan Islam (SKI) di Madrasah Ibtidaiyyah Swasta Azrina. Fokus pengembangan media pembelajaran Wordwall dalam penelitian ini bertujuan untuk memenuhi kebutuhan terhadap alat pembelajaran digital inovatif dalam pendidikan Islam. Penelitian ini menggunakan metode Research and Development (R&D) dengan mengikuti model ADDIE (Analysis, Design, Development, Implementation, and Evaluation). Data dikumpulkan melalui observasi, wawancara, angket, dan tes,

Wan Tasya Luthfiah Anwar. (2026). Development of Wordwall Learning Media Based on Student Characteristics in Sejarah Kebudayaan Islam at Madrasah Ibtidaiyyah. Ruhama :Islamic Education Journal, Vol. 9, (No. 1), page. 01-16 DOI: //doi.org/10.31869/ruhama.v9i1

dengan menggunakan analisis kualitatif dan kuantitatif. Temuan awal menunjukkan dominasi gaya belajar visual dan kinestetik di pada peserta didik. Hasil penelitian menunjukkan bahwa: 1) Proses pengembangan berhasil mengikuti lima tahapan model ADDIE; 2) Validasi ahli memberikan skor sebesar 91,66% baik dari ahli media maupun ahli materi, yang mengategorikan media tersebut sebagai "sangat layak"; 3) Uji efektivitas menunjukkan peningkatan signifikan pada hasil belajar peserta didik, dengan skor N-Gain pada uji coba terbatas mencapai 0,87 (efektivitas 87%) untuk gaya belajar auditori/visual dan 0,88 (88%) untuk gaya belajar kinestetik. Uji coba luas menghasilkan skor N-Gain mencapai 0,93 (93%) untuk visual, 0,92 (92%) untuk auditori, dan 0,86 (86%) untuk kinestetik, yang semuanya masuk dalam kategori "sangat efektif"; 4) Uji praktikalitas menghasilkan skor rata-rata 3,5 dari guru dan 3,4 dari siswa, yang keduanya diklasifikasikan sebagai "sangat praktis." Media Wordwall berbasis karakter pada materi Sunan Kalijaga yang dikembangkan terbukti valid, praktis, dan sangat efektif dalam meningkatkan hasil belajar peserta didik di Madrasah Ibtidaiyyah.

Kata Kunci *Karakteristik siswa; madrasah ibtidayiyyah; pengembangan media; sejarah kebudayaan islam: wordwall.*

INTRODUCTION

Madrasah Ibtidaiyyah (MI) continues to encounter substantial challenges in implementing interactive learning environment in Sejarah Kebudayaan Islam (SKI). Instructional activities in many classrooms remain dominated by teacher centred lectures and reliance on conventional textbooks, resulting in passive student participation (Setiawan et al., 2024). Empirical observations in several Islamic elementary institutions also indicate that technological facilities such as projectors and internet access are rarely integrated into instructional activities despite their availability (Fatah et al., 2025; Rahayu et al., 2025). Limited variation in instructional media contributes to low learning motivation and weak comprehension of Islamic historical narratives among students (Ahmadi et al., 2023; Ainun et al., 2025). Conditions of this kind indicate the importance of aligning instructional practices with developmental characteristics of primary school learners.

Characteristics of primary school learners require instructional approaches that emphasise visual stimulation, interaction, and active engagement (Zubaidah et al., 2025). Students at the elementary level demonstrate strong interest in game-based activities and digital interaction as part of their daily experiences (Farida & Lusiana, 2024; Saleh & Ahmed Althaqafi, 2022). Learning environments that fail to accommodate these sensory characteristics frequently lead to cognitive fatigue, reduced concentration, and classroom disengagement (Eliwati, 2023; Pahru et al., 2023). Compatibility between learning media and student characteristics therefore becomes an essential consideration in developing more interactive SKI instruction. Attention toward suitable instructional media consequently becomes necessary to support effective classroom learning.

Lack of instructional media diversity has repeatedly been associated with low student engagement in Islamic education learning environments (Putra et al., 2024; Ubaedullah et al., 2025). Monotonous storytelling approaches without visual or interactive support often reduce students' interest and participation during history instruction (Akrim, 2022; Restalia & Khasanah, 2025). Recent discussions on digital pedagogy demonstrate that interactive platforms can strengthen learning motivation and classroom involvement. Empirical exploration concerning the integration of digital media with visual, auditory, and kinaesthetic learning preferences in SKI instruction,

however, remains limited. Conditions of this kind encourage the development of learning media capable of accommodating diverse student characteristics within Islamic history instruction.

Wordwall has the potential to address instructional limitations through interactive learning features that support student participation and sensory engagement (Zulfah, 2023). Interactive quizzes, matching activities, and visual tasks available in the platform may assist teachers in transforming historical material into more accessible and engaging learning experiences (Ardiansyah & Wahyuddin, 2025; Damayanti & Carli, 2026). Integration between Wordwall features and student characteristics is expected to improve learning motivation while facilitating deeper understanding of Islamic historical content (Annur et al., 2025). Systematic development procedures are therefore required to ensure that resulting media remains relevant to classroom needs and learning objectives.

