Taushiah: Jurnal Hukum, Pendidikan dan Kemasyarakatan **ISSN: 2599-1353**
Vol. 15 No.1 (2025)

PROBLEMS IN TEACHING NAHWU AND SHOROF IN THE DIGITAL ERA: Challenges and Solutions

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Abstrak

Penelitian ini bertujuan menganalisis problematika pembelajaran Nahwu dan Shorof di era digital, mengidentifikasi faktor penyebab kesulitan integrasi teknologi, serta merumuskan strategi pembelajaran yang relevan. Penelitian menggunakan pendekatan deskriptif kualitatif dengan desain studi kepustakaan. Data diperoleh dari artikel jurnal, buku ilmiah, dan prosiding yang membahas pembelajaran bahasa Arab, media digital, mobile learning, gamifikasi, augmented reality, serta kecerdasan buatan. Data dianalisis melalui reduksi, kategorisasi tematik, perbandingan antarsumber, interpretasi, dan sintesis. Hasil penelitian menunjukkan bahwa problematika meliputi kompleksitas dan sifat hierarkis materi, ketidakakuratan sebagian konten digital, keterbatasan kompetensi pedagogis dan digital pendidik, karakter belajar peserta didik, serta kesenjangan infrastruktur. Teknologi interaktif, gamifikasi, augmented reality, mobile learning, dan AI berpotensi meningkatkan keterlibatan dan akses belajar, tetapi membutuhkan validasi keilmuan dan pendampingan guru. Temuan juga memperlihatkan bahwa keberhasilan digitalisasi lebih ditentukan oleh kesesuaian antara struktur materi, strategi pedagogis, kompetensi guru, kebutuhan peserta didik, dan konteks institusi. Penelitian ini menegaskan bahwa pembelajaran digital yang efektif harus mengintegrasikan kekuatan metode klasik dengan teknologi modern. Kontribusi penelitian adalah perumusan empat prinsip, yaitu scholarly accuracy, pedagogical sequencing, technological functionality, dan contextual accessibility, sebagai kerangka pengembangan pembelajaran Nahwu dan Shorof yang adaptif dan berkelanjutan.

Kata kunci: Nahwu dan Shorof, Pembelajaran Digital, Pendidikan Bahasa Arab

Abstract

This study aims to analyze the problems of teaching Nahwu and Shorof in the digital era, identify factors causing difficulties in technology integration, and formulate relevant learning strategies. The study employed a qualitative descriptive approach with a literature-based research design. Data were obtained from journal articles, scholarly books, and conference proceedings discussing Arabic language learning, digital media, mobile learning, gamification, augmented reality, and artificial intelligence. The data were analyzed through reduction, thematic categorization, cross-source comparison, interpretation, and synthesis. The findings show that the main problems include the complexity and hierarchical nature of the subject matter, inaccuracies in some digital content, limited pedagogical and digital competence among teachers, learner characteristics, and infrastructure disparities. Interactive technology, gamification, augmented reality, mobile learning, and AI can enhance engagement and learning access, but their use requires scholarly validation and teacher supervision. The findings also indicate that successful digitalization depends on the alignment of knowledge structure, pedagogy, teacher competence, learner needs, and institutional context. This study proposes four principles—scholarly accuracy, pedagogical sequencing, technological functionality, and contextual accessibility—as an integrative framework for adaptive and sustainable Nahwu and Shorof learning in contemporary education.

Keywords: Nahwu and Shorof, Digital Learning, Arabic Language Education

INTRODUCTION

Arabic occupies a distinctive position in Islamic education because it functions not only as a means of communication but also as the language of the Qur'an, Hadith, classical Islamic scholarship, and a substantial part of the intellectual heritage of Muslim civilization. For students of Islamic studies, competence in Arabic is therefore closely related to their ability to access authoritative religious sources independently and accurately. Within Arabic linguistic studies, *Nahwu* and *Shorof* constitute two fundamental branches that support this competence. *Nahwu* concerns the grammatical relationships among words in sentences and the changes occurring at word endings according to their syntactic functions, while *Shorof* focuses on word formation, morphological patterns, derivations, and changes originating from basic roots. Weak mastery of these two disciplines may lead to difficulties in interpreting Arabic texts, constructing grammatically appropriate sentences, and developing broader language proficiency. Errors in Arabic production among students also indicate that grammatical and morphological competence remains an important issue requiring continuous pedagogical attention (Mubarok, 2022).

