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Developing Arabic Language Instructional Materials for Mathematic Students in Islamic Higher Education in Indonesia

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ABSTRACT: The lack of relevance between Arabic language learning materials and students' academic disciplines has contributed to low engagement and language proficiency. This study aims to develop Arabic teaching materials integrated with mathematical content to enhance students' linguistic competence and mathematical reasoning. The research employs a Research and Development (R&D) approach, adopting the Hannafin and Peck model, which consists of three main stages: needs analysis, design, and iterative evaluation-based development. Participants included 72 students and 2 lecturers, with additional validation from 3 subject matter experts. Data were collected through needs analysis questionnaires, expert validation sheets, and practicality questionnaires. The findings reveal that: (1) 72.3% of students expressed a need for Arabic materials incorporating mathematical content; (2) Four core topics were identified for material development: numbers, fractions, geometry, and statistics; (3) Expert validation yielded scores >0.5 (valid category); and (4) The practicality level of the materials reached 81,3% (practical criteria). These results indicate that the developed interdisciplinary teaching materials not only meet validity and practicality standards but also have the potential to bridge students' academic and linguistic needs. The study recommends further effectiveness testing across various Islamic higher education contexts to strengthen the generalizability of the findings.

Keywords: Arabic-mathematics integration, interdisciplinary teaching materials, Hannafin and Peck model, mathematics education.

ABSTRAK: *Kurangnya relevansi materi pembelajaran bahasa Arab dengan disiplin ilmu akademik siswa menjadi salah satu faktor rendahnya keterlibatan dan kemahiran berbahasa. Penelitian ini bertujuan mengembangkan materi ajar bahasa Arab yang terintegrasi dengan konten matematika guna meningkatkan kompetensi linguistik dan penalaran matematis mahasiswa. Metode penelitian yang digunakan adalah research and development (R&D) dengan mengadopsi model Hannafin dan Peck, yang meliputi tiga tahap utama: analisis kebutuhan, desain, dan pengembangan berbasis evaluasi iteratif. Partisipan terdiri dari 72 mahasiswa dan 2 dosen, dengan melibatkan 3 ahli sebagai validator. Instrumen pengumpulan data mencakup kuesioner analisis kebutuhan, lembar validasi ahli, dan kuesioner kepraktisan. Hasil penelitian menunjukkan: (1) 72,3% mahasiswa membutuhkan materi bahasa Arab berbasis matematika; (2) Teridentifikasi empat topik inti untuk pengembangan materi, yaitu bilangan, pecahan, geometri, dan statistik; (3) Validasi ahli memperoleh skor >0,5 (kategori valid); dan (4) Tingkat kepraktisan materi mencapai 81,3% (kriteria praktis). Temuan ini mengindikasikan bahwa materi ajar interdisipliner yang dikembangkan tidak hanya memenuhi aspek validitas dan kepraktisan, tetapi juga berpotensi menjembatani kebutuhan akademik dan kebahasaan mahasiswa. Implikasi penelitian merekomendasikan uji efektivitas lebih lanjut di berbagai konteks perguruan tinggi Islam guna memperkuat generalisasi temuan.*

Kata kunci*: integrasi bahasa Arab-matematika, materi ajar interdisipliner, model Hannafin dan Peck, pendidikan matematika.*

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INTRODUCTION

The development of effective instructional materials for specialized educational contexts remains a significant challenge within language pedagogy. Standardized commercial learning resources often fall short in addressing the discipline-specific needs of learners (McDonough et al., 2013). Research highlights that collaborative material development involving educators, learners, and subject experts, underpinned by rigorous research methodologies, is key to producing more educationally valuable resources (Tomlinson, 2005). This approach is particularly crucial when creating Arabic language materials for Mathematics Education students at Islamic higher education institutions (PTKI), where the interdisciplinary nature of the subject demands customized instructional resources.

Recent scholarship in Arabic language instruction reveals three predominant trends: the integration of religious education (Kholida, 2021; Syarifuddin, 2017), the development of Arabic for Specific Purposes (ASP) in fields such as physics and economics (Mahyudin, 2017; Rahmawati, 2020), and the enhancement of discrete language skills (Fauziah et al., 2022; Syaifullah & Izzah, 2019). However, a significant gap remains in the development of Arabic language materials specifically tailored for mathematics students in PTKI settings, despite clear connections between mathematical concepts and Arabic linguistic structures, particularly in Quranic teachings on inheritance, algebra, and proportional reasoning.

Mathematics students in STEM fields often face multiple challenges in acquiring Arabic. Among these challenges are the limited availability of relevant learning resources, persistent misconceptions regarding the relationship between Arabic and mathematics, and suboptimal learning environments, which together account for approximately 50% of the difficulties faced by students (Kholida, 2021). Additional barriers include systemic curriculum deficiencies (*Masa Depan Bahasa Arab Di Indonesia | Republika Online*, n.d.), persistent literacy gaps due to inadequate infrastructure (Zarkasyi et al., 2022), and the inherent complexity of Arabic's diglossic nature and unique phonetic features.

The Quran provides numerous opportunities for interdisciplinary integration, particularly in the mathematical applications found in the laws of inheritance (Surah An-Nisa). Research suggests that pedagogical approaches that systematically link Arabic language learning with mathematical processes can significantly enhance student engagement (Ihsan, 2019; Rodli, 2017). The successful application of integrated textbooks in fields such as economics (Rahmawati, 2020) suggests substantial potential for similar applications in mathematics education.

This study aims to: (1) analyze the Arabic language requirements for Mathematics Education students at PTKI; (2) develop interdisciplinary teaching materials that incorporate mathematical concepts; (3) validate these materials through expert review; and (4) assess their practical application in classroom settings. A brief overview of the relevant literature is provided below to support the study.

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Literature Review

The teaching of Arabic to mathematics students in Islamic universities plays a crucial role in facilitating comprehension of Islamic texts, thereby enhancing students' engagement with the subject matter in mathematics education. In Indonesia, Arabic proficiency is a requirement for students in Islamic universities to access religious documents and enrich their interaction with Arab literature and culture (Husein et al., 2023). This necessity is echoed by a growing emphasis on specialized Arabic curricula designed to meet the specific academic and cultural needs of these students (Tabroni et al., 2022).

Within the framework of Islamic education, learning Arabic is not merely an academic exercise but is deeply intertwined with the acquisition of knowledge in both religious and scientific domains. Arabic is the language of the Qur'an and classical Islamic texts, making it indispensable for students to master it in order to fully understand the foundational principles of Islamic teachings (Majid & Rusady, 2022; Suwardi et al., 2023). In the context of mathematics education, the integration of Arabic language training enables students to interpret mathematical texts that often incorporate Arabic terminology or concepts, thus enhancing their academic capabilities in both Islamic and scientific disciplines (Ritonga et al., 2021; Zarkasyi et al., 2022).

The pedagogical approaches employed in teaching Arabic to mathematics students are highly customized to accommodate their specific linguistic competencies and learning styles. Studies suggest that hybrid learning methods, which engage multiple sensory approaches, are particularly effective in enhancing Arabic language acquisition (Husna et al., 2024). Additionally, innovative learning tools, such as Mufradat cards and thematic materials, have proven successful in improving understanding and retention among students (Suwardi et al., 2023).

Despite these advances, educators continue to face challenges, including the variability in students' prior knowledge of Arabic and the necessity for instructional methods that are tailored to these differences (Muhsin, 2021; Husein et al., 2023). Reforms in Arabic language curricula that emphasize practical applications and contextual learning have been proposed as essential strategies to ensure success (Burhanuddin, 2024). These strategies not only foster greater engagement but also equip students to apply their language skills effectively within their mathematics studies and in understanding complex Islamic texts.

The development of teaching materials for Arabic language instruction in Islamic universities, particularly for mathematics students, underscores the intersection of language learning and subject-specific academic needs. Crafting effective and relevant educational resources demands a careful consideration of various factors. Materials development in Arabic language instruction is fundamentally about addressing the unique communicative and academic needs of students. According to (Husein et al., 2023), this process involves systematic activities designed to improve educational outcomes. Within the realm of Arabic for Specific Purposes, which has parallels in the broader field of Arabic language education, course design should prioritize the unique requirements of learners, particularly in relation to their academic or professional fields (Selim, 2018). This

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requires moving beyond traditional Arabic content to create specialized materials that align with the mathematics curriculum, thus addressing the dual necessity of language proficiency and mathematical understanding (Ritonga et al., 2023).

The effectiveness of instructional materials is significantly influenced by the integration of contextual factors. Richards (Husein et al., 2023) and Andriani (2015) emphasize the importance of understanding the students' cultural and educational backgrounds when designing learning resources. For mathematics students, this includes the incorporation of mathematical terminology and concepts into Arabic language instruction to promote fluency in both language and subject matter (Mohideen, 2024). Furthermore, the availability of resources, including textbooks and digital content, plays a critical role in ensuring effective learning. Research indicates that the lack of appropriate, research-based materials can hinder students' academic success in both language acquisition and mathematics (Tahir & Maarof, 2021). Moreover, the teaching context itself—encompassing classroom environments, instructional aids, and teaching methods—must be adapted to enhance students' language competencies in a manner that complements their mathematical education. Mastery of Arabic not only facilitates the understanding of Islamic texts but also supports a deeper comprehension of mathematical concepts presented in Arabic (Burhanuddin, 2024).

To develop effective teaching materials, several critical steps must be followed. Sa'dudin et al. (2022) (Sa'dudin et al., 2022) outline a three-stage process: first, conducting a needs analysis to determine the specific needs of the students; second, selecting appropriate teaching theories that resonate with these needs; and third, adapting authentic texts and resources to meet the learning objectives. This meticulous process ensures that the materials are not developed in isolation, but rather are shaped by the educational needs and cultural contexts of the students (Wargadinata & Maimunah, 2021).

RESEARCH METHOD

This study employs a developmental research approach, utilizing the instructional material development model proposed by Hannafin and Peck. This model consists of three main phases: analysis, design, and implementation, with evaluation and revision integrated at each stage (Hasyim, 2016).

The research was conducted at IAIN Palopo, involving both students and lecturers from the Mathematics Education program. A purposive sampling technique was used to select participants. Out of 145 students enrolled, 72 were chosen based on their enrollment in Arabic-related courses and their willingness to participate. Additionally, one Mathematics Education lecturer and one arabic lecturer was involved in the study. Although involving two lecturers may limit broader institutional representation, the selected lecturers possessed relevant experience in both curriculum development and interdisciplinary teaching. Future studies are encouraged to include curriculum developers for data triangulation and broader perspectives.

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The instruments employed in this study included a needs analysis questionnaire, a practicality questionnaire, and an expert validation sheet. The needs analysis questionnaire was adapted from an instrument developed by Andri Prayoga (Prayoga et al., 2021). It contained 18 items using a four-point Likert scale to measure students' expectations and perceptions regarding Arabic learning. Additionally, the questionnaire included an analysis of students' physiological and psychological characteristics, with 30 dichotomous (yes/no) questions.

The expert validation sheet was designed to assess the quality of the developed instructional materials. It covered three main indicators: format appropriateness, content quality, and language accuracy. It consisted of 16 statement items evaluated using a four-point Likert scale. Validation was conducted by three experts selected based on their expertise in Arabic education, instructional material development, and curriculum design. Prior to full distribution, a pilot test of the questionnaires was conducted to ensure clarity and reliability.

The practicality questionnaire, consisting of 20 items, evaluated five main aspects: readability, flexibility, usefulness, equivalence, and appeal, all measured using a four-point Likert scale.

Data from the expert validation sheet were analyzed using Aiken's V formula (Azwar, 2019) to determine the content validity of the instructional materials. The coefficient value of Aiken's V ranges from 0 to 1, with a value of 0.5 or higher indicating adequate content validity (Al-Dujaily et al., 2025). Percentage-based analysis was used to evaluate responses from the needs analysis and practicality questionnaires. A practicality score of 70% or higher indicated that the developed materials were considered practical for use (Benavides et al., 2022).

