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# Analysis of the Development Needs for AI-Based Electronic Arabic Teaching Materials

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### Abstract

Educators and instructors need to prepare various elements necessary for developing teaching materials by incorporating AI to create engaging, effective, and efficient learning. This research aims to describe the requirements in developing AI-based teaching materials that align with the needs of students and the instructional approaches utilized. The subjects involved in this study are students from the Faculty of Education and Arabic Language lecturers. A qualitative approach is employed to describe the research objectives. The study reveals that students' understanding of Arabic language learning falls within the moderate category; instructors develop AI-based teaching materials to assist students in comprehending the subject matter, concretizing abstract concepts, supplementing reading materials or references, creating an engaging learning environment, and enhancing interaction during the learning process. Constraints in implementing AI-based teaching materials can be categorized into physical and non-physical resources; however, the supporting facilities and infrastructure for implementing AI-based teaching materials are deemed sufficient.

**Keywords:** *Need analysis, AI based, electronic teaching materials, Arabic.*

### المخلص

يحتاج المربون والمدرسون إلى إعداد عناصر مختلفة ضرورية لتطوير المواد التعليمية من خلال دمج الذكاء الاصطناعي لإنشاء تعلم جذاب وفعال. تهدف هذه الدراسة إلى وصف المتطلبات في تطوير المواد التعليمية المعتمدة على الذكاء الاصطناعي والمتماشية مع احتياجات الطلاب والنهج التعليمي المستخدم. تشمل الموضوعات المشاركة في هذه الدراسة الطلاب من كلية التربية ومحاضري اللغة العربية. يتم استخدام نهج نوعي لوصف أهداف البحث. تظهر الدراسة أن فهم الطلاب لتعلم اللغة العربية يقع ضمن الفئة المتوسطة؛ يطور المحاضرون مواد تعليمية معتمدة على الذكاء الاصطناعي لمساعدة الطلاب على فهم المواد الدراسية وتجسيد المفاهيم المجردة وتكميل المواد القرائية أو المراجع وخلق بيئة تعليمية جذابة وتعزيز التفاعل خلال عملية التعلم. يمكن تصنيف القيود في تنفيذ المواد التعليمية المعتمدة على الذكاء الاصطناعي إلى موارد مادية وغير مادية؛ ومع ذلك، يُعتبر الوسائل الداعمة والبنية التحتية لتنفيذ المواد التعليمية المعتمدة على الذكاء الاصطناعي كافية.

الكلمات الرئيسية: تحليل الاحتياجات، معