INNOVATION IN ARABIC LANGUAGE TEACHING THROUGH DIGITAL SITUATIONAL SIMULATION AT MTSN 2 PALEMBANG, SOUTH SUMATERA PROVINCE

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Abstract:*This research endeavors to develop and examine the efficacy of digital situational simulation media in Arabic language learning at MTsN 2 Palembang. The methodology employed Research and Development (R&D) using the ADDIE model, encompassing 87 eighth-grade students. The analytical phase revealed that 78.2% of students encountered difficulties in applying Arabic vocabulary within authentic communicative contexts. The media was developed as a web-responsive platform incorporating six communicative scenarios and an artificial intelligence chatbot featuring 87.3% recognition accuracy. Expert panel validation demonstrated a Content Validity Ratio (CVR) of 0.92 with an average score of 4.6 on a 5-point scale for content validity. Implementation was conducted through three phases over 12 weeks using a quasi-experimental design. Research findings indicated substantial improvements in students' communicative competence: listening comprehension increased by 34.7 points, speaking proficiency by 28.9 points, and pragmatic competence by 31.2 points. Statistical analysis through paired-samples t-test yielded p-value < 0.001 with Cohen's d effect size of 1.23. Long-term retention evaluation demonstrated that 82.4% of students maintained their acquired competencies with only 12.3% degradation rate after 8 weeks. Digital situational simulation media proved remarkably effective in enhancing students' Arabic communicative competence both significantly and sustainably.*

Keywords: digital situational simulation, Arabic language learning, communicative competence

Abstrak: *Penelitian ini bertujuan mengembangkan dan menguji efektivitas media simulasi situasional digital dalam pembelajaran bahasa Arab di MTsN 2 Palembang. Metode penelitian menggunakan Research and Development (R&D) dengan model ADDIE yang melibatkan 87 siswa kelas VIII. Tahap analisis mengidentifikasi bahwa 78,2% siswa mengalami kesulitan mengaplikasikan kosakata bahasa Arab dalam konteks komunikasi nyata. Media dikembangkan berbasis web-responsive dengan enam skenario komunikatif dan fitur artificial intelligence chatbot yang memiliki tingkat akurasi recognition 87,3%. Validasi expert panel menunjukkan Content Validity Ratio (CVR) sebesar 0,92 dengan skor rata-rata 4,6 dari skala 5 untuk content validity. Implementasi dilakukan melalui tiga fase selama 12 minggu dengan quasi-experimental design. Hasil penelitian menunjukkan peningkatan signifikan kemampuan komunikatif siswa: listening comprehension meningkat 34,7 poin, speaking proficiency meningkat 28,9 poin, dan pragmatic competence meningkat 31,2 poin. Uji statistik paired-samples t-test menghasilkan p-value < 0,001 dengan effect size Cohen's d sebesar 1,23. Long-term retention evaluation menunjukkan 82,4% siswa mempertahankan kemampuan dengan degradation rate 12,3% setelah 8 minggu. Media simulasi situasional digital terbukti efektif meningkatkan kemampuan komunikatif bahasa Arab siswa secara signifikan dan berkelanjutan.*

Kata kunci: simulasi situasional digital, pembelajaran bahasa Arab, kemampuan komunikatif

Introduction

The development of information and communication technology in the digital era has brought about significant transformations in various aspects of life, including in the field of education. Learning Arabic as one of the compulsory subjects in junior high schools faces the challenge of adapting to these technological developments (Qomaruddin, 2022). This is reinforced by learning conditions that have experienced a paradigm shift from conventional methods to more interactive learning based on digital technology. The integration of technology in Arabic learning is an urgent need to increase the effectiveness and attractiveness of learning, especially for the digital native generation who are accustomed to technological devices in their daily activities (Rahman, 2023).

Arabic language learning in Indonesia, especially at the madrasah tsanawiyah level, still faces various complex problems. Low motivation and interest of students in learning Arabic is a major issue that needs serious attention from educators and education practitioners (Hasanah & Rahman, 2024). Factors that influence low student interest include learning methods that are still traditional, minimal variation in learning media, and lack of situational context that can make students feel the practical usefulness of Arabic in everyday life. This condition results in Arabic language learning often being considered a difficult, boring, and irrelevant subject to students' needs, so that learning outcomes are not optimal and the communicative objectives of language learning are not achieved properly (Bustam, 2023).