Development of instructional media through the ADDIE model offers a systematic framework for producing educational products that are valid and relevant to classroom needs (Almelhi, 2021). Stages of analysis, design, development, implementation, and evaluation enable the media to be constructed based on empirical conditions identified in the learning environment (Li & Cheong, 2023). Product feasibility can also be examined comprehensively through qualitative and quantitative validation procedures involving material and media experts (Abuhassna et al., 2024; Adeoye et al., 2024). Structured development procedures also provide opportunities to integrate instructional design with specific student learning characteristics.

Integration of student sensory characteristics into the design structure of Wordwall learning media becomes an important aspect in strengthening adaptive SKI instruction. Research concerning educational technology in Islamic learning environment generally focuses on digital utilisation without specifically synchronising media features with visual, auditory and kinaesthetic learning needs. This study develops Wordwall learning media specifically adapted to the characteristics of Madrasah Ibtidaiyyah students and the contextual content of Islamic cultural history. Findings of this research are expected to contribute theoretically to the development of adaptive digital pedagogy in Islamic education while supporting teachers in creating more interactive and student-oriented learning environments.

METHOD

This study employed the Research and Development (R&D) method to develop Wordwall learning media based on student characteristics in Sejarah Kebudayaan Islam (SKI) learning at Madrasah Ibtidaiyah. Development procedures adopted the ADDIE model consisting of analysis, design, development, implementation, and evaluation stages (Adeoye et al., 2024; Li & Cheong, 2023). Selection of the model was based on its systematic and flexible structure in supporting instructional media development. Research activities were conducted at Madrasah Ibtidaiyah Swasta Azrina Medan during the second semester of the 2025/2026 academic year from January to April 2026. Participation consisted of sixth grade students, SKI teachers, and validators including material experts, media experts, and language experts. Sampling techniques employed purposive and cluster sampling adjusted to research needs and classroom availability.

Data collection techniques included observation, interviews, questionnaires, tests, and documentation. Observations and interviews were conducted to identify classroom conditions, student characteristics, and instructional problems during SKI learning. Questionnaires were administered to students, teachers, and validators to evaluate learning characteristics, media feasibility, practicality, and student responses toward Wordwall learning media. Learning outcome tests in the form of pre-test and post-test were used to measure students' understanding of Walisongo material before and after implementation. Validation procedures involved material experts, media experts, and language experts. Material validation examined content suitability, learning objectives, and instructional relevance, whereas media validation focused on interface appearance, readability, accessibility, and suitability of interactive activities with student characteristics. Validation instruments used a Likert scale and were analysed descriptively using percentage calculations to determine media feasibility.

Analysis activities involved identification of instructional problems, student learning characteristics, and classroom conditions through preliminary observations and interviews. Design activities focused on preparation of media structures, visual colour composition, interface appearance, interactive activities, and learning materials adapted to visual, auditory, and kinaesthetic characteristics of students. Development activities involved construction of Wordwall based learning media followed by expert validation and product revision stages. Implementation activities were conducted through limited and broader trials. Limited trials involved small group and large group testing to identify weaknesses related to media operation, instructional flow, and student responses during learning activities.

Broader trials were conducted after product revisions by involving another class in the implementation process. Pre-test activities were conducted before implementation to identify students' initial understanding of Walisongo material, whereas post-test activities were administered after implementation to measure improvement in learning outcomes. Test instruments consisted of multiple choice and essay questions adjusted to instructional indicators and cognitive levels of sixth grade students. Improvement in student learning outcomes was analysed using the normalised gain score (N-Gain). Observation, interviews, and questionnaires were also conducted during implementation to obtain comprehensive information regarding practicality and effectiveness of developed media.

Evaluation activities consisted of formative and summative evaluation. Formative evaluation was conducted continuously during development and validation stages to improve product quality based on expert suggestions and trial findings. Summative evaluation was conducted after broader implementation to examine effectiveness and practicality of the developed media through analysis of learning outcomes, student responses, and teacher feedback. Qualitative data obtained from observations, interviews, and validator comments were analysed through data reduction, data display, and conclusion drawing techniques. Quantitative data obtained from questionnaires and learning outcome tests were analysed descriptively using percentage calculations, validity criteria, practicality criteria, and N-Gain analysis to determine effectiveness of developed Wordwall learning media.

RESULTS&DISCUSSION

Presentation of the research results begins with an identification of learning characteristics found among students during the learning process. These initial findings serve as a fundamental basis for designing instructional media that align with the actual needs of the classroom. Data regarding sensory modalities in the limited trial group show that 8 students or 40% of the participants possess a visual learning style. Kinaesthetic learners account for 7 students or 35% while auditory preferences are limited to only 5 students or 25% of the total. Results from the broader trial class confirm this trend with visual and kinaesthetic styles each representing 35% and auditory styles representing 30% of the population.

The high prevalence of visual and kinaesthetic tendencies necessitates a shift from conventional verbal lectures toward more interactive pedagogical strategies. Meaningful engagement in SKI emerges when instructional tools provide both aesthetic stimulation and opportunities for active participation. Wordwall is proposed as a strategic intervention because the mechanics of the software allow for the synchronisation of images and game-based activities. Synchronising these digital features with the identified psychological profiles of the learners ensures that the instructional process becomes more inclusive and effective within the Madrasah learning environment.

The Analysis Stage

The analysis stage is conducted to identify the root causes of performance gaps within the instructional process. Every action taken during this phase is intended to determine specific instructional needs that can bridge the gap between current outcomes and desired learning goals. Potential strategies for closing these performance gaps are proposed based on empirical evidence regarding success in the classroom. This foundational phase serves as the essential basis for creating an instructional design that addresses the actual needs of the learners.

Need analysis is performed through interviews with the subject teacher to explore the obstacles occuring during SKI lessons. Results from these consultations reveal that the current media are often perceived as monotonous and fail to stimulate students' cognitive engagement and affective participation. Traditional methods such as one-way lectures and rote memorisation lead to a lack of enthusiasm and a passive classroom atmosphere. Students are found to be disengaged because communication remains unidirectional while their sensory needs for variety are ignored.

Lack of diverse and attractive media is identified as a primary factor causing student confusion and a lack of focus during lessons. Teachers are currently challenged to implement various forms of engaging instruction to meet the demands of the modern era. Observations indicate that the absence of stimulating digital tools makes it difficult for learners to grasp complex historical concepts effectively. Providing varied media options is essential for accommodating the different abilities of students in absorbing information.

Data from the observation phase provide a quantitative overview of the current instructional conditions at the Madrasah. Records indicate that the utilisation of information technology in the classroom is limited to 2 points or 40% which falls into the poor category. Effectiveness in using learning media is even lower at 1 point or 20% which is classified as very poor which falls within the low category. The average score for all observed aspects is calculated at 1.17 or 34.29% representing a significant deficiency in the current instructional variety.

Analysis of the curriculum confirms that the Sunan Kalijaga material for sixth grade requires a transition from conventional text to interactive content. The syllabus emphasises the understanding of historical figures and the application of moral values in daily life. Traditional methods of delivery are found to be insufficient for achieving these cognitive and affective objectives. Development of digital media is therefore proposed to provide a more concrete and engaging experience for the learners.

The Wordwall application is selected as the primary solution to accommodate the visual and kinaesthetic tendencies of the students. Features within this digital tool allow historical content to be presented in an interactive format that encourages active participation. Cognitive and affective learning objectives are integrated through game-based activities that encourages students to solve problems and actively engage with historical content. This approach is expected to bridge the gap between historical theory and instructional needs of the learners.

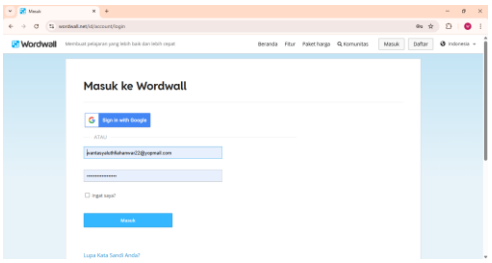
The learners involved in this development process are within the age range of 11 to 12 years and are currently in the concrete operational stage of cognitive development. Development of a positive classroom climate is essential for maintaining motivation and achieving learning targets for this age group. Provision of varied learning sources allows students to access information quickly and enhances their overall engagement with the subject. Availability of adequate instructional media is considered a critical factor in improving the quality and outcomes of the learning process.

The Design Stage

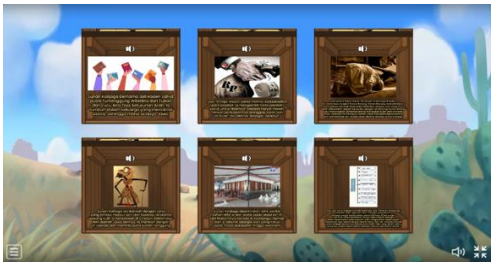
Completion of the analysis phase is followed by the design stage to establish the structural framework of the instructional media. Primary activities at this stage involve the creation of a comprehensive plan regarding the format and specifications of the digital product. Necessary preparations are conducted to ensure that all requirements for the subsequent development process are met with precision. This phase serves as a bridge between the identified educational needs and practical implementation of the proposed digital solution.

Specifications for the media are designed to ensure compatibility and accessibility for the targeted sixth-grade students. The application is developed through the Wordwall platform and is titled Sunan Kalijaga to focus on the historical figure presented in the curriculum. Contents of the instructional tool include the biography of Sunan Kalijaga, his role in the development of Islam, his moral values, a historical timeline, and interactive quizzes. The application supports various devices such as smartphones, tablets, and personal computers to support both online and offline learning environments. Instant feedback is provided through the quiz feature to allow students to monitor their own learning progress.

