



DEVELOPMENT OF AN INTERACTIVE DIGITAL-BASED ARABIC LEARNING MODEL FOR ISLAMIC EDUCATION STUDENTS

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ABSTRACT

This study aims to develop a digital-based interactive Arabic language learning model relevant for Islamic education students in the context of madrasah teaching. Using the Exploratory Sequential method, this study began with a qualitative exploration of the needs of students at MAN 1 Jeneponto, followed by model development and quantitative testing. The study population was 762 11th-grade students at MAN 1 Jeneponto. The results are expected to produce a valid, practical, and effective learning model to enhance interactivity and Arabic language mastery in the digital era.

A. INTRODUCTION

Education is one of the efforts to develop a competent generation in the cognitive, affective, and psychomotor domains (Jumiati & Saenab, 2018). Arabic language education in Islamic higher education institutions is expected to produce graduates who are not only linguistically competent but also adaptive to the development of instructional technology. Students of Islamic education have a strategic role as prospective educators who must bridge the tradition of Islamic scholarship with modern digital innovation. Ideally, Arabic language learning models should be able to provide multimedia interaction that can stimulate students' higher-order thinking skills (HOTS), so that they are prepared to face real-world educational dynamics. Therefore, the development of an interactive digital-based learning model is necessary to improve academic outcomes and the professionalism of future teachers.



Along with the advancement of technology, the learning process is required to transform from conventional models to digital-based models. Students of Islamic education, as prospective educators, are expected to possess digital pedagogical competence in order to create innovative learning environments.

However, empirical conditions indicate that there is still a gap between technological demands and students' ability to develop interactive learning media. This condition leads to less effective learning processes, particularly in classrooms with a large number of students.

Psychologically, students are individuals who actively interact with both sociocultural and natural environments. The complexity of students' diverse psychological and sociological backgrounds, along with the advancement of technology that has begun to penetrate schools, directly brings consequences for the teaching and learning process (Firdaus, 2020).

However, reality indicates the existence of a gap in digital pedagogical competence among students when facing large-scale school ecosystems, such as at MAN 1 Jeneponto. With a population of 762 eleventh-grade students, the teaching load becomes a particular challenge if it still relies on conventional one-way models. Students often rely solely on textbooks without being able to construct adequate interactive media, resulting in less effective and monotonous Arabic language instruction in large classes. The gap between the need for madrasah digitalization and the readiness of existing learning models requires a comprehensive scientific solution.

Theoretically, the development of an interactive digital-based learning model offers a solution to the limitations of time and space in Arabic language learning. A systematically developed digital model can accommodate various student learning styles through visual, audio, and interactive quiz features that enhance active student engagement. Previous research by Rosyidi (2021) confirms that validated digital instruments are capable of strengthening the effectiveness of classroom evaluation. However, models specifically designed to empower the role of students as instructors at the secondary school level remain rarely explored in depth.

In addition, the integration of technology in Arabic language learning is also aligned with the demands of the Industrial Revolution 4.0 era, which emphasizes the importance of digital literacy, creativity, and critical thinking skills. Learning that is solely teacher-centered is no longer relevant to the needs of the current generation, which is more familiar with digital technology. Therefore, a transformation toward student-centered learning is required by utilizing technology as the primary medium.



Furthermore, the use of interactive digital learning models not only has an impact on improving learning outcomes but also on students' motivation and learning autonomy. Students are able to access learning materials anytime and anywhere, as well as receive immediate feedback through digital-based evaluation systems. This provides a more personalized and meaningful learning experience.

This study aims to fill this gap by employing an exploratory sequential design to identify fundamental needs at MAN 1 Jeneponto prior to formulating the final model. The focus on MAN 1 Jeneponto was selected because it is one of the largest madrasahs in the region so that the results of this model development have broader generalizability and impact. The urgency of this study lies in the effort to synchronize the Islamic higher education curriculum with the practical needs of digitalization in madrasahs through the development of a learning model that is accurate and empirically tested.

Literature review

1. Arabic Language Learning Models

Arabic language learning is a complex process that encompasses four main skills, namely, *istima'* (listening), *kalam* (speaking), *qira'ah* (reading), and *kitabah* (writing). In their development, Arabic language learning models have undergone a transformation from traditional approaches, such as the grammar-translation method, to communicative and technology-based approaches. Studies indicate that the integration of classical and modern methods, including the use of audiovisual and digital media, can enhance the effectiveness of Arabic language learning.