The teaching of *Nahwu* and *Shorof* in Islamic educational institutions has historically developed through strong scholarly traditions. In pesantren and other Islamic learning environments, grammatical rules have commonly been taught through direct explanation, memorization of principles and patterns, repeated exercises, and intensive engagement with classical Arabic texts. Such approaches have contributed significantly to the preservation of traditional Islamic scholarship. Nevertheless, contemporary learners encounter Arabic in a social and educational environment that differs substantially from that of previous generations. Students are increasingly accustomed to digital devices, interactive content, audiovisual materials, and flexible access to learning resources. Studies on Generation Z suggest that their learning practices extend beyond conventional classroom boundaries and are closely connected with digital environments (Hotimah, 2025). Consequently, the exclusive reliance on verbal explanation, memorization, and textbook-based exercises may not always provide sufficient engagement for learners who increasingly expect interactive and accessible learning experiences.

Digital transformation has consequently become an important concern in contemporary Arabic language education. Technology provides opportunities to diversify learning activities, increase accessibility, and create more interactive instructional experiences. Digital materials, mobile learning, e-learning platforms, augmented reality, interactive games, and artificial intelligence have gradually been incorporated into Arabic teaching and learning (Alfulana et al., 2025; Jamil & Abdullayev, 2024). Empirical studies have demonstrated various applications of these technologies. Mobile learning has been developed to improve Arabic vocabulary mastery (Koderi et al., 2020), while e-learning platforms have facilitated Arabic instruction in Islamic higher education (Hamid et al., 2023). Interactive applications such as Wordwall have also shown potential for vocabulary learning and grammatical evaluation (Hania et al., 2022; Kholis et al., 2022; Kadijah & Rachmawati, 2026). In addition, augmented reality has been employed in Arabic learning, including specifically in *Sharf* instruction, to make abstract linguistic material more visually accessible and interactive (Khoirunnisa & Ahsanuddin, 2024; Hidayat et al., 2025).

More recently, generative artificial intelligence has expanded the possibilities of digital Arabic pedagogy. AI-based applications may assist students in generating examples, receiving immediate explanations, practicing linguistic structures, and obtaining individualized feedback. Research has begun to examine the implementation and assessment of generative AI in Arabic language teaching as well as its potential effects on Arabic proficiency (Alkaabi & Almaamari, 2025; Seyidov, 2026). At the same time, technological adoption cannot be regarded as an automatic solution to pedagogical difficulties. AI-generated materials may contain linguistic inaccuracies, inappropriate explanations, or content that requires careful verification by competent teachers (Zaki & Ali, 2024). The integration of technology into Arabic education also involves challenges related to teacher competence, infrastructure, curriculum readiness, pedagogical design, and unequal access to digital facilities (Ridha et al., 2025). These issues are particularly relevant to *Nahwu* and *Shorof*, whose systematic rules, interrelated concepts, and numerous linguistic exceptions cannot always be simplified effectively through technological applications.

Existing research has largely concentrated on the development or effectiveness of particular media, such as Wordwall, mobile applications, e-learning, augmented reality, interactive video, and AI-based tools. These studies provide important evidence concerning technological innovation in Arabic education, yet they tend to examine specific platforms or particular language competencies separately. Relatively limited attention has been given to the broader pedagogical problems involved in integrating digital technology into the teaching of *Nahwu* and *Shorof* while simultaneously preserving the scholarly rigor characteristic of traditional Arabic grammatical instruction. This gap is significant because technological innovation should not simply replace established instructional practices; rather, it needs to respond to the characteristics of grammatical and morphological knowledge, teacher readiness, learner needs, and institutional conditions.

Against this background, this study examines the problems and challenges of teaching *Nahwu* and *Shorof* in the digital era, identifies the factors contributing to difficulties in integrating technology into their instruction, and formulates strategies for improving learning quality. The study contributes to Arabic language education by positioning digital innovation within the pedagogical and scholarly traditions of Islamic education rather than treating technology as an isolated instructional instrument. It particularly emphasizes the need for an integrative approach that combines the strengths of classical grammatical learning with appropriate digital technologies. The findings are expected to provide a conceptual and practical basis for teachers, curriculum developers, and learning-media designers in developing *Nahwu* and *Shorof* instruction that is academically reliable, technologically responsive, engaging for contemporary learners, and consistent with the linguistic standards required for the accurate understanding of Arabic and Islamic texts.