Prototypes of the product are developed by creating a detailed framework for every page within the instructional media. This schematic design ensures that the flow of information remains logical and engaging for the learners throughout the interactive session. Representation of the structure for the Wordwall application is presented in Figure 1 to illustrate the distribution of content and navigation components. Each section of the prototype is carefully mapped to align with the learning objectives and learning preferences of the students.



Wordwall homepage



Section biography of Sunan Kalijaga

Material section

Test section

Figure 1. Initial Display of Teaching Materials

The Development Stage

Instructional design is realised during the development phase through a two-stage expert appraisal process involving instructional media experts. This evaluative activity is conducted to determine the feasibility and quality of the product based on 15 indicators related usability, aesthetics, and technical performance. Data from the initial stage indicate an average score of 3 which necessitates revisions related to the visual consistency and content structure of the application. Subsequent improvements lead to a final average score of 3.66 in the second stage which confirms that the media is highly feasible for classroom implementation without major revision. These refinements ensure that the Wordwall tool is technically feasible and aligned with the pedagogical requirements of the Madrasah environment. Comprehensive results of this validation process are presented in Table 1.

Table 1. Media Expert Validation

No	Indicator	Stage I	Stage II
1	Wordwall interface is easy to understand	3	4
2	Colours and images and icons are suitable for students	3	4
3	Text is clear and legible	3	4
4	Layout is tidy and organised	3	3
5	Game instructions are explicit	3	4
6	Alignment with student cognitive abilities	3	4
7	Enhancement of learning motivation	3	4
8	Maitenance of student focus through the game	3	3
9	Support for active learning environment	3	3
10	Accessibility across various digital devices	3	4
11	Speed of media response and loading	3	4
12	Requirements for internet bandwidth	3	3
13	Audio quality and relevance	3	4

No	Indicator	Stage I	Stage II
14	Engagement and student involvement in activities	3	3
15	Alignment with student motoric skills	3	4
Average		**3**	**3.66**
Criteria		**Revised**	**Feasible**

Validation of the instructional content is performed by an expert in the History of Islamic Civilisation through a two-stage appraisal process conducted between January and February 2026. The initial evaluation phase focuses on 15 indicators including material depth, character values, and quality of assessment items. Results from the first stage indicate an average score of 2.26 or 56.66% suggesting that the content is feasible but requires substantial revision. The validator recommended improvements related to enhance the alignment of the material with learning objectives and to clarify the explanation of character values from historical figures. Answer choices within the quiz were also refined to be more effective to ensure that students improve students' accuracy and comprehension. Revisions implemented during the second stage led to a significant increase in the average score to 3.66 or 91.66% which falls into the highly valid category. These refinements ensure that the learning material is theoretically sound and suitable for the Madrasah environment. Comprehensive results of this validation process are presented in Table 2.

Table 2. Content Expert Validation

No	Indicator	Stage I	Stage II
1	Alignment of material with CP and KD	3	3
2	Alignment of material with learning objectives	2	4
3	Suitability of material coverage with student characteristics	3	4
4	Depth and detail of material according to student need	3	3
5	Inclusion of exemplary values of Islamic figures in the material	3	3
6	Clarity and ease of language used	2	4
7	Inclusion of character values (religious, tolerance, responsibility)	2	4
8	Suitability of material difficulty with cognitive abilities	3	4
9	Clarity of material presentation in supporting SKI concepts	2	4
10	Alignment of questions with learning indicators	2	4
11	Clarity and accuracy of answer choices	2	3
12	Effectiveness of Wordwall activities in measuring understanding	3	4
13	Suitability of Wordwall variations with student characteristics	2	4
14	Ability of material to encourage student activity	2	4
15	Ability of material to train critical and analytical thinking	2	4
Average		**2.26**	**3.66**

No	Indicator	Stage I	Stage II
Criteria		**Revised**	**Feasible**

The Implementation Stage

Implementation of the developed Wordwall media is executed through field testing to evaluate the effectiveness and practicality of the product within the instructional environment. This stage is divided into two distinct phases consisting of limited trial and a broader trial conducted at MIS Azrina Medan. The limited trial involves 20 students from the sixth grade who are categorised into 3 groups based on their specific learning styles including 5 auditory, 8 visual, and 7 kinaesthetic learners. Classroom activities begin with orientation regarding learning objectives followed by a guided exploration to engage actively with the interactive features before completing post-test and questionnaires to measure the impact of the instructional intervention.

Practicality of the media is assessed based on several aspects including visual attractiveness, motivation enhancement, ease of use, and alignment with student learning characteristics. Evaluation of practicality is performed by the SKI teacher on 01 April 2026 to ensure the instructional suitability of the tool for daily classroom use. Data obtained from the teacher responses indicate an average score of 3.5 which is classified as highly practical. These results demonstrate that the Wordwall media is technically and pedagogically sound for delivering instructional material related to Sunan Kalijaga to elementary students. Integration of this digital platform is found to support the instructional workflow effectively while maintaining student engagement throughout the session.