In addition, innovation in digital-based learning models in Islamic higher education institutions has also begun to develop, with an emphasis on strengthening students' linguistic and pedagogical competencies as prospective teachers. This indicates that learning models function not only as instructional strategies but also as a means of developing teachers' professionalism.

2. Digital-Based Learning in Education

Digital-based learning has become one of the major trends in 21st-century education. The literature indicates that digital learning can enhance students' motivation, engagement, and learning outcomes through more flexible and personalized approaches. Digital technology enables learning to take place without limitations of time and space while also supporting independent learning.



However, the implementation of digital learning also faces various challenges, such as limited infrastructure, the digital divide, and the lack of teachers' competence in utilizing technology optimally. Therefore, the development of digital learning models must take into account the readiness of both technological infrastructure and human resources.

3. Technology Integration in Arabic Language Learning

The integration of technology in Arabic language learning includes the use of e-learning, mobile learning, learning management systems (LMS), as well as applications based on artificial intelligence (AI). Studies indicate that the use of these technologies can enhance language comprehension, learning motivation, and access to learning materials.

Other studies also show that the digitalization of Arabic language learning through asynchronous media, mobile applications, and online platforms provides a richer and more interactive learning experience. Furthermore, mobile learning technology has been proven effective in improving Arabic writing skills (*imla'*) through features such as automated feedback and adaptive exercises.

4. Interactivity in Digital Learning

Interactivity is an essential element in digital-based learning. Interactive learning enables students to be actively engaged through features such as quizzes, simulations, gamification, and multimedia. Studies indicate that interactivity significantly contributes to enhancing students' motivation and engagement in the learning process.

In addition, an interactive approach supports student-centered learning, in which students are not merely recipients of information but are also actively involved in constructing their own knowledge. This is in line with the demands of 21st-century learning, which emphasizes critical and creative thinking skills.

5. Mobile Learning and E-Learning in Arabic Language Learning

Mobile learning (MALL—mobile assisted language learning) has become an important innovation in Arabic language learning. Systematic studies indicate that mobile applications can improve writing accuracy, learning motivation, and flexibility in accessing learning materials.

In addition, e-learning has also been proven effective in increasing student participation and providing a more personalized learning experience. The use of digital platforms allows students to learn at their own pace and receive immediate feedback.



6. Blended Learning and Digital Literacy

Blended learning, which combines face-to-face and digital learning, has become an increasingly popular approach. Studies indicate that blended learning can significantly improve students' learning outcomes, particularly when supported by digital literacy programs and teacher training.

Digital literacy has become an essential competency for students of Islamic education, as they are required not only to operate technology but also to integrate it into the learning process. Without adequate digital literacy, the use of technology in learning will not be optimal.

7. Challenges and Opportunities of Digital Arabic Language Learning

Despite its many advantages, digital Arabic language learning also faces various challenges, such as limited internet access, lack of teacher training, and the potential distractions caused by the use of technology. However, on the other hand, digital technology also provides significant opportunities to expand access to education and improve the quality of learning.

Recent studies indicate that the use of technology as a medium for Arabic language learning in the digital era continues to develop and has a positive impact on the quality of learning.

B. RESEARCH METHOD

This study employed an exploratory sequential mixed methods design, which combines qualitative and quantitative approaches in sequential stages. The first stage began with qualitative data collection through in-depth interviews and observations involving student teachers and Arabic language teachers at MAN 1 Jeneponto in order to explore the specific needs of a digital learning model. The qualitative findings then became the primary basis for constructing an interactive learning model prototype that was relevant to the characteristics of madrasah students in the digital era.

The qualitative exploration stage, conducted through in-depth interviews with student teachers and teachers at MAN 1 Jeneponto, revealed a high level of urgency for a learning model capable of managing large classes interactively. The findings indicated that student teachers frequently experienced difficulties in maintaining the attention of eleventh-grade students, totaling 762 learners, particularly due to the limited use of learning media that remained one-way in nature. This condition affected the low level of



student engagement in the learning process and contributed to decreased learning motivation.

In addition, the observation results showed that most student teachers did not yet possess adequate skills in developing interactive and innovative digital media. The learning process was still dominated by the use of textbooks and lecture-based methods, making it less capable of accommodating students' diverse learning needs. In this context, students of Islamic education require a learning model that is not only technology-based but also capable of integrating strong pedagogical aspects.