Innovation in Arabic language teaching methods is a strategic solution to overcome these problems. Digital situational simulation is one innovative approach that can provide a more realistic and contextual learning experience for students (Rosyadi, 2021). Through digital situational simulation, students can practice using Arabic in various communication contexts that resemble real-life situations, such as conversations in the market, in the hospital, at school, or in other social situations. This approach not only improves students' linguistic abilities but also develops communicative competence and confidence in using Arabic practically (Syarifuddin, 2023). The advantage of digital situational simulation lies in its ability to provide a safe, repeatable learning environment and provide direct feedback to students.

MTsN 2 Palembang as one of the state junior high schools in South Sumatra Province has a strategic position in implementing Arabic language learning innovations. As an Islamic educational institution committed to improving the quality of learning, MTsN 2 Palembang faces the challenge of creating more effective and interesting Arabic language learning for students (Sari, 2024). The geographical conditions of Palembang as the provincial capital with relatively good access to technology are the capital for developing digital technology-based learning. However, the implementation of digital situational simulations in Arabic language learning still requires in-depth studies on the effectiveness, constraints, and appropriate strategies in order to have a positive impact on achieving comprehensive Arabic language learning goals (Mahmudah, 2019).

The development of digital situational simulations in Arabic language learning requires appropriate design to accommodate the needs and characteristics of junior high school students. Aspects that need to be considered include the selection of content that is relevant to students' lives, the use of user-friendly technology, and integration with the applicable curriculum (Hanifah, 2024). Digital situational simulations must be able to provide an immersive learning experience, where students can feel as if they are in a real communication situation using Arabic. This requires a combination of multimedia technology, interactive learning design, and a pedagogical approach that is in accordance with the principles of effective second language learning (Lathifah, 2024).

The success of implementing digital situational simulations in Arabic language learning also depends heavily on the readiness of teachers as learning facilitators. Arabic language teachers need to have adequate digital competence to be able to operate and optimize the use of simulation technology in the learning process (Sukamto, 2020). In addition, a change in the teacher's mindset is needed from the role of the main source of information to a facilitator who helps students explore and construct knowledge through simulation experiences.(Kurniawan, MA, & Wulandari, D. 2022) Pedagogical aspects in the use of digital situational simulations must be integrated with the principles of communicative, contextual, and student-centered language learning, so that technology is not only a tool but also a medium that enriches students' learning experiences (Zulhanan, 2025).

Research on innovation in Arabic language teaching through digital situational simulation at MTsN 2 Palembang is important to contribute to the development of more effective Arabic language learning methods that are in accordance with the demands of the digital era. Through this research, it is hoped that the appropriate digital situational simulation model can be identified, the effectiveness of its implementation in improving students' Arabic language skills, and the supporting and inhibiting factors in its implementation (Kurniawan, 2022). The results of this study will not only provide benefits for MTsN 2 Palembang, but can also be a reference for other madrasas that want to implement similar innovations in Arabic language learning, thus contributing to improving the quality of Arabic language education nationally (Wahyuni, 2025).

Research methods

This study uses the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) development model approach to develop digital situational simulation media in teaching Arabic at MTsN 2 Palembang (Hidayat & Nizar, 2021). In the Analysis stage, a needs analysis was carried out on class VIII MTs students, including obstacles in conventional Arabic language learning and identification of students' contextual needs in Arabic language communication. The Design stage involves designing situational simulation scenarios such as interactions in markets, schools, hospitals, and public places, with storyboards and interface designs based on digital technology (Safitri & Aziz, 2022). The Development stage includes the process of producing learning media using multimedia software that supports student interaction digitally in various communication situations. Furthermore, the Implementation stage was carried out with a limited trial on MTsN 2 Palembang students to observe student involvement, understanding, and responses to the media developed. Finally, the Evaluation stage is carried out with validation by Arabic language material experts, learning media experts, and Arabic language teachers, to evaluate the effectiveness and feasibility of the simulation media produced (Nurdiansyah et al., 2023). Data collection techniques include observation, expert validation questionnaires, interviews with teachers and students, and learning outcome tests, while the data is analyzed descriptively qualitatively for the development process and quantitatively to assess the effectiveness of the media (Sukamto & Winoto, 2023).

Discussion

A. Concept and Theoretical Foundation of Digital Situational Simulation in Arabic Language Learning

Digital situational simulation is a learning approach that integrates information and communication technology with contextual learning principles to create a learning environment that resembles a real-life situation. According to Hakim and Sari (2023), digital situational simulation in Arabic language learning is defined as a learning method that uses a

digital platform to create communicative scenarios that mimic everyday life situations where Arabic is used as the main means of communication. This concept is rooted in constructivist learning theory which emphasizes the importance of meaningful learning through direct and contextual experiences.

The theoretical basis of digital situational simulation is based on the theory of communicative language teaching (Communicative Language Teaching) proposed by Hymes and further developed in the context of Arabic language learning. According to Fitriyana and Aziz (2022), the communicative approach in Arabic language learning emphasizes the development of students' communicative competence which includes linguistic, sociolinguistic, discourse, and strategic competence. Digital situational simulation is the right vehicle to implement these four competences in an integrated manner in an authentic learning experience.

The experiential learning theory proposed by Kolb is also the basis for the development of digital situational simulations in Arabic language learning. According to Nurhasanah and Rahman (2023), experiential learning through digital simulations allows students to experience a complete learning cycle, starting from concrete experience, reflective observation, abstract conceptualization, to active experimentation. In the context of Arabic language learning, students not only learn language structures theoretically, but also experience the use of language directly in real communicative contexts.

The psychological aspect of learning is also an important consideration in the development of digital situational simulations. According to Wulandari and Hasibuan (2022), digital simulations can reduce language anxiety that students often experience when learning a foreign language, including Arabic. A safe and controlled simulation environment allows students to experiment with the language without fear of making mistakes or being judged negatively by others. This is in line with the affective filter hypothesis theory put forward by Krashen, where positive psychological conditions will facilitate the language acquisition process.

The integration of technology in digital situational simulations is also based on the Technology Acceptance Model (TAM) theory developed by Davis. According to Rahmawati and Purwanto (2023), the acceptance of technology in Arabic language learning is influenced by the perception of ease of use and the perception of usefulness. Digital situational simulations are designed to meet both aspects by providing a user-friendly interface and learning content that is relevant to students' communicative needs.

The multimodal dimension in digital situational simulation also has a strong theoretical basis in multimedia learning theory. According to Safitri and Maulana (2022), the principles of multimedia learning proposed by Mayer can be applied in Arabic language learning through digital simulations that integrate text, audio, visuals, and interactions. This multimodal approach not only accommodates various learning styles of students but also enriches the learning experience and improves long-term memory retention.

Contextualization of learning through digital situational simulations is also in line with the principles of culturally responsive teaching. According to Hidayat and Muslimah (2023), effective Arabic language learning must consider the cultural context of both the Arabic culture as the language owner and the local culture of the students. Digital situational simulations allow the integration of both cultural aspects in authentic and meaningful learning scenarios.

B. Implementation of Digital Technology in Arabic Language Learning at MTsN 2 Palembang

The implementation of digital technology in Arabic language learning at MTsN 2 Palembang is a strategic response to the development of the digital era and the demands of

21st century learning. According to Andriani and Sitompul (2023), the integration of technology in Arabic language learning at junior high schools requires careful planning and adequate infrastructure support. MTsN 2 Palembang has made significant investments in the provision of information technology facilities, including computer laboratories, high-speed internet networks, and multimedia devices to support the implementation of digital situational simulations.

The development of a digital situational simulation platform at MTsN 2 Palembang was carried out through collaboration with the educational application development team and involving Arabic language teachers as subject matter experts. According to Maharani and Dewi (2022), the development of a digital learning platform must consider pedagogical, technological, and contextual aspects in order to provide an optimal impact on achieving learning objectives. The platform developed includes various interactive features such as virtual reality environments, Arabic chatbots, voice recognition systems, and integrated assessment tools.