Assessment of media practicality is further extended to students through limited and broader trial phase conducted on 02 April 2026. The limited trial involves 20 participants from the sixth-grade A class to evaluate the compatibility of the digital tool with students' learning styles. Data from this initial group show an average score of 3.4 which is classified as highly practical for instructional use. Feedback from the students indicates that the design and content of the Wordwall application are suitable for SKI learning. This positive reception confirms that the media effectively accommodates the sensory preferences identified during the analysis stage.

The broader trial is executed with 20 students from the sixth-grade B class to ensure the consistency of the practicality results across a broader group of students. Evaluation in this phase focuses on the suitability of the interface and the clarity of the historical material presented within the software. An average score of 3.5 is obtained from the broader trial which reinforces the status of the media as a highly practical instructional resource. The major features of the application including the interactive quiz and visual components is found to be engaging and easy to navigate for the learners. Summary of the practicality results from the teacher and students in both trial groups is presented in Figure 2 to illustrate the overall practicality of the implementation.

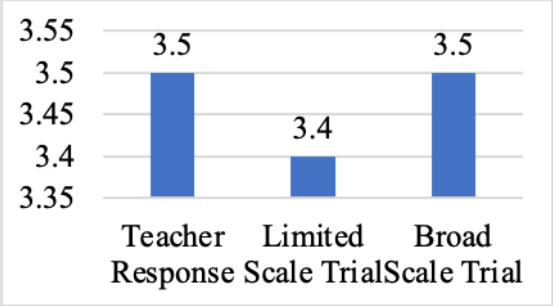


Figure 2. Summary of Product Practicality

Evaluation of instructional effectiveness is conducted using the N-Gain analysis to measure the improvement in student learning outcomes between the pre-test and post-test phases. Following high validity ratings from media and content experts, the N-Gain analysis was from both media and content specialists. Data from the limited trial group indicate a significant increase in learning outcomes across all learning style categories. Auditory learners show an average N-Gain score of 0.87 or 87% while visual learners also achieve an average N-gain score of 0.87. Kinaesthetic students demonstrate the highest improvement in this trial phase with an average N-Gain of 0.88 or 88%. These scores fall within the high category of gain and confirm that the digital tool is highly effective in accommodating various sensory preferences during the learning process.

The broader trial results further validate the effectiveness of the Wordwall application through consistent improvements in student scores. Auditory participants achieve an average N-Gain of 0.92 while the kinaesthetic group reaches an average of 0.86. Visual learners obtain the highest performance increase in the broad trial with an average N-Gain score of 0.93 or 93%. All groups in this evaluation phase remain within the highly effective category based on the established criteria. The statistical evidence indicates that the instructional media provides effective support for visual learners while maintaining high efficiency for auditory and kinaesthetic students. Integration of interactive technology is shown to enhance the mastery of Sunan Kalijaga material significantly enhances students' mastery of Sunan Kalijaga material within the Madrasah environment.

Discussion

Learning Style Tendencies

Identification of learning style tendencies among sixth grade students reveals a diverse distribution of auditory, visual, and kinaesthetic preferences. Data from the limited trial group indicate that visual learning styles dominate at 40% while kinaesthetic and auditory preferences account for 35% and 25% respectively. The broader trial results show a relatively balanced distribution with visual and kinaesthetic styles each reaching 35% and auditory preferences at 30%. These findings indicate that a considerable proportion of students rely on visual and kinaesthetic activities to process historical information effectively (Mdodana-Zide, 2024). Mastery of complex subjects such as SKI is more effectively achieved when instructional methods align with these sensory characteristics.

Findings of this study support the visual, auditory, and kinaesthetic (VAK) learning style theory which suggests that students require varied instructional strategies to achieve optimal comprehension. Reliance on conventional lecture methods is

considered insufficient for addressing the specific needs of visual and kinaesthetic learners in a primary school context (Kassim & Nordin, 2024). Interactive media such as Wordwall is an effective solution for accommodating these diverse learning requirements through engaging visual and active components (Damayanti & Carli, 2026; Sari et al., 2024). Meaningful learning experiences are created when teachers transition from traditional approaches to more dynamic and multisensory digital platforms (Cosentino & Giannakos, 2023; Saborío-Taylor, 2025). Development of varied and interactive instruction is considered essential for improving the academic engagement of students at the Madrasah level.

Design of Wordwall Instructional Media

Challenges in maintaining student interest are frequently encountered during the delivery of theoretical subjects such as the history of Sunan Kalijaga. Conventional approaches involving lectures and static presentation slides are found to be insufficient for creating a meaningful and enjoyable learning atmosphere (Petruse et al., 2024). Active engagement in the learning process is considered a major factor for improving comprehension and academic outcomes based on the constructivist theory (Wibowo et al., 2025). Constructivism theory emphasises the importance of active exploration to allow students to construct their understanding through direct engagement with learning materials (Kusumawati et al., 2022). Development of interactive instructional media is therefore identified as a necessary intervention to transform passive observation into an active learning experience for Madrasah students.