By incorporating both expert validation and field testing, this study aims to ensure that the developed Arabic instructional materials are not only theoretically sound but also practically effective for Mathematics Education students in Islamic higher education.

RESULT AND DISCUSSION

The Needs of Students in Mathematics Education

The needs analysis phase serves as a fundamental step in ensuring that the developmental research addresses relevant and effective solutions to existing challenges. This analysis helps anticipate the impact of the developed instructional materials on the expected learning outcomes. The results presented in this section are the interpretation of the field data.

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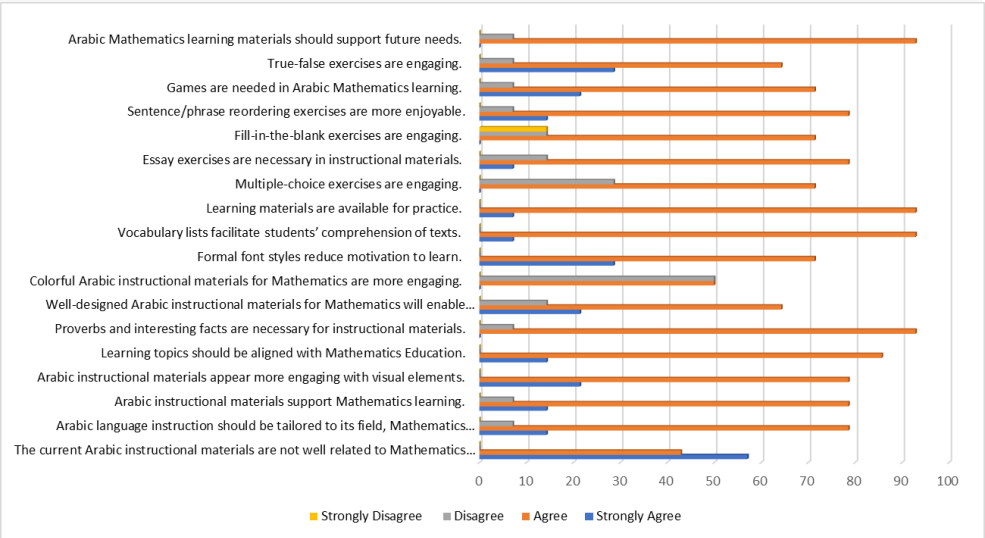

Figure 1. Results of the needs analysis questionnaire on instructional materials

Figure 1, which presents the results of the respondents' questionnaire on instructional needs, highlights the necessity for Arabic language course materials in the Mathematics Education program to be directly related to mathematics. However, integrated Arabic instructional materials specifically designed for mathematics are currently unavailable. Respondents also emphasized the importance of incorporating engaging visual elements to enhance the learning experience. MI said "I think that's important. If the material was aligned with what we are learning in Math, I could see a more direct connection between language and application". Additionally, the discussion topics within the course should remain closely aligned with mathematics subjects. Moreover, respondents expressed the need for motivational statements, proverbs, and Quranic verses or Hadith quotations in the instructional materials to instill positive values in learners.

Half of the respondents indicated a preference for instructional materials designed with attractive colors, as these enhance content retention and improve long-term recall. Additionally, the use of varied and less rigid font styles makes the materials more engaging while fostering students' creativity and innovation. When students are inspired by well-designed materials, they are more likely to develop creative problem-solving skills and gain a deeper understanding of the subject matter (Rahmawati, 2022)

On average, 80% of respondents expressed a preference for instructional materials that support independent learning, enabling students to access and explore content aligned with their interests and learning objectives. SA "If the materials were designed well, with clear explanations and exercises, I think we would be able to study by ourselves more effectively". Additionally, such materials promote the development of effective time management skills, as learners must prioritize and regulate their own study schedules.

Respondents also emphasized the importance of incorporating diverse exercises, including multiple-choice questions, essays, matching activities, and sentence/word reordering tasks. These varied exercises are considered essential

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for enhancing problem-solving skills, decision-making abilities, and analytical thinking. Engaging with such activities helps learners develop critical thinking skills that are valuable not only in academic settings but also in real-world applications.