The process of implementing digital technology begins with a preparation phase that includes teacher training, socialization to students and parents, and limited trials in certain classes. According to Susanti and Fajar (2023), the success of implementing technology in learning is highly dependent on the readiness and digital competence of teachers as learning facilitators. MTsN 2 Palembang held a series of workshops and intensive training to improve the digital literacy of Arabic language teachers, including training in the use of simulation platforms, digital learning facilitation techniques, and technology-based assessment strategies.

The digital situational simulation-based learning design at MTsN 2 Palembang adopts a blended learning approach that combines face-to-face learning with online learning. According to Kartika and Wijaya (2022), the blended learning model in Arabic language learning allows the optimization of the advantages of conventional and digital learning simultaneously. Students attend orientation and briefing sessions in conventional classes, then continue with digital simulation activities individually or in groups.

Customization and personalization of learning are one of the advantages of implementing digital technology at MTsN 2 Palembang. According to Pratiwi and Salam (2023), adaptive technology allows the adjustment of content and level of learning difficulty according to the abilities and individual progress of students. The developed digital situational simulation platform is equipped with an artificial intelligence algorithm that can analyze student performance and provide personalized learning recommendations.

Real-time monitoring and evaluation systems are important components in implementing digital technology. According to Handayani and Zulfikar (2022), digital monitoring systems allow teachers to continuously monitor student progress and provide timely interventions when needed. The analytics dashboard integrated into the simulation platform provides comprehensive data on student learning activities, participation levels, achievement rates, and areas that need improvement.

Sustainability and scalability of digital technology implementation are also the focus of attention of MTsN 2 Palembang. According to Ningsih and Ramadhan (2023), the sustainability of educational technology programs requires maintenance strategies, regular updates, and continuous capacity development. Madrasah has prepared a long-term roadmap for the development of learning technology that includes aspects of financial planning, human resource development, and technology upgrades.

C. The Effectiveness of Digital Situational Simulation on Students' Arabic Communicative Ability

The effectiveness of digital situational simulation on students' Arabic communicative abilities can be analyzed through various learning indicators that include cognitive, affective, and psychomotor aspects. According to Hasanah and Qodir (2023), students' Arabic communicative abilities increased significantly after participating in digital situational simulation-based learning, with an average score increase of 35% in the speaking ability test and 28% in the listening ability test. This increase shows that digital situational simulation is effective in developing students' receptive and productive skills simultaneously.

A comprehensive analysis of communicative skills shows that digital situational simulations have a positive impact on four core competencies in Arabic language learning. According to Zakaria and Mutmainnah (2022), students' linguistic competence is improved through intensive exposure to Arabic language structures in diverse communicative contexts. Situational simulations allow students to experience various language registers, from formal language in academic contexts to informal language in everyday conversations, thus enriching their linguistic repertoire.

The improvement of sociolinguistic competence is also a positive result of the implementation of digital situational simulations. According to Fadilah and Hakim (2023), students showed a better understanding of the pragmatic aspects of Arabic, including the use of polite expressions, communication strategies, and register adaptation according to social context. Digital simulations that cover various social settings help students develop sensitivity to cultural and social nuances in Arabic communication.

The aspects of student motivation and engagement also experienced a significant increase. According to Rahayu and Nasution (2023), the level of student participation in Arabic language learning increased from 65% to 89% after the implementation of digital situational simulations. Gamification elements integrated into the simulation platform, such as point systems, achievement badges, and leaderboards, have succeeded in increasing students' intrinsic motivation to continue practicing and using Arabic in various communicative contexts.

The development of autonomous learning skills is another positive impact of the use of digital situational simulations. According to Fitriana and Azhar (2022), students showed increased independent learning and self-regulation skills in learning Arabic. The simulation platform, which can be accessed 24/7, allows students to practice at their own pace and preference, thus developing personal responsibility for the learning process.

Retention and transfer learning also showed encouraging results. According to Sari and Wijayanti (2023), students' ability to apply Arabic language knowledge obtained through simulation into real communicative situations showed a substantial increase. Follow-up assessments conducted 3 months after the program showed that 78% of students were still able to maintain their communicative skills and successfully use Arabic in real situations outside the learning context.

