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# EXPLORING THE NEED FOR INTERACTIVE E-MODULES IN DIGITAL ARABIC LEARNING

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**Abstract**

This study adopted a case study design with a descriptive-analytical approach to investigate students' needs for an interactive e-module to support the acquisition of Arabic reading skills among second-language learners. Primary data were collected through a needs analysis questionnaire and preliminary field interviews administered to 170 first-year students enrolled in Arabic language courses at Universitas Muhammadiyah Yogyakarta, Indonesia. As the primary measurement tool, the questionnaire instrument demonstrated high internal consistency with a reliability coefficient (Cronbach's Alpha) of 0.869, confirming its high validity and reliability for use. Subsequently, the collected quantitative data were analyzed using descriptive statistics via SPSS, including frequencies, percentages, means, and standard deviations. The findings revealed that a substantial proportion of respondents face challenges in reading Arabic, with 38.8% expressing difficulties in skill acquisition and 35.9% struggling to find suitable learning resources. Conversely, students demonstrated highly positive perceptions toward digital integration; 61.8% believed that e-modules provide substantial support in learning, and 57% agreed that interactive e-modules make learning reading skills more engaging. Consequently, this study highlights the need to develop interactive e-modules.

**Keywords** E-module; Interactive; Reading Skill.

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## INTRODUCTION

Reading skill is a fundamental pillar in Arabic language acquisition and the comprehension of its academic and cultural texts; however, teaching it to non-native speakers continues to face complex structural and methodological challenges. In the university context at Universitas Muhammadiyah Yogyakarta, direct classroom observations of first-year students enrolled in Arabic language courses revealed a clear gap between course objectives and students' actual reading comprehension levels. Most students experience significant difficulties in decoding unvocalized texts, understanding grammatical structures, and inferring implicit meanings, which results in slow reading speed.

Empirical evidence from preliminary student interviews (October 2024) further elucidates the practical dimensions of the current instructional dynamics. Specifically, students articulated an expectation for better integration of multimedia elements, such as providing audiovisual support to facilitate accurate pronunciation. Moreover, students felt that the contextual relevance of the reading texts could be further improved to ensure the materials are better aligned with authentic communicative situations and daily language practice.

Current practices in using instructional materials on digital platforms have established a solid foundation; however, there remains room for optimization to manage the cognitive load of beginner learners better. Such optimization is anticipated to encourage students to further develop independent reading strategies. In line with these dynamics, there is a strategic opportunity to innovate in instructional content design through interactive e-modules. These modules serve as a pedagogical and technological alternative that integrates reading texts with multimedia elements, immediate feedback, and graded contextual activities tailored to individual needs. Ultimately, research into the development of these e-modules is expected to synergize with and constructively enrich existing methods of Arabic reading instruction.

Numerous previous studies have explored the utilization of digital technologies and electronic modules in reading instruction. Rochma and Achmad (2023) found that difficulties in Arabic reading comprehension stem from limited vocabulary mastery, grammatical complexity, low motivation, and a lack of supportive media. At the higher education level, Budiarti and Ghani (2026) demonstrated that implementing an ADDIE-based electronic module significantly improves university students' Arabic learning outcomes and fosters interactive learning. In line with this, Şanal et al. (2025) showed that context-based electronic books effectively enhance reading

comprehension performance among learners with reading difficulties. Furthermore, Al Sous et al. (2024) found that Arabic teachers have a high level of awareness of the role of digital stories in developing reading skills, while Bataineh et al. (2025) confirmed that self-regulated online reading instruction significantly improves overall reading comprehension and specific sub-skills such as scanning and inferencing.

Nevertheless, distinct research gaps remain across each of these studies. Rochma and Achmad (2023) focused solely on diagnosing reading difficulties at the secondary school level without evaluating university students' digital readiness or multimedia preferences, whereas Budiarti and Ghani (2026) focused on testing e-module effectiveness. Meanwhile, Şanal et al. (2025) examined context-based electronic books on a small scale at the elementary level, Al Sous et al. (2024) relied solely on teachers' perceptions without incorporating direct needs data from learners, and Bataineh et al. (2025) investigated general online platforms for reading instruction. Addressing these gaps, the novelty of this study lies in establishing an empirically grounded diagnostic framework that maps the linguistic, pedagogical, and technological needs of first-year students at Universitas Muhammadiyah Yogyakarta into design specifications for an interactive Arabic reading e-module. Thus, this study aims to identify students' learning needs in Arabic reading skills to establish an empirical foundation for developing an adaptive interactive electronic module.

## METHOD

This study adopted a case study design within a descriptive–analytical approach to investigate learners' needs, bounded by the institutional context of developing an interactive e-module for Arabic reading skills among first-year students at Universitas Muhammadiyah Yogyakarta, Indonesia. The research was executed operationally through the following steps:

The target population comprised first-year students enrolled in Arabic language courses at Universitas Muhammadiyah Yogyakarta. Using simple random sampling, 170 students were selected as the primary study sample to represent learners experiencing practical challenges with Arabic reading comprehension and the use of digital learning resources.

Primary data were collected through a structured needs-analysis questionnaire specifically designed for non-native Arabic learners, supplemented by preliminary field interviews and an open-ended comment section for qualitative feedback. The questionnaire employed a 5-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). The instrument focused on the core

dimension of Learning Arabic Reading Skills (comprising 6 items). It was designed to assess Difficulties in reading comprehension, challenges in finding quality reading resources, and students' perceptions regarding the usefulness, preference, engagement, and learning progress offered by an interactive e-module.

Before field administration, the instrument underwent expert review to verify content validity. It was piloted with a separate trial sample of 170 students at Universitas Muhammadiyah Yogyakarta to establish internal consistency. Based on the Cronbach's Alpha reliability test—following the criteria outlined by Hair et al. (2019) The learner needs dimension yielded a reliability coefficient of 0.869, which falls into the high reliability category (0.70–0.89), confirming that the instrument was valid and dependable for data collection.

The validated questionnaire was distributed to the 170 respondents after explaining the study objectives and ensuring the confidentiality of responses. The collected quantitative data were processed using descriptive statistics in SPSS, computing frequencies, percentages, means, and standard deviations for each item, and categorizing open-ended suggestions. These results were systematically analyzed to prioritize students' pedagogical and technical requirements as the empirical foundation for designing the interactive e-module.

## FINDINGS AND DISCUSSION

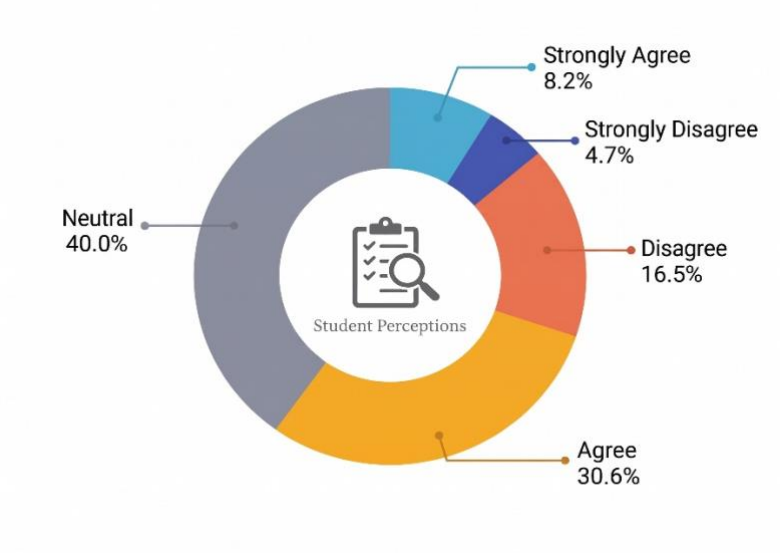
### Findings

### Issues Related to Learning Reading Skills

This section presents findings from a questionnaire distributed to 170 first-year students enrolled in Arabic language courses at Universitas Muhammadiyah Yogyakarta, Indonesia. A thorough descriptive analysis was conducted on the respondents' answers to identify the key challenges and needs associated with learning Arabic reading skills, as detailed below:

**Difficulty in Learning Reading Skills**

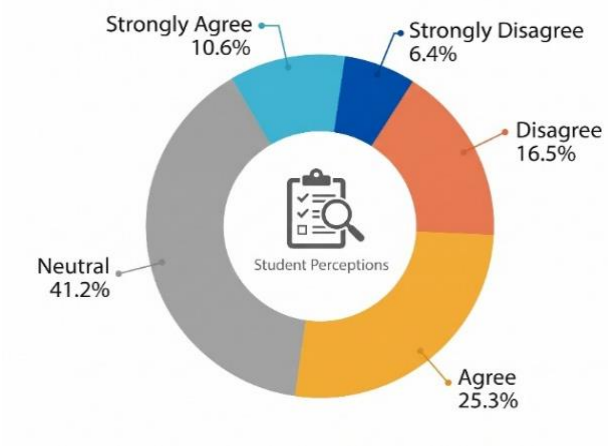
**Figure 1.** Difficulty in Learning Reading Skills




Based on the questionnaire results regarding the difficulty of learning Arabic reading skills, it can be concluded that the research sample exhibited highly varied perceptions. The largest segment of respondents (68 students, or 40%) held a neutral stance, indicating that while they acknowledge difficulties, these challenges do not significantly interfere with their learning. Meanwhile, 52 respondents (30.6%) agreed that they face difficulties learning to read, and 14 (8.2%) strongly agreed, highlighting a significant challenge for a specific group. Conversely, 28 students (16.5%) disagreed and 8 (4.7%) strongly disagreed, indicating that only a small portion of the sample reported not encountering major difficulties. Overall, although the majority did not report severe impediments, the findings reveal that Arabic reading remains a substantial challenge, particularly for the 38.8% of respondents who fell into the 'agree' and 'strongly agree' categories.

**Difficulty in Finding Instructional Resources for Reading Skills**

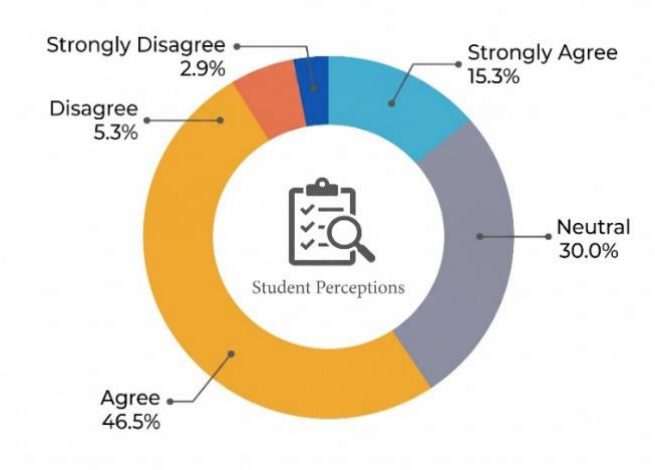
**Figure 2.** Difficulty in Finding Resources



Based on the questionnaire results concerning the difficulty of locating learning resources for reading skills, it can be concluded that the respondents exhibited varied perceptions regarding resource availability. A total of 70 students (41.2%) fell into the neutral category, suggesting that while they acknowledged some challenge in finding resources, they did not consider it a significant issue. Furthermore, 43 students (25.3%) reported difficulty finding suitable educational materials, and 18 (10.6%) strongly agreed, indicating that resource availability poses a major challenge for a specific group of students. Conversely, 28 students (16.5%) disagreed, and 11 students (6.4%) strongly disagreed. Overall, although the majority did not report severe impediments to locating learning resources, a substantial proportion of respondents (35.9%, combining the 'agree' and 'strongly agree' categories) still experience difficulties finding appropriate materials for learning this skill.