Engaging instructional materials play a crucial role in creating an effective and memorable learning experience for students (Magdalena, 2022). Such materials not only enhance learning outcomes but also foster students' interest and motivation in understanding the world around them. Additionally, instructional materials that relate to students' daily lives and experiences can significantly increase their engagement in the learning process (Jiang, 2023). Students are more likely to connect with course content when they perceive its relevance to their own lives (Jhonson, 2015). The questionnaire results analyzing students' characteristics are as follows:

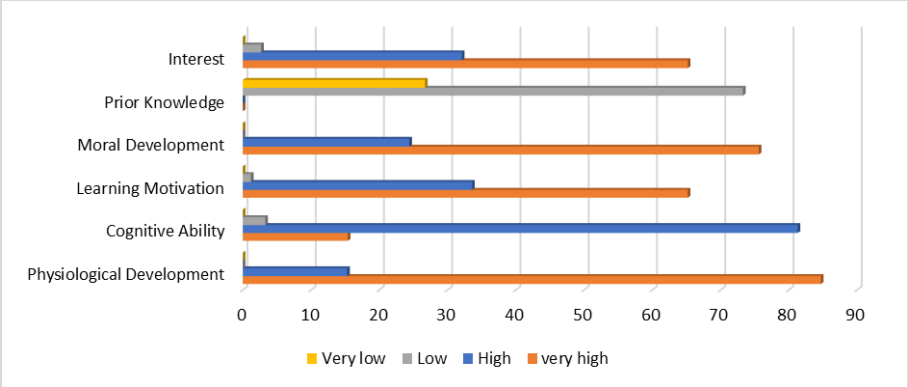

Figure 2. Student characteristics analysis

Physiological factors play a crucial role in students' ability to learn and succeed in education. These factors include physical health, sleep patterns, nutrition, learning environment conditions, and hormonal and chemical balance in the body (Rosa & Nursa'adah, 2023). The questionnaire results indicate that more than 80% of respondents reported having very good or high physiological conditions, providing a strong foundation for their learning abilities. However, if these factors are not adequately met, students may face learning difficulties and struggle to reach their full academic potential.

More than 60% of respondents exhibited strong psychological factors, which play a crucial role in the learning process by influencing cognition, motivation, emotions, and student behavior. When educators understand these factors and integrate them into lesson planning, they can create more effective and meaningful learning experiences. Psychological factors shape how students process, comprehend, and respond to information; therefore, recognizing and addressing them is essential for optimizing student learning outcomes (Chanda & Harahap, 2023). Assessing students' prior knowledge before developing instructional materials is essential for designing effective learning experiences. The questionnaire results indicate that 73% of Mathematics Education students have low prior knowledge, while the remaining respondents fall into the very low category. Overall, evaluating students' prior knowledge is a fundamental aspect of student-centered education, as it enables the creation of more meaningful,

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relevant, and personalized learning experiences. This approach ultimately enhances learning outcomes (Arends, 2007).

Arabic Language Instructional Materials

The development of Arabic language course instructional materials follows a systematic process aimed at designing or enhancing instructional products. This phase focuses on creating effective and relevant solutions to identified needs or challenges. It involves careful planning, thorough analysis, and collaborative efforts to ensure the production of high-quality Arabic language instructional materials. Based on the needs analysis, four core instructional materials have been specifically designed to address these requirements

Table 1. Roadmap for instructional material development

No	Title	Competencies	Activities
1	Numbers	*a. Maharah Istima'* *b. Maharah al kalam* *c. Maharah Al qira'ah* d. *Maharah al kitabah*	• Introduction • Reading Passages • Answering Questions Based on Texts • Understanding Arabic numerals • Matching words/sentences, • Answering multiple-choice questions • Completing words (time) • constructing sentences • Completing dialogues related to fruits
2	Fractions		• Conversations Related to Time and Clocks • Reading Passages on Daily Activity Schedules • Answering Comprehension Questions Based on the Text • Understanding Parts of Fractional Numbers • Writing and Reading Fractions in Arabic • Matching Sentences or Words with Time Expressions • Answering Multiple-Choice Questions • Completing Words with Harf (Letters/Particles) • Arranging Words into Correct Sentences