Collaborative learning and peer interaction also increased through digital situational simulations. According to Pratama and Lestari (2023), the multiplayer feature in simulations allows students to interact and collaborate with peers in completing communicative tasks. This peer-to-peer interaction not only improves communicative skills but also develops social skills and teamwork which are essential in foreign language learning.

D. Challenges and Strategies for Sustainable Development of Digital Situational Simulation

The implementation of digital situational simulation in Arabic language learning at MTsN 2 Palembang faces various technical, pedagogical, and organizational challenges that require a comprehensive sustainable development strategy. According to Indrawati and Setiawan (2023), the main challenges faced include limited technological infrastructure, disparities in digital competencies between teachers and students, and resistance to changes in

learning paradigms. Infrastructure challenges include unstable internet connections, limited bandwidth, and uneven availability of devices among students.

The strategy for developing technology infrastructure requires a gradual and sustainable approach. According to Kurniawan and Hayati (2022), the development of digital infrastructure in educational institutions must consider aspects of sustainability and long-term scalability. MTsN 2 Palembang developed an educational technology master plan that includes gradual upgrades to the network system, procurement of mobile learning devices, and construction of local servers to reduce dependence on external internet connections.

Human resource capacity development is a top priority in sustainable strategies. According to Arifin and Safitri (2023), teachers' digital competence is a key factor in the success of implementing learning technology. Sustainable professional development programs are designed to cover various aspects, from technical skills, pedagogical content knowledge, to innovation mindset.Mentoring and peer coaching systems are implemented to ensure effective knowledge transfer between teachers. (Kurniawan, MA, et.al 2025).

Content development and curriculum alignment are challenges that require special strategies. According to Dewanti and Putra (2023), the integration of digital situational simulations with the national curriculum requires detailed mapping of competency standards and basic competencies in Arabic language subjects. The curriculum development team collaborated with Arabic teachers to create an alignment matrix that ensures that each simulation activity supports the achievement of the learning outcomes that have been set.

The financial sustainability of the program is also a major concern that requires a diversified funding strategy. According to Santoso and Marlina (2022), the sustainability of educational technology programs requires a financing model that does not only rely on a single source. MTsN 2 Palembang developed a multi-funding strategy that includes allocation of the APBN/APBD, partnerships with the technology industry, grants from donor institutions, and revenue sharing from commercialization of content.

Quality assurance and continuous improvement are important elements in a sustainable development strategy. According to Widianto and Rusli (2023), a quality assurance system must include monitoring of technical performance, learning effectiveness, user satisfaction, and achievement of learning objectives. A comprehensive evaluation framework is developed to measure various aspects of the program periodically and systematically.

The development of a learning community is an important strategy to ensure program sustainability. According to Hartini and Basuki (2023), the formation of a community of practitioners consisting of teachers, students, parents, and other stakeholders can create an ecosystem that supports continuous learning and innovation. This community functions as a platform for sharing best practices, collaborative problem solving, and sustainable collective learning.

Adaptation to technological developments and pedagogical innovation is also an integral part of the sustainable development strategy. According to Novitasari and Rahman (2022), rapid development in learning technology requires organizational agility and readiness to change. Early warning and technology scanning systems are implemented to identify emerging technologies and pedagogical trends that are relevant to Arabic language learning, so that madrasas can proactively adapt to changes that occur.

Research result

A. Results of the Analysis and Design Stage of Digital Situational Simulation Media Development

Based on the results of a needs analysis conducted on 87 students of class VIII MTsN 2 Palembang, it was found that 78.2% of students had difficulty applying Arabic vocabulary in real communication contexts, while 84.3% of students showed limitations in understanding

Arabic pragmatics according to different social situations (Documentation of Student Needs Questionnaire, 2024). Observations of conventional learning showed that the dominant lecture and drill methods used were only able to produce active student participation of 23.4%, with an average Arabic language interaction duration of 2.3 minutes per student in one 90-minute learning session (Learning Observations for Classes VIII-A to VIII-D, September 2024). A deeper analysis revealed that students need authentic and situational learning contexts, where 91.6% of students expressed high interest in digital technology-based learning that can simulate real communication situations (Results of Focus Group Interviews with 24 students, October 2024). This finding is in line with research by Rahmawati and Hakim (2023) which shows that contextual Arabic language learning through digital simulations can increase students' learning motivation by up to 67% compared to conventional methods.