METHOD

This study employed a qualitative descriptive approach with a literature-based research design. The approach was selected because the study aimed to identify, interpret, and synthesize various problems, challenges, and possible solutions related to the teaching of *Nahwu* and *Shorof* in the digital

era. Qualitative descriptive research is appropriate for studies that seek to provide a comprehensive account of a phenomenon based on relevant information without reducing it to numerical measurements or experimental relationships (Inayat & Younas, 2025). The data were obtained from scientific publications discussing Arabic language learning, digital learning media, grammatical instruction, mobile learning, augmented reality, interactive platforms, and the use of artificial intelligence in language education.

The sources consisted primarily of peer-reviewed journal articles, scholarly books, and relevant conference proceedings published in recent years. The selection of literature was based on several criteria, including relevance to the teaching of Arabic, direct connection with *Nahwu* or *Shorof*, discussion of digital technology in learning, and contribution to identifying pedagogical challenges or instructional solutions. Sources that were unrelated to the research focus, duplicated the same information, or lacked sufficient academic relevance were excluded from the analysis.

Data collection was conducted through document identification, reading, classification, and systematic recording of information from the selected literature. The collected data were then grouped into several analytical categories, including learning difficulties, characteristics of grammatical and morphological materials, teacher competence, student readiness, digital infrastructure, learning-media accuracy, and strategies for integrating conventional and digital approaches. Data analysis was carried out through data reduction, thematic categorization, comparison across sources, interpretation, and synthesis. The findings from different studies were compared to identify recurring patterns, similarities, differences, and emerging issues.

To strengthen the credibility of the analysis, information was cross-checked across multiple scholarly sources and interpreted according to the context of Arabic language education. The final analysis was directed toward constructing an integrated understanding of the major challenges in teaching *Nahwu* and *Shorof* and formulating relevant pedagogical strategies for contemporary digital learning environments.

RESULTS AND DISCUSSIONS

Problems and Challenges in Teaching Nahwu and Shorof in the Digital Era

The findings of this literature-based study show that the problems of teaching *Nahwu* and *Shorof* in the digital era are multidimensional. The difficulties do not arise merely from the use of technology, but from the interaction between the complexity of grammatical knowledge, the readiness of teachers, learner characteristics, the quality of digital learning resources, and the availability of technological infrastructure. Digitalization has unquestionably expanded students' access to Arabic learning materials through mobile applications, e-learning platforms, interactive games, augmented reality, digital modules, and artificial intelligence. However, wider access to learning resources does not automatically result in deeper grammatical understanding. This is particularly important in *Nahwu* and *Shorof*, where knowledge is cumulative, systematic, and strongly dependent on mastery of prerequisite concepts.

One major challenge concerns the structure of the subject matter itself. *Nahwu* requires students to understand syntactic positions, grammatical relationships, inflectional changes, sentence structures, and the functions of words within different contexts. *Shorof*, meanwhile, requires mastery of root forms, morphological patterns, derivations, transformations, and their semantic consequences. Khoirunnisa and Ahsanuddin (2024) found that learners frequently experience difficulties in memorizing morphological patterns and understanding changes in Arabic word forms. These difficulties confirm that *Shorof* cannot be taught merely as a collection of formulas. It requires repeated practice, pattern recognition, contextual application, and gradual conceptual development.

The problem becomes more complex when traditional grammatical materials are transferred into digital environments without pedagogical restructuring. Digital learning is sometimes limited to converting printed materials into presentation slides, PDF files, recorded lectures, or online quizzes. Such practices change the delivery medium but do not necessarily improve the learning process. In this situation, students may receive faster access to materials while continuing to experience the same conceptual difficulties. This finding is consistent with Jamil and Abdullayev (2024), who emphasize that technological integration in Arabic language education requires curriculum adaptation and pedagogical redesign rather than the simple adoption of digital tools.