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No	Title	Competencies	Activities
			• Completing Conversations Related to Time
3	Geometric Shapes		• Conversations Related to Travelers (*Musafir*) • Reading Passages on the Shapes of Surrounding Objects • Answering Comprehension Questions Based on the Text • Understanding Two-Dimensional Shapes • Understanding Three-Dimensional Shapes • Matching Images with Corresponding Words • Answering Multiple-Choice Questions • Completing Sentences with Shape-Related Terms • Arranging Words into Correct Sentences • Constructing Sentences Based on Images
4	Statistica		• Conversations Related to Lessons • Reading Passages About Gardens • Answering Questions Based on Images • Understanding Terminologies in Statistics • Matching Words Related to Mean (Average) • Answering Multiple-Choice Questions on Mean (Average) • Constructing Sentences Using Given Words (Dhomir - Pronouns) • Arranging Words into Correct Sentences • Developing Statistical Literacy

Table 1 presents four main topics that serve as the focus of instructional material development: numbers, fractions, geometric shapes, and statistics. Additionally, the expected student competencies include developing speaking skills through conversation exercises and improving reading comprehension of provided texts. Students are also encouraged to expand their vocabulary through

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exposure to colors, Arabic pronouns (*dhomir*), time expressions, and specific hours. Integrating mathematics with Arabic language learning is expected to enhance both students' communication skills and linguistic competence (Christensen, 2022).

Instructional materials that align with students' needs play a crucial role in effective education (Bayu, 2023). By understanding learners' needs and designing appropriate instructional materials, educators can create more meaningful, effective, and inclusive learning experiences (Sumartini et al., 2019). This approach enables students to reach their full learning potential and actively engage in the learning process (Agusta & Nuraini, 2019)

The following provides an overview of the main topics covered in the developed instructional materials.

Figure 3. Overview of the initial display for each main topic

Instructional Material Validity

The validity of the developed instructional materials was evaluated by three lecturers recognized as experts in mathematics and Arabic language. This validation process involved assigning scores and providing feedback based on the evaluators' assessments. The collected scores were then analyzed using Aiken's validity criteria. The validation results are presented in Table 2.

Table 2. Aiken's Validity Assessment Results for Instructional Materials

No	Aspect	V	Category
1	Size Appropriateness	0,667	Valid
2	Language and Vocabulary	0,778	Valid
3	Material Compatibility	0,556	Valid
4	Depth of Material	0,778	Valid
5	Material Accuracy	0,889	Valid

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6	Material Updates	0,667	Valid
7	Suitability to Student Development Level	0,556	Valid
8	Communication Effectiveness	0,556	Valid
9	Accuracy	0,667	Valid
10	Coherence and Unity of Ideas	0,556	Valid
11	Learning Presentation	0,556	Valid
12	Content Layout	0,556	Valid
13	Content Illustration	0,667	Valid
14	Typography of Materials	0,889	Valid
15	Presentation Techniques	0,778	Valid
16	Size Appropriateness	0,778	Valid

The application of Aiken's Validity Index in assessing instructional materials provides a foundation for evaluating content validity, where the majority of evaluated components scored above 0.5, indicates that these materials possess the essential elements necessary to meet the desired learning objectives effectively (Kamarzaman et al., 2021).

Although the teaching materials meet the validity criteria, there are recommendations for language simplification and sentence improvement that should be addressed. Some evaluators pointed out a mismatch between the mathematical concepts presented and the Arabic terminology used. Additionally, suggestions to simplify the readings and conversations highlight the importance of providing a learning context that is relevant and easy for students to understand.