In the design stage, a digital situational simulation framework was developed that included six main scenarios: interactions in traditional markets, communication in hospitals, conversations in schools, dialogues in restaurants, interactions in banks, and communication in places of worship, with each scenario designed to accommodate 15-20 variations of dialogue according to the students' ability level (Storyboard and Flowchart Documentation, November 2024). Design validation by three Arabic language material experts showed an average score of 4.2 on a scale of 5 for the aspect of content suitability to the curriculum, 4.4 for the aspect of Arabic cultural contextualization, and 4.1 for the aspect of graduation of difficulty levels (Material Expert Validation Results, November 2024). The interface design adopts the principles of user experience design with intuitive navigation, attractive visuals, and gamification features in the form of a point system, achievement badges, and progress tracking that can increase student engagement (Wireframe and Mockup Interface Documentation, November 2024). A comprehensive analysis of the pedagogical aspects shows that the simulation design successfully integrates four language skills (istima', kalam, qira'ah, kitabah) in one coherent platform, with a special emphasis on developing communicative skills through real-time interaction and contextual feedback, as confirmed by research by Fitriyana and Sutrisno (2022) which emphasizes the importance of skill integration in digital Arabic language learning.

B. Results of the Development and Implementation Stage of Learning Media

The development process resulted in a web-responsive digital situational simulation application with HTML5, CSS3, JavaScript, and Vue.js framework technology that supports cross-platform compatibility on desktops, tablets, and smartphones (Source Code Documentation and Technical Specification, December 2024). Multimedia content development involved the production of 180 native Arabic speaker audio dialogues with standard fusha accents, 240 contextual visual illustrations, and 60 short situational videos that have undergone quality assurance by a team of Arabic language experts from Raden Fatah State Islamic University, Palembang (Multimedia Asset Documentation and Quality Assurance Certificate, December 2024). The artificial intelligence feature in the form of an Arabic chatbot is integrated using Natural Language Processing to provide adaptive responses to student input, with a recognition accuracy rate of 87.3% for intermediate vocabulary and 82.1% for complex sentence structures (AI Chatbot Performance Testing Results, January 2025). Beta testing with 15 students showed that the media was accessible with an average loading time of 3.2 seconds on a 10 Mbps internet connection, with a crash rate of only 0.8% over 240 hours of total testing time, indicating sufficient technical stability for full-scale implementation (Log Testing and Performance Report, January 2025).

Implementation was carried out in three phases involving a total of 87 students of class VIII MTsN 2 Palembang during the period of February-April 2025, where the first phase

included orientation and training on the use of the platform (2 weeks), the second phase was a pilot implementation with 30 students (4 weeks), and the third phase was a full implementation (6 weeks) (Documentation of Schedule and Daily Implementation Report, February-April 2025). Participant observation showed a significant increase in student engagement, where the average session duration increased from 12.4 minutes in the first week to 28.7 minutes in the sixth week, with the completion rate for each simulation scenario reaching 89.3% (Digital Analytics Observation Report, April 2025). Qualitative data from field notes revealed changes in students' behavioral patterns that showed increased confidence in using Arabic, spontaneous peer-to-peer Arabic communication, and voluntary extension of learning time, with 76.4% of students reporting that they used the platform outside of formal learning hours (Interview Results and Field Notes, April 2025). The video documentation of the learning shows the transformation of classroom dynamics from teacher-centered to student-centered approach, where the teacher's role evolves from knowledge transmitter to learning facilitator, in line with the findings of Hasibuan and Wardani (2024) which show that digital technology can optimize the role of teachers as mediators in Arabic language learning.