**The Interactive Electronic Module Helps Improve Reading Skills**

**Figure 3.** The Interactive Electronic Module Helps Improve Reading Skills

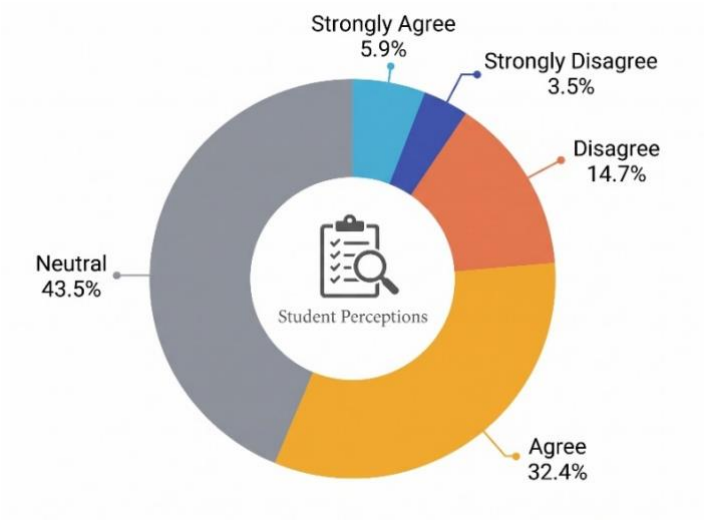



Based on the questionnaire results regarding the role of e-modules in supporting Arabic reading skills, it can be concluded that most respondents perceive e-modules as playing a positive role in the learning process. A total of 79 respondents (46.5%) agreed that e-modules can assist in learning reading skills, and 26 students (15.3%) strongly agreed, indicating that most participants view e-modules as effective instructional tools. Meanwhile, 51 students (30%) held a neutral position, suggesting that they might not have fully experienced either the benefits or the difficulties of using e-modules for reading. Conversely, 9 students (5.3%) disagreed and 5 (2.9%) strongly disagreed, indicating that only a small minority felt e-modules were unhelpful. Overall, these findings reveal that a significant majority of respondents (61.8% combining the 'agree' and 'strongly agree' categories) believe that e-modules provide substantial support in learning reading skills, with

only a very small fraction of participants finding them unsuitable or unhelpful for their learning.

**Preference for Using Interactive Electronic Modules Instead of Traditional Instructional Materials for Learning Reading Skills**

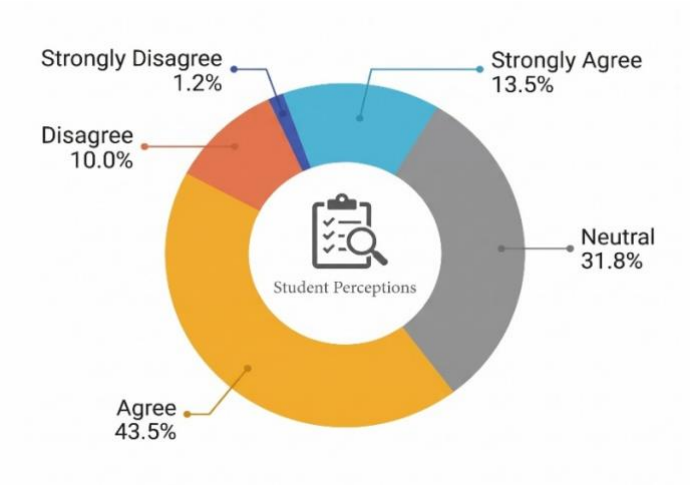
**Figure 4.** Preference for Using Interactive Electronic Modules Instead of Traditional Instructional Materials for Learning Reading Skills




Based on the questionnaire results on the preference for interactive e-modules over traditional learning materials for learning reading skills, it can be concluded that the respondents exhibited varied attitudes. A total of 74 students (43.5%) held a neutral stance, indicating no clear or firm preference between interactive e-modules and traditional materials. This suggests a variance in user experience or uncertainty in choosing their preferred instructional method. Meanwhile, 55 respondents (32.4%) agreed that they prefer interactive e-modules over traditional materials, and 10 students (5.9%) strongly agreed, suggesting that a segment of the participants views interactive e-modules as a more effective or engaging approach to learning reading skills. Conversely, 25 students (14.7%) disagreed and 6 (3.5%) strongly disagreed, indicating that a small minority of respondents still prefer traditional learning materials over interactive e-modules. Overall, although the largest segment of respondents remained neutral, the findings indicate that approximately 38.3% of participants (combining the 'agree' and 'strongly agree' categories) favor using interactive e-modules over traditional educational materials for learning reading skills.

**The Interactive Electronic Module Can Help Achieve Progress in Reading Skills**

**Figure 5.** The Interactive Electronic Module Can Help Achieve Progress in Reading Skills




Based on the questionnaire results, most respondents were positive about the interactive e-module. A total of 74 participants (43.5%) agreed that the interactive e-module makes learning more engaging, and 23 (13.5%) strongly agreed, indicating that most participants felt it adds significant appeal to the Arabic language learning process. Additionally, 54 students (31.8%) held a neutral stance, suggesting they did not perceive a substantial difference or had not fully experienced the interactive e-module's benefits in making learning more interesting. Conversely, 17 students (10%) disagreed, and only 2 individuals (1.2%) strongly disagreed, indicating that a small proportion of respondents felt the interactive e-module had no impact or was even less engaging for learning to read. Overall, these findings indicate that approximately 57% of respondents (across the 'agree' and 'strongly agree' categories) believe that using interactive e-modules can make learning reading skills more engaging.