In relation to Constructivist Theory, the findings underscore the necessity of presenting relevant and comprehensible content to students, facilitating meaningful learning experiences. Research highlighted in studies by Wiyono et al. and Khairunnisa et al. supports this principle, emphasizing the alignment of instructional materials with students' cognitive levels to promote effective knowledge construction (Khairunnisa et al., 2024; Wiyono et al., 2020). Additionally, recommendations to simplify language and ensure content alignment corroborate the need for materials tailored to the cognitive capabilities of learners, reinforcing concepts within Constructivist Theory (Khairunnisa et al., 2024). Furthermore, Cognitive Theory complements these insights by stressing the organization and clarity of instructional material. A coherent structure allows learners to navigate content logically, which enhances understanding and retention (Porter, 2002)The role of effective typography and presentation techniques, as noted by Sofiya et al., is pivotal for enhancing the clarity of instructional content. This aligns with the assertion that validated materials can significantly improve student outcomes (Porter, 2002; Sofiya et al., 2018). Recent findings emphasize that well-structured instructional tools contribute fundamentally to the learning process by guiding students through systematic inquiries (Firmansyah et al., 2020).

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Practicality

Practicality is a key criterion in instructional material development, ensuring that the materials can be effectively and efficiently utilized in a learning environment. The results of the instructional material practicality assessment are presented in Table 3.

Table 3. Practicality of Instructional Materials

No.	Indicator	Practicality Score (%)	category
1	Flexibility of Use	85,3	Very Practical
2	Time Efficiency	75,6	Practical
3	Engagement/Attractiveness	85,5	Very Practical
4	Readability	78,8	Practical
5	Equivalence	81,2	Practical
Average		**81,28**	Practical

The practicality test results, gathered from students and lecturers, indicate that more than 80% of the assessed indicators fall into the practical category. Meeting practicality criteria ensures that the instructional materials support a more effective, accessible, and efficient learning experience, enhancing their usability across various educational contexts. This is essential for maximizing the benefits of instructional materials in facilitating the achievement of learning and educational objectives.

Although the current time efficiency score is deemed practical, there remain opportunities for further optimization. Streamlining lengthy explanations, simplifying instructions, or omitting unnecessary content can enable educators to allocate more time to student interaction and practice, which is crucial for deeper learning outcomes. Research by Winarso and Wahid supports the idea that valid instructional design integrates core concepts succinctly, thereby maximizing teaching time (Winarso & Wahid, 2020).

Improving readability is essential, especially concerning complex topics. By simplifying language and providing clearer examples, instructional content can become more accessible to students with diverse reading abilities. This aligns with findings that highlight the importance of clear communication in educational materials to enhance comprehension and retention across various student demographics. Larisang et al. emphasize that clear language significantly affects students' ability to engage with and understand instructional content (Larisang et al., 2023). Furthermore, the significance of inclusivity in educational resources is discussed by Nuzulah et al., affirming that materials designed for different literacy levels can significantly improve engagement and academic performance (Nuzulah et al., 2023).

The high engagement score of current materials suggests they effectively capture student interest; however, continual innovation is necessary to sustain motivation. Incorporating multimedia elements and interactive experiences, as discussed by Eliza et al., can foster greater engagement, as these tools have been

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shown to heighten students' personal connection with the material (Eliza et al., 2022) The inclusion of real-world applications further supports ongoing student interest, highlighting the relevance of their studies (Simanullang & Sipahutar, 2023).

Therefore, the Arabic-integrated instructional materials for Mathematics Education students can be effectively implemented. The development process has undergone three main stages: analysis, design, and development. Overall, the instructional materials are considered to sufficiently meet the needs of Mathematics Education students at IAIN Palopo.

CONCLUSION

This research emphasizes the significance of designing context-specific, interdisciplinary Arabic materials. Integrating subjects like mathematics into Arabic language instruction can enhance both language proficiency and domain-specific literacy. Lecturers and curriculum developers are encouraged to create materials that align with students' academic backgrounds and the broader objectives of Islamic higher education, which aims to connect religious and scientific knowledge. However, the study recognizes certain limitations. The sample size was small, and the research was confined to a single institution (IAIN Palopo), which may affect the generalizability of the results. Furthermore, the short-term evaluation did not assess long-term impacts on students' language skills. Future research should explore the materials' adaptability and effectiveness across multiple institutions, including the integration of digital learning tools. Long-term studies are also needed to assess the impact on students' Arabic proficiency. Collaboration among Arabic language experts, mathematics educators, and instructional designers is essential for creating high-quality interdisciplinary materials to meet students' diverse needs.

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