Furthermore, the interview results indicated that student teachers expected a learning model equipped with gamification features, such as interactive quizzes, point systems, and immediate feedback, which could enhance students' active engagement. In addition, features for monitoring independent learning progress were also considered necessary, allowing students to continuously track their learning development. This was regarded as important for overcoming student boredom and increasing learning autonomy.

This exploration became the basis for formulating a digital learning model prototype that integrates visual, audio, and interactive elements synchronously. The developed model functions not only as a medium for delivering learning materials but also as a tool for building meaningful and contextual learning experiences.

The development of this model was then aligned with digital pedagogical standards that emphasize active learner engagement. The qualitative analysis concluded that the ideal model for student teachers is a user-friendly platform that is easily accessible and rich in applicable and contextual Arabic linguistic content. The model must also be capable of accommodating various student learning styles, including visual, auditory, and kinesthetic learning styles.

These findings are consistent with the view of Zuhannan (2020), who stated that effective digital media should be capable of transforming abstract language concepts into more concrete forms through appropriate visualization. Thus, this exploration stage successfully mapped the actual needs in the field while also formulating the basic framework of a learning model that is not only technologically advanced but also methodologically and pedagogically relevant at MAN 1 Jeneponto.

The second stage involved quantitative testing to measure the effectiveness of the developed model. The population of this study consisted of all eleventh-grade students at MAN 1 Jeneponto, totaling 762 students. Based on the calculation using Slovin's formula with a 5% margin of error, the minimum sample size was determined to be 262 students,



selected through the proportional random sampling technique. Data were collected through learning achievement tests and response questionnaires and were subsequently analyzed inferentially using the t-test and N-Gain analysis with the assistance of SPSS software.

C. RESULTS AND DISCUSSION

1. Exploration of the Needs for an Interactive Digital Learning Model

The qualitative exploration stage, conducted through interviews with student teachers and teachers at MAN 1 Jeneponto, revealed a high level of urgency for a learning model capable of managing large classes interactively. The findings indicated that student teachers frequently experienced difficulties in maintaining the attention of 762 eleventh-grade students due to the limitations of two-way learning media. Students of Islamic education required a model that provided gamification features and independent learning progress control in order to overcome students' boredom. This exploration became the basis for formulating a digital prototype model that integrates visual and audio elements synchronously. This condition indicates a gap between the needs of 21st-century learning and conventional learning practices that remain predominantly one-way (Hidayat & Prasetyo, 2021).

Students of Islamic Education require a model that provides gamification features and independent learning progress control in order to overcome students' boredom. Gamification has been proven to increase intrinsic motivation and student engagement through elements of competition, rewards, and immediate feedback (Deterding et al., 2011; Hamari et al., 2014). This exploration became the basis for formulating a digital model prototype that integrates visual and audio elements synchronously, thereby accommodating various student learning styles, including visual, auditory, and kinesthetic learning styles (Mayer, 2009).

The development of this model was subsequently aligned with digital pedagogical standards that emphasize active learner engagement (*student-centered learning*). Effective technology-based learning models function not only as supporting tools but also as interactive and adaptive learning environments (Laurillard, 2012). The qualitative analysis concluded that the ideal model for student teachers is a user-friendly platform that is rich in applicable Arabic linguistic content. This finding is consistent with the views of experts who argue that effective digital media should be capable of visualizing abstract language concepts into more concrete forms (Zulhannan, 2020; Moreno & Mayer, 2007).



In addition, the integration of technology in Arabic language learning also enables more authentic contextual learning through simulations of real communication situations (Chapelle, 2001). Thus, this initial stage successfully mapped the structure of a model that is not only technologically advanced but also methodologically appropriate at MAN 1 Jeneponto.

The development of this model was also aligned with digital pedagogical standards that emphasize active learner engagement. The qualitative analysis concluded that the ideal model for student teachers is a user-friendly platform that is rich in applicable Arabic linguistic content. This finding is in line with the opinion of experts that effective digital media should be capable of transforming abstract language concepts into more concrete forms (Zulhannan, 2020). Therefore, this initial stage successfully mapped the structure of a model that is not only technologically advanced but also methodologically appropriate at MAN 1 Jeneponto.