Based on the analysis of the previous results, the students' needs regarding the use of interactive electronic modules to enhance Arabic reading skills encompass several interrelated areas. Foremost, students require innovative instructional approaches characterized by interactivity and variety, particularly those that leverage modern educational technologies, such as interactive electronic modules, to overcome existing reading challenges. In tandem with these methods, there is a strong demand for reliable, diverse learning resources that integrate the internet and educational applications to meet students' individual needs effectively. To ensure the successful use of these modules, it is essential to provide technical support and training programs for both students and teachers, along with instructional content designed to enhance engagement and motivation.

Furthermore, developing dynamic instructional programs is crucial for encouraging continuous learning, using interactive teaching methods and applications that make reading both enjoyable and stimulating. Ultimately, fulfilling these needs depends on technological enhancements that deliver clear pedagogical gains, specifically through sophisticated educational tools that provide real-time feedback and continuous guidance throughout the reading acquisition process.

**Discussion**

Descriptive data from the 170 first-year students enrolled in Arabic language courses at Universitas Muhammadiyah Yogyakarta indicate that learners face notable challenges in developing Arabic reading proficiency, with **38.8%** reporting difficulties in mastering reading skills and **35.9%** struggling to locate suitable instructional resources. Theoretically, these reading barriers can be explained through contemporary Schema Theory (Anderson & Pearson, 1984) and the Interactive-Compensatory Reading Model (Grabe & Yamashita, 2010), which posit that fluent reading comprehension requires the simultaneous activation of bottom-up decoding skills and top-down background knowledge. When non-native learners encounter unvocalized Arabic scripts without adequate morphological and syntactic scaffolding, their lower-level word recognition consumes excessive working memory, thereby obstructing higher-level semantic inference. Furthermore, from the perspective of Cognitive Load Theory (Sweller et al., 2011), static and poorly organized text materials impose a high extraneous cognitive load on beginner learners, leaving insufficient cognitive capacity for schema construction and deep comprehension.

These empirical patterns strongly align with recent studies in Arabic as a second language pedagogy over the last five years. For instance, Saepudin et al. (2024), Nasirudeen and Chtaibi (2024), Ayatullah and Farhana (2024), and Mustofa et al.(2026) found that non-native university students frequently struggle with lexical ambiguity and grammatical parsing when reading unvocalized texts, which significantly slows reading fluency—a challenge further compounded by Arabic diglossia and orthographic complexity (Asadi & Asli-Badarneh, 2026). Similarly, research by Karo and Lubis (2025) and Aflisia et al. (2026) confirmed that conventional print-based or static digital handouts fail to provide immediate lexical support, exacerbating reading anxiety among beginner learners. While some scholars argue that early exposure to simplified, non-interactive texts is sufficient to build initial reading confidence (Othman, 2025), the present findings affirm the counter-perspective advanced by Azami (2025) and Rosyad et al. (2026), demonstrating that without contextualized scaffolding and authentic communicative relevance, simplified static materials fail to

bridge the gap toward functional reading proficiency. Furthermore, recent investigations into instructional strategies reveal a persistent gap between educators' pedagogical perceptions and the reality of students' actual language proficiency needs, a mismatch that further impedes comprehension gains (Ismail & Mat, 2026). To address these actual learner needs, empirical evidence increasingly underscores that integrating morphological and syntactic awareness exercises directly into reading instruction is essential for enabling non-native learners to decode unvocalized texts independently (Nisa & Mahmudah, 2026).

The second major finding reveals that first-year students at Universitas Muhammadiyah Yogyakarta hold positive perceptions toward digital learning interventions, with 61.8% recognizing that an interactive electronic module can help improve reading skills, 57.0% believing it makes the learning process significantly more engaging, and 38.3% preferring it over traditional print-based materials (compared to only 18.2% who favored traditional resources). Grounded in the Cognitive Theory of Multimedia Learning (Mayer, 2022) and contemporary Dual-Coding Principles (Clark & Paivio, 1991), learning is significantly enhanced when instructional content is processed simultaneously through both auditory/verbal and visual/pictorial channels. Incorporating native audio recordings alongside visual syntactic or morphological explanations enables learners to form dual mental representations, directly addressing the phonological and orthographic decoding bottlenecks commonly faced by beginner readers (Kassim & Taqwudin, 2026). Moreover, in accordance with Sociocultural Scaffolding Theory (Lantolf & Poehner, 2014) and Second Language Acquisition Input Principles (VanPatten et al., 2022), interactive self-assessment quizzes and immediate feedback function as dynamic digital scaffolding that lowers the affective filter and guides learners progressively toward autonomous reading mastery (Azrien & Hasan, 2024).