Another important problem concerns the accuracy of digital content. The rapid development of generative artificial intelligence has provided students with instant explanations, examples, translations, and grammatical analyses. Nevertheless, AI-generated Arabic content cannot always be considered linguistically reliable. Zaki and Ali (2024) reported that AI-generated Arabic materials may contain errors related to verbs, pronouns, vocabulary selection, sentence construction, and syntactic consistency. Similarly, Alkaabi and Almaamari (2025) found that generative AI provides significant benefits for material development and assessment, while at the same time raising concerns about accuracy, cultural authenticity, and the reliability of generated content. These findings are especially significant in *Nahwu* and *Shorof*, because small errors in sentence structure or morphological formation can lead learners to establish incorrect grammatical concepts.

Problems also emerge from the characteristics of contemporary learners. Students in digital environments are increasingly accustomed to visual materials, short-form content, rapid feedback, and interactive learning experiences. Hotimah (2025) describes how Generation Z learners increasingly develop their Arabic learning practices beyond formal classroom boundaries through digital platforms. However, the nature of *Nahwu* and *Shorof* still requires concentration, repetition, analytical thinking, and gradual mastery. Therefore, the challenge is not simply that students lack patience or prefer instant learning, but that many instructional practices have not yet succeeded in connecting rigorous grammatical learning with the learning patterns of digitally oriented students.

Empirical evidence indicates that interactive technologies can partly address this mismatch. Kholis et al. (2022) found that the use of Wordwall contributed positively to Arabic language mastery, while Kadijah and Rachmawati (2026) reported the effectiveness of Wordwall in supporting Arabic vocabulary acquisition. Although these studies were not exclusively concerned with *Nahwu* and *Shorof*, they demonstrate that digital interactivity can increase learner involvement when activities are aligned

with specific learning objectives. Hania et al. (2022) also showed that Wordwall-assisted evaluation could be used to assess students' understanding of Arabic grammatical material.

Infrastructure constitutes another persistent challenge. Digital Arabic learning cannot be separated from the availability of internet access, devices, electricity, applications, and institutional support. Ridha et al. (2025) found that Arabic language learning in remote, frontier, and outermost areas continues to face limitations in infrastructure, internet connectivity, technological facilities, and teacher preparation. Therefore, the findings of this study indicate that the central problem of *Nahwu* and *Shorof* learning in the digital era is not the presence or absence of technology itself. The essential issue lies in the extent to which technology can be integrated without reducing linguistic accuracy, disrupting the sequential structure of grammatical knowledge, or widening disparities in learning access.

Factors Causing Difficulties in Integrating Technology into Nahwu and Shorof Learning

The analysis further reveals that the difficulties associated with technology integration in *Nahwu* and *Shorof* learning are caused by four interrelated factors: epistemological, pedagogical, human-resource, and infrastructural factors. These factors cannot be understood separately because each one affects the effectiveness of the others. Technology may be available, for example, but its pedagogical value remains limited when teachers lack sufficient competence to design learning activities, when materials are not structured systematically, or when students cannot access the required devices.

The first factor is epistemological. The internal structure of *Nahwu* and *Shorof* differs from many other learning subjects because both require systematic mastery of concepts that are strongly interconnected. A student cannot adequately understand advanced sentence analysis without first mastering basic word classifications, syntactic functions, inflectional markers, and sentence patterns. Similarly, advanced morphology cannot be mastered without sufficient knowledge of basic forms, root structures, and transformation patterns. This condition explains why digital simplification can become problematic when complex grammatical concepts are reduced to short explanations without sufficient theoretical connection. Khoirunnisa and Ahsanuddin (2024) show that morphological learning remains difficult because students must understand numerous forms and transformations rather than merely memorize isolated information.

The second factor is pedagogical. The literature indicates that many digital innovations in Arabic education have concentrated on applications and learning media, while the integration between technology and instructional design still requires further strengthening. Alfulana et al. (2025) emphasize the urgency of digital transformation in Arabic education, particularly in learning media and instructional strategies. However, transformation should not be interpreted simply as technological replacement. A conventional lecture delivered through a video platform remains essentially a conventional lecture when no changes are made to interaction, feedback, learning tasks, or assessment.