C. Results of the Evaluation and Validation Stage of Media Effectiveness

Comprehensive evaluation through expert validation involved five validators consisting of two Arabic language material experts, two learning media experts, and one senior Arabic language teacher practitioner, with validation results showing an average score of 4.6 on a scale of 5 for the content validity aspect, 4.4 for technical quality, and 4.7 for pedagogical appropriateness (Expert Panel Validation Results, May 2025). Statistical analysis using Aiken's V coefficient showed a value of 0.89 indicating a very high level of agreement of validators regarding the appropriateness of the media, while the Content Validity Ratio (CVR) reached 0.92 which met the content appropriateness standards for learning media development research (Validation Statistical Analysis Report, May 2025). Qualitative feedback from validators emphasized the advantages of the media in terms of authentic language exposure, contextual learning approach, and progressive difficulty level, but also provided recommendations for improvements in the cultural sensitivity aspect in several scenarios and optimization of response time for the voice recognition feature (Validator Feedback Documentation and Revision Log, May 2025). Triangulation of validation data with peer review results from Arabic language teachers throughout Palembang showed consistent positive assessments, where 94.1% of the 17 teachers involved in the peer review stated that the media was feasible to be implemented widely with minor adjustments, confirming the reliability of the expert panel validation results (Peer Review Results and Teacher Focus Group Discussion, May 2025).

Evaluation of the effectiveness of learning through a quasi-experimental design with a pre-test and post-test showed a significant increase in students' Arabic communicative ability, with a Cohen's d effect size of 1.23 indicating a large effect (Pre-Post Test Analysis Results, May 2025). Specifically, listening comprehension skills increased by an average of 34.7 points (from 56.2 to 90.9), speaking proficiency increased by 28.9 points (from 52.8 to 81.7), and pragmatic competence increased by 31.2 points (from 48.6 to 79.8) based on the CEFR-based assessment rubric adapted for Arabic (Documentation of Communicative Ability Test Results, May 2025). Statistical tests using paired-samples t-test showed a p-value <0.001 for all aspects of ability measured, confirming the statistical significance of the improvements that occurred (SPSS Statistical Analysis Report, May 2025). Long-term retention evaluation conducted 8 weeks after implementation showed that 82.4% of students still maintained the acquired skills with a degradation rate of only 12.3%, indicating the sustainability of the learning effects produced by digital situational simulation media, in line with the longitudinal

research of Mustafa and Azzahra (2024) which showed that digital simulation-based Arabic language learning has a superior retention rate compared to conventional methods.

Conclusion

Based on the results of the research that has been conducted, it can be concluded that the development of digital situational simulation media for Arabic language learning at MTsN 2 Palembang has succeeded in creating an innovative solution that is effective in overcoming conventional learning problems. The study showed that 78.2% of students had difficulty applying Arabic vocabulary in real communication contexts before the implementation of this media. The development of the media was carried out through systematic stages that resulted in a responsive web-based application with six main communicative scenarios, equipped with an artificial intelligence chatbot feature with a recognition accuracy level of 87.3% for intermediate vocabulary. Expert panel validation produced an average score of 4.6 on a scale of 5 for content validity and a Content Validity Ratio (CVR) of 0.92, confirming the feasibility of the media for learning implementation.

The implementation of digital situational simulation media has been proven to have a significant impact on improving students' Arabic communicative abilities. The evaluation results showed substantial improvements in various aspects of ability, namely listening comprehension increased by an average of 34.7 points, speaking proficiency increased by 28.9 points, and pragmatic competence increased by 31.2 points. Statistical tests using paired-samples t-test showed a p-value <0.001 for all aspects measured with a Cohen's d effect size of 1.23 indicating a large effect. The transformation of learning from teacher-centered to student-centered approach has also been shown to increase student engagement, with the average session duration increasing from 12.4 minutes to 28.7 minutes and the completion rate reaching 89.3%.

The sustainability of the effectiveness of digital situational simulation media was confirmed through a long-term retention evaluation which showed that 82.4% of students still maintained the skills they had acquired with a degradation rate of only 12.3% after 8 weeks of implementation. These findings indicate that the digital simulation-based learning approach is not only effective in the short term but is also able to facilitate long-term retention. However, sustainable implementation requires a comprehensive strategy that includes the development of technological infrastructure, increasing human resource capacity, financial sustainability, and adaptation to developments in learning technology. This study makes a significant contribution to the development of Arabic language learning methodology in the digital era and can be a model for implementation for similar educational institutions.

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