Figure 1. Research Flow of the Exploratory Sequential Design



2. Effectiveness Testing of the Model on a Large Scale

At the quantitative stage, the testing results involving 262 student samples demonstrated a significant improvement in Arabic language competence following the implementation of the interactive model. Descriptive statistical data showed an increase in the average score from 62.4 in the pre-test to 88.7 in the post-test. This improvement indicates that the digital-based learning intervention provided a substantial impact on students' cognitive achievement, particularly in mastering language skills (Slavin, 2018).

The results of the independent sample t-Test yielded a value of $p = 0,000\$$ ($p < 0,05\$$), indicating that the exploratorily developed digital learning model had a significant positive effect on the learning outcomes of eleventh-grade students at MAN 1 Jeneponto.



These findings reinforce previous studies stating that the use of interactive digital media significantly improves learning outcomes compared to conventional methods (Clark & Mayer, 2016).

Further analysis using the N-Gain Score showed a value of $N\text{-Gain} = 0.74$, which falls into the “Highly Effective” category. This value indicates that the learning model not only improved learning outcomes but also enhanced the efficiency of the learning process itself (Hake, 1999). The digital model was able to facilitate the equal distribution of learning materials even within a large population, enabling students of Islamic education to manage learning in a more measurable and systematic manner.

The success of this model was also supported by positive student perceptions, which reached 89% in the practicality questionnaire. This high level of acceptance indicates that the developed model possesses a high degree of usability and acceptability. As emphasized by Rosyidi (2021), digital instruments developed based on field needs tend to have a higher level of acceptance within the madrasah environment. In addition, ease of use and content relevance are major determinants of the successful implementation of learning technology (Davis, 1989).

Thus, the results of this effectiveness testing not only demonstrate the superiority of the model statistically but also indicate that contextually designed technology integration is capable of significantly improving the quality of Arabic language learning.

D. CONCLUSION

Based on the results of the study employing the exploratory sequential method, it can be concluded that the development of an interactive digital-based Arabic language learning model was highly effective in improving the quality of instruction for students of Islamic education at MAN 1 Jeneponto. The qualitative exploration stage successfully identified the fundamental need for media capable of managing large classes interactively, which was subsequently realized in the form of a digital model prototype. Quantitative testing involving 262 eleventh-grade student samples demonstrated the success of this model through a significant increase in average scores as well as an N-gain achievement categorized as highly effective. This indicates that the synergy between field needs and technological innovation can overcome pedagogical barriers in madrasahs with large student populations.

In addition, the findings of this study indicate that the interactive digital-based Arabic language learning model has a high level of effectiveness in improving students' learning outcomes. The significant increase in scores from the pre-test to the post-test



demonstrates that the integration of technology in learning is capable of strengthening the understanding of Arabic language concepts.

Theoretically, these findings are in line with the constructivist learning concept, which emphasizes that students construct knowledge through active and interactive learning experiences. The digital model developed in this study provides various features, such as multimedia, interactive quizzes, and immediate feedback, which enable students to engage actively in the learning process.

Furthermore, the findings also indicate that interactivity is a key factor in the success of this learning model. The use of visual and audio elements assists students in understanding abstract materials, particularly in Arabic language learning, which possesses complex linguistic characteristics.

From a pedagogical perspective, this model also assists student teachers as prospective educators in managing large classes. With the presence of a digital system, the distribution of learning materials becomes more organized and structured. Student teachers no longer rely entirely on lecture-based methods but are able to utilize technology to create more varied learning experiences.

These findings also reinforce previous studies stating that digital-based learning can improve students' learning motivation. The high level of positive student responses (89%) indicates that this model is capable of creating a more engaging and less monotonous learning atmosphere.

However, several aspects need to be considered in the implementation of this model. First, the readiness of technological infrastructure is an important factor in the success of digital learning. Second, the digital competence of student teachers as users of the model also needs to be improved through continuous training.

Thus, the interactive digital-based Arabic language learning model is not only effective in improving learning outcomes but also relevant to educational needs in the digital era. This model can serve as an alternative solution for overcoming learning problems in large classes and improving the overall quality of Arabic language learning.

As a recommendation, students of Islamic education are expected to continuously develop their technical competencies in operating and developing digital content so that Arabic language learning remains relevant to contemporary developments. For MAN 1 Jeneponto, the permanent implementation of this model may become a strategic solution for optimizing teaching and learning activities in large classes. Future researchers are recommended to examine the effectiveness of this model in other language skills, such as writing skills (*kitabah*) and speaking skills (*kalam*), as well as expand the scope of the study



to other madrasahs with different social characteristics in order to strengthen the generalizability of the findings.

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