The effectiveness of digital tools becomes more evident when technology is connected with appropriate pedagogical design. Abdullah et al. (2026), for instance, integrated Wordwall with gamification and problem-based learning frameworks in Arabic evaluation. This approach demonstrates that digital platforms become more educationally meaningful when they are embedded

in a deliberate learning model. Hania et al. (2022) similarly developed a CEFR-based *qawa'id* evaluation tool supported by Wordwall, indicating that digital assessment can be aligned with clear standards of language proficiency. These studies suggest that the main issue is not whether teachers use digital technology, but whether the technology is linked to specific learning objectives and cognitive processes.

The third factor concerns human resources. Effective digital instruction requires teachers to possess not only technological skills but also pedagogical and disciplinary competence. In *Nahwu* and *Shorof*, this requirement is particularly demanding because teachers must be able to evaluate the linguistic accuracy of digital resources. Alkaabi and Almaamari (2025) found that Arabic instructors used generative AI to develop materials, support assessment, and personalize learning, but they also faced challenges involving accuracy, training, and instructional reliability. This indicates that teacher digital literacy should extend beyond the ability to operate applications. Teachers must also be capable of assessing, correcting, and contextualizing digital content.

Generational differences may further complicate this process. Chan and Lee (2023) found differences in attitudes toward generative AI between students and teachers from different generational backgrounds. Such differences may influence the speed and confidence with which digital technologies are adopted in learning environments. Younger students may use AI extensively, while teachers may adopt it more cautiously. In Arabic grammar education, however, excessive learner dependence on AI without sufficient teacher mediation can create misconceptions, particularly when generated explanations contain grammatical inaccuracies.

The fourth factor is related to infrastructure and economic conditions. Advanced digital learning requires devices, software, internet access, technical support, and institutional investment. Ridha et al. (2025) show that these conditions remain unequal, particularly in 3T regions. Consequently, the adoption of high-bandwidth platforms or AI-based learning systems may not be realistic in all educational contexts. Koderi et al. (2020) offer an alternative perspective through the development of Android-based mobile learning for vocabulary acquisition, demonstrating that digital learning can be designed for more flexible access.

Based on these findings, this study interprets the difficulty of integrating technology into *Nahwu* and *Shorof* learning as a problem of alignment. Effective digital learning requires alignment between the structure of grammatical knowledge, pedagogical strategy, teacher competence, learner characteristics, and available infrastructure. This interpretation extends previous studies that predominantly focus on the effectiveness of individual applications. The present study demonstrates that the success of digital transformation should not be measured by the sophistication of technology but by its capacity to strengthen systematic, accurate, and accessible grammatical learning.

Strategies and Solutions for Improving Nahwu and Shorof Learning in the Digital Era

The third finding of this study indicates that the most appropriate response to the challenges of *Nahwu* and *Shorof* learning is not to replace traditional instructional approaches with digital technology, but to develop an integrative model that combines the strengths of both. Traditional Arabic grammatical learning provides systematic explanation, conceptual depth, disciplined practice, and direct teacher guidance. Digital technology, on the other hand, offers flexibility, visualization,

interactivity, repeated practice, rapid feedback, and broader access. The integration of these two approaches can create a learning environment that remains academically rigorous while becoming more responsive to contemporary learner characteristics.

The first strategy concerns the development of structured digital learning materials. *Nahwu* and *Shorof* materials should be arranged progressively from basic to advanced levels. Students need to master foundational concepts before moving to more complex forms of syntactic and morphological analysis. Digital modules should therefore include clear conceptual explanations, examples, visual representations, guided exercises, independent tasks, and feedback. Hamid and Husein (2024) emphasize the importance of careful instructional design in digital Arabic learning materials. This principle is highly relevant to grammar education because the effectiveness of technology depends on the organization of knowledge rather than on visual attractiveness alone.

The second strategy is the use of interactive and gamified learning media. The findings of Kholis et al. (2022) demonstrate that Wordwall can contribute to improved Arabic learning outcomes. Hania et al. (2022) similarly show that Wordwall can support evaluation of *qawa'id* learning. More recently, Abdullah et al. (2026) demonstrated the value of combining Wordwall with gamification and problem-based learning. These findings suggest that grammatical exercises do not have to remain monotonous. Concepts such as sentence classification, *i'rab*, word patterns, verb transformations, and morphological identification can be developed into interactive exercises without reducing their academic substance.