In dialoguing with contemporary educational technology literature (2022–2026), these results corroborate findings by Syarifah (2024) and Hidayah et al. (2025), who reported that multimedia-rich Arabic e-modules substantially improve vocabulary retention, phonological awareness, and learner engagement compared to traditional textbooks. Likewise, studies by Sa'i et al. (2026), Syaifullah et al. (2026), and Nasr (2024) demonstrated that integrating interactive audio-visual elements and formative self-checks fosters self-regulated learning and reduces foreign language reading anxiety. Nevertheless, the substantial proportion of neutral responses across the questionnaire items (ranging from 30.0% to 43.5%) offers a critical nuance an antithesis to purely technology-driven assumptions, echoing caveats raised by Selwyn (2011) and Sapawi and Yusoff

(2025): positive attitudes toward digital modules do not automatically translate into effective reading acquisition unless learners are given clear pedagogical orientation and the module is structured around their specific linguistic deficits (Sapawi & Yusoff, 2025). Thus, affirming the contemporary Systematic Instructional Design Frameworks advocated by Dick et al. (2006), Nurbayan and Sanusi (2025), and (Hamdy et al., 2025), the present findings underscore that developing an effective Arabic reading e-module requires harmonizing multimedia interactivity with contextualized, learner-centered scaffolding tailored to first-year university students' actual diagnostic needs.

Beyond media features and learner preferences, the findings particularly the 34.5% of students who reported difficulty locating appropriate reading resources highlight the necessity of designing the proposed interactive e-module as an easily accessible, self-contained digital learning resource tailored for independent study (Nair & Mohd Haniff, 2026). From a learner-cantered instructional design perspective, intuitive navigation, hyperlinked glossaries, and integrated reading tools eliminate the time-consuming burden of searching across fragmented supplementary sources, which is critical for first-year undergraduates transitioning into autonomous university study (Vavouras et al., 2026). Recent empirical investigations have shown that well-structured, mobile-friendly digital Arabic modules significantly improve resource accessibility, learner autonomy, and sustained reading engagement compared with conventional offline handouts (Syihabuddin & Wahyudi, 2026). Furthermore, the successful integration of interactive digital modules into higher education reading courses depends equally on instructors' pedagogical guidance and digital literacy to orient learners especially those holding neutral or hesitant attitudes toward effective self-regulated reading strategies (Wei, 2023).

From a curricular and practical standpoint, these diagnostic insights provide actionable design parameters for Arabic language program developers seeking to modernize foundational reading courses. Rather than relying on generic commercial textbooks, curriculum designers should prioritize modular, bite-sized instructional units that pair authentic cultural texts with progressive vocalization fading to foster independent decoding transfer (Mahyudin et al., 2025). This pedagogical approach aligns with recent evidence showing that culturally contextualized and incrementally scaffolded digital reading materials strengthen learners' reading self-efficacy and long-term vocabulary retention in non-native Arabic programs (Aljanahi, 2025); (Vambudi et al., 2026). Finally, while the present needs analysis establishes a robust empirical baseline from 170

students, future research should pursue iterative design-based development and multi-institutional quasi-experimental trials to validate the longitudinal efficacy of the resulting interactive e-module across diverse proficiency levels.

## CONCLUSION

Based on a needs analysis of 170 first-year students at Universitas Muhammadiyah Yogyakarta, this study concludes that learners face challenges in developing Arabic reading proficiency, primarily due to the limited availability of adaptive learning materials. Concurrently, students demonstrate high digital readiness and access to devices, accompanied by a strong preference for interactive electronic modules. Consequently, developing an interactive Arabic reading e-module equipped with clear audiovisual pronunciation aids, animations to illustrate complex grammatical concepts, and embedded interactive practice exercises is a highly relevant pedagogical solution for addressing students' learning needs.

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