The Wordwall platform is implemented with careful consideration of students' diverse learning characteristics (Farida & Lusiana, 2024). The media is designed to accommodate visual, auditory, and kinaesthetic styles through interactive game-based activities and multimedia elements. Accessibility is ensured for both classroom sessions and independent learning via digital devices such as smartphones or computers. Teachers act as facilitators to guide the exploration process and ensure that students understand both the navigation and the learning content of the tool. The effectiveness of the implementation is evaluated through the analysis of learning outcomes in pre-test and post-test phases alongside student questionnaires regarding practicality. This structured approach ensures that the digital media serves as a effective link between historical theory and students' developmental needs.

Validity of Wordwall Instructional Media

Validation results from media and content experts indicate high feasibility across all evaluated dimensions. Technical assessment of the media produces a score of 91.66% which is classified as highly valid. This high rating indicates that the visual interface and functionality effectively attract student attention and facilitating the instructional process. Integration of interactive technology emphasises attention, relevance, confidence, and satisfaction as key motivational factors. Engagement theory is supported by findings that interactive tools like Wordwall increase student engagement and learning effectiveness (Sari et al., 2024).

Content validation also yields a score of 91.66%, confirming that the material is highly suitable for current curriculum standards. This percentage reflects a strong alignment between the digital content and the specific learning objectives and indicators for the Sunan Kalijaga material. Information accuracy and the structured depth of the material support the cognitive levels described in Bloom's Taxonomy. This result

suggest that the pedagogical substance is theoretically sound and capable of supporting students' comprehensive understanding. Expert consensus indicates that the media is ready for classroom implementation within the Madrasah environment.

Practicality of Wordwall Instructional Media

Practicality tests involving teachers and students result in high average scores that place the media in the highly practical category. Evaluation by the subject teacher yielded an average score of 3.5, indicate that the tool is exceptionally easy to operate and effective for material delivery. These results align with the Technology Acceptance Model (TAM), which identifies perceived usefulness and ease of use as critical factors for technology adoption. Teachers reported that the application simplifies the management of complex historical topics while maintaining classroom engagement. High acceptance levels among educators suggest that the media meets the professional requirements for modern instructional tools.

Student responses provided an average practicality score of 3.345 which reflects a very positive responses of the digital platform. Learners find the interactive design and navigation intuitive and helpful for grasping historical concepts more effectively. Active involvement through technology based-learning has been shown to enhance motivation and academic performance (Annur et al., 2025). Principles of engagement theory are reflected in the findings as the media creates meaningful interactions between students and learning materials. High practicality scores from both user groups confirm that the Wordwall media meets the operational needs and expectations of the primary school environment.

Effectiveness of Wordwall Instructional Media

The effectiveness of the Wordwall media was evaluated through limited and broad trials to measure significant improvements in student performance. Analysis of the combined trial data revealed an average N-Gain score of 0.891 which represents a high level of achievement improvement. This result corresponds to an effectiveness percentage of 89.1% and falls within the highly effective category. Deep understanding and knowledge application are achieved through an engaging learning context provided by the application. Findings from this research support the implementation of interactive media as a effective method for increasing mastery in elementary education (Setiawan et al., 2024).

The utilization of the Wordwall platform allows students to progress through different cognitive levels of comprehension as outlined in Bloom's Taxonomy. Interactive features encouraged learners to apply historical facts in a dynamic setting rather than passive memorisation strategies. Statistical evidence indicates that the media is consistently effective across different learning styles and classroom context. Significant gains in pre-test and post-test scores demonstrate that the integration of students' characteristics into digital media design is a successful strategy. Strong results were observed throughout the evaluation process to prove that the media is a reliable instructional tool for improving the quality of SKI instruction.

CONCLUSIONS

Wordwall-based learning instructional media developed in this study demonstrates strong feasibility, practicality, and effectiveness in supporting SKI learning in Madrasah Ibtidaiyah. The integration of visual, auditory, and kinaesthetic learning characteristics within the ADDIE framework enables the transformation of abstract historical content into interactive and meaningful learning experiences. The findings indicate that the developed media is appropriate for improving student engagement and learning outcomes in primary Islamic education. The effectiveness of the media reflects its ability to create a multisensory learning environment that supports active participation and enhances conceptual understanding of historical material. The instructional design also shows consistency between pedagogical objectives and learner characteristics, confirming its relevance for classroom implementation.

This study is limited to a single institution, one historical topic, and a short implementation period, which restricts the generalisability of the findings. Future studies are recommended to expand the scope of materials, extend the duration of implementation, and compare Wordwall with other interactive learning platforms to strengthen external validity and instructional effectiveness. Recommendations include improving teacher readiness in digital learning implementation and encouraging further development of interactive media across broader SKI topics. Collaboration between teachers and educational technology developers is necessary to sustain innovation in Islamic primary education.