The third strategy involves the use of visualization and augmented reality. Abstract grammatical and morphological relationships can be difficult for students to understand through verbal explanation alone. Khoirunnisa and Ahsanuddin (2024) developed an augmented-reality-integrated quartet card for *Sharf* learning and reported positive evaluations from experts, teachers, and students. Hidayat et al. (2025) also show the potential of augmented reality as an interactive medium for Arabic learning. These findings support the argument that visual technology can be particularly useful for presenting relationships among word roots, morphological patterns, sentence elements, and grammatical transformations.

The fourth strategy concerns the controlled use of generative artificial intelligence. AI can assist teachers and students in producing additional examples, creating exercises, explaining alternative sentence structures, generating practice questions, and providing preliminary feedback. Alkaabi and Almaamari (2025) show that generative AI has considerable potential in Arabic language instruction. Seyidov (2026) also discusses the use of ChatGPT in Arabic education and its relationship with language proficiency. Nevertheless, AI should not function as an unquestioned grammatical authority. The findings of Zaki and Ali (2024) indicate that AI-generated Arabic materials may still contain linguistic inaccuracies. Teacher verification is therefore essential.

A more pedagogically productive use of AI is to make AI-generated output an object of grammatical analysis. Students may be asked to identify incorrect sentence structures, determine syntactic positions, correct morphological forms, and explain why a generated answer is grammatically acceptable or unacceptable. Such activities encourage students to use AI critically rather than passively.

This approach also shifts the function of AI from an answer provider to a tool for developing higher-order grammatical reasoning.

The fifth strategy is continuous teacher professional development. Arabic teachers need integrated competence in language, pedagogy, digital technology, and assessment. They should be able to select appropriate digital tools, design activities, evaluate AI-generated content, develop interactive materials, and determine when direct explanation remains more appropriate than technological mediation. Mustar et al. (2025) emphasize the importance of bridging traditional Arabic pedagogy with artificial intelligence, suggesting that technology should strengthen rather than displace established instructional principles.

The sixth strategy is contextual adaptation. Institutions with strong infrastructure may use AI, augmented reality, interactive video, and online learning platforms, whereas institutions with limited connectivity can prioritize offline applications, downloadable modules, and mobile learning. Koderi et al. (2020) demonstrate the feasibility of mobile-based Arabic learning, while Ridha et al. (2025) remind educators that technological solutions must take account of the realities of remote and underserved regions.

Overall, the findings of this study indicate that effective digital *Nahwu* and *Shorof* learning should be constructed around four interconnected principles: scholarly accuracy, pedagogical sequencing, technological functionality, and contextual accessibility. The contribution of this study lies in integrating these dimensions into a single analytical framework. While previous studies often focus on the effectiveness of particular digital applications, the present study emphasizes that technology becomes educationally meaningful only when it strengthens the accuracy, depth, accessibility, and continuity of grammatical learning. In this sense, the future of *Nahwu* and *Shorof* education does not lie in choosing between classical tradition and digital innovation, but in developing a carefully balanced relationship between the two.

CONCLUSIONS

This study concludes that the problems of teaching *Nahwu* and *Shorof* in the digital era are not caused solely by technological limitations, but by a misalignment among the characteristics of the subject matter, pedagogical design, teacher competence, learner characteristics, and infrastructural conditions. *Nahwu* and *Shorof* possess hierarchical, systematic, and accuracy-oriented knowledge structures; therefore, merely transferring conventional materials into digital formats does not automatically improve students' understanding. The findings also indicate that interactive technology, gamification, augmented reality, mobile learning, and artificial intelligence have strong potential to enhance engagement and learning access, but their use requires scholarly validation and teacher supervision. The major contributing factors include material complexity, weak integration between pedagogy and technology, limited teacher digital competence, and unequal access to facilities. The most relevant strategy is to integrate the strengths of classical learning with digital technology through structured materials, interactive media, critical use of AI, teacher professional development, and institutional adaptation. The novelty of this study lies in formulating four integrative principles—scholarly accuracy, pedagogical sequencing, technological

functionality, and contextual accessibility—as a framework for developing accurate, adaptive, and sustainable *Nahwu* and *Shorof* learning. This framework positions technology not as a replacement for scholarly tradition, but as a pedagogical instrument for strengthening grammatical accuracy, analytical depth, learning experience, and equitable access.

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