BIBILIOGRAPHY

Abuhassna, H., Alnawajha, S., Awae, F., Adnan, M. A. B. M., & Edwards, B. I. (2024). Synthesizing Technology Integration within The Addie Model for Instructional Design: A Comprehensive Systematic Literature Review. *Journal of Autonomous Intelligence*, *7*(5), 1546–1574. https://doi.org/10.32629/jai.v7i5.1546

Adeoye, M. A., Wirawan, K. A. S. I., Pradnyani, M. S. S., & Septiarini, N. I. (2024). Revolutionizing Education: Unleashing the Power of the ADDIE Model for Effective Teaching and Learning. *JPI (Jurnal Pendidikan Indonesia)*, *13*(1), 202–209. https://doi.org/10.23887/jpiundiksha.v13i1.68624

Ahmadi, A., Noetel, M., Parker, P., Ryan, R. M., Ntoumanis, N., Reeve, J., Beauchamp, M., Dicke, T., Yeung, A., Ahmadi, M., Bartholomew, K., Chiu, T. K. F., Curran, T., Erturan, G., Flunger, B., Frederick, C., Froiland, J. M., González-Cutre, D., Haerens, L., … Lonsdale, C. (2023). A Classification System for Teachers' Motivational Behaviors Recommended in Self-Determination Theory Interventions. *Journal of Educational Psychology*, *115*(8), 1158–1176. https://doi.org/10.1037/edu0000783

Ainun, A., Fitriani, F., Saifuddin, S., Nurma, N., Nasaruddin, N., & Ruslan, R. (2025). Pendekatan Psikologis dalam Pendidikan Islam: Menjawab Tantangan Pendidikan

di Era Digital. *Action Research Journal Indonesia (ARJI)*, *7*(4), 2763–2778. https://doi.org/10.61227/arji.v7i4.576

Akrim, A. (2022). A New Direction of Islamic Education in Indonesia: Opportunities and Challenges in the Industrial Revolution Era 4.0. *Edukasi Islami: Jurnal Pendidikan Islam*, *11*(01), 35–48. https://doi.org/10.30868/ei.v11i01.1799

Almelhi, A. M. (2021). Effectiveness of the ADDIE Model within an E-Learning Environment in Developing Creative Writing in EFL Students. *English Language Teaching*, *14*(2), 20–36. https://doi.org/10.5539/elt.v14n2p20

Annur, S., Sya'ban, M. F., Syahidah, S., Maulidia, M., & Julianti, J. (2025). Tinjauan Literatur: Penggunaan Media Pembelajaran Berbasis Website Wordwall untuk Meningkatkan Motivasi Belajar Peserta Didik. *Nusantara Journal of Education and Social Science*, *2*(2), 54–62. https://doi.org/10.69959/nujess.v2i2.108

Ardiansyah, H., & Wahyuddin, W. (2025). Pengembangan Media Pembelajaran Interaktif Berbasis Wordwall untuk Meningkatkan Minat Belajar Mata Pelajaran Sejarah Siswa SMP Kabupaten Dompu. *JURNAL PENDIDIKAN MIPA*, *15*(3), 1486–1491. https://doi.org/10.37630/jpm.v15i3.3505

Cosentino, G., & Giannakos, M. (2023). Multisensory Interaction and Analytics to Enhance Smart Learning Environments: A Systematic Literature Review. *IEEE Transactions on Learning Technologies*, *16*(3), 414–430. https://doi.org/10.1109/TLT.2023.3243210

Damayanti, N. W., & Carli, A. (2026). Fostering Inclusive Mathematics Learning: A Lesson Study Approach Integrating the Wordwall Digital Platform for Special Needs Students. *Euler : Jurnal Ilmiah Matematika, Sains Dan Teknologi*, *14*(1), 59–78. https://doi.org/10.37905/euler.v14i1.37499

Eliwati, N. (2023). Supervision of Madrasah Principals Based on Cognitive Behavior Therapy in Improving the Performance of Islamic Religious Education Teachers. *Ruhama: Islamic Education Journal*, *6*(2), 57–74. https://doi.org/https://doi.org/10.31869/ruhama.v6i2.4770

Farida, & Lusiana, E. (2024). The Use of Wordwall-Based Educational Games to Improve Student Learning Outcomes in Islamic Education Learning in MI Negeri 2 Solok. *Jurnal Profesi Guru Indonesia*, *1*(2), 153–165. https://doi.org/10.62945/jpgi.v1i2.681

Fatah, A. A., Riyadi, R., & Irsalina, I. N. P. A. (2025). Eksplorasi Pengembangan Media Berbasis Web dalam Pembelajaran Sejarah Kerajaan Islam Menggunakan Genially untuk Meningkatkan Pemahaman Belajar Siswa kelas X. *Maharsi*, *7*(3), 45–53. https://doi.org/10.33503/maharsi.v7i3.2515

Kassim, A., & Nordin, M. N. (2024). An Effective Teaching Aids Using Visual, Auditory and Kinesthetic Learning Styles for Students with Special Needs. *Special Education [SE]*, *2*(1), e0009. https://doi.org/10.59055/se.v2i1.9

Kusumawati, I. T., Soebagyo, J., & Nuriadin, I. (2022). Literature Study of Critical Thinking Ability with the Application of the PBL Model in the Constructivism Theory Approach. *JURNAL MathEdu (Mathematic Education Journal)*, *5*(1), 13–

18. https://doi.org/https://doi.org/10.37081/mathedu.v5i1.3415

Li, H., & Cheong, J. P. G. (2023). Using the ADDIE model to design and develop physical education lessons incorporated with a functional training component. *Frontiers in Public Health, Volume 11*. https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2023.1201228

Mdodana-Zide, L. (2024). Using ADDIE m\Model for Scaffolded Learning and Teaching Intervention. *Interdisciplinary Journal of Education Research*, *6*, 1–15. https://doi.org/10.38140/ijer-2024.vol6.28

Pahru, S., Gazali, M., Pransisca, M. A., Marzuki, A. D., & Nurpitasari, N. (2023). Teori Belajar Kognitivistik dan Implikasinya dalam Proses Pembelajaran di Sekolah Dasar. *NUSRA: Jurnal Penelitian Dan Ilmu Pendidikan*, *4*(4), 1070–1077. https://doi.org/10.55681/nusra.v4i4.1745

Petruse, R. E., Grecu, V., Chiliban, M.-B., & Tâlvan, E.-T. (2024). Comparative Analysis of Mixed Reality and PowerPoint in Education: Tailoring Learning Approaches to Cognitive Profiles. *Sensors*, *24*(16), 5138–5163. https://doi.org/10.3390/s24165138

Putra, R. G., Yusri, N., & Sinaga, S. F. (2024). The Role of Social Media in Islamic Religious Education: Challenges and Opportunities in the Digital Era. *JUDIKIS: Jurnal Pendidikan Islam*, *1*(3), 191–199. https://doi.org/10.70938/judikis.v1i3.70

Rahayu, Y. N., Farihah, U., & Anwar, K. (2025). Menakar Kebijakan PAI di Era Global: Kajian Konseptual atas Reformasi Pendidikan Islam di Indonesia dan Dunia. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *4*(4), 256–260. https://doi.org/10.31004/riggs.v4i4.3152

Restalia, W., & Khasanah, N. (2025). Transformation of Islamic Education in The Digital Age: Challenges and Opportunities. *Tadibia Islamika*, *4*(2), 85–92. https://doi.org/10.28918/tadibia.v4i2.8964

Saborío-Taylor, S. (2025). Multisensory Strategies to Foster Autonomous Language Learning Through Digital Landscapes. *European Journal of Interactive Multimedia and Education*, *6*(1), 1–7. https://doi.org/10.30935/ejimed/16045

Saleh, A. M., & Ahmed Althaqafi, A. S. (2022). The Effect of Using Educational Games as a Tool in Teaching English Vocabulary to Arab Young Children: A Quasi-Experimental Study in a Kindergarten School in Saudi Arabia. *Sage Open*, *12*(1), 1–10. https://doi.org/10.1177/21582440221079806

Sari, Y., Marini, A., Rahmawati, Y., Fitriasari, E., Wardhani, P. A., Safitr, D., Dewiyani, L., & Muda, I. (2024). Emerging Technologies of Interactive Learning Media with Wordwall for Students' Interest as an Impact on SDGS. *Journal of Lifestyle and SDGs Review*, *5*(2), 1–18. https://doi.org/10.47172/2965-730X.SDGsReview.v5.n02.pe03268

Setiawan, M. A., Sriadhi, S., & Silaban, S. (2024). Enhancing Critical Thinking Skill by Implementing Electronic Student Worksheets Based on Guided Inquiry in Natural Science Subject for Elementary School. *Jurnal Pendidikan Kimia*, *16*(3), 225–229.

https://doi.org/10.24114/jpkim.v16i3.64843

Ubaedullah, D., Rokimin, & Suryono, F. (2025). Technology in Islamic Education Curriculum: Challenges and Opportunities. *Jurnal Al Burhan*, *5*(2), 369–391. https://doi.org/10.58988/jab.v5i2.609

Wibowo, S., Wangid, M. N., & Firdaus, F. M. (2025). The Relevance of Vygotsky's Constructivism Learning Theory with The Differentiated Learning Primary Schools. *Journal of Education and Learning (EduLearn)*, *19*(1), 431–440. https://doi.org/10.11591/edulearn.v19i1.21197

Zubaidah, Z., Utomo, P., Hidayat, R. S., & Satria, I. (2025). Efforts of the Guidance Teacher in Improving Elementary School Students' Ability to Analyze the Meaning and Recite Al-Asmaul Al-Husna through Audio-Visual Media. *Southeast Asian Journal of Global Trends and Issues in Education*, *1*(2), 39–48. https://doi.org/10.64420/sajgtie.v1i2.404

Zulfah, N. (2023). Pemanfaatan Media Game Edukasi Wordwall untuk Meningkatkan Minat Belajar Siswa. *Pubmedia Jurnal Penelitian Tindakan Kelas Indonesia*, *1*(1), 11. https://doi.org/10.47134/ptk.v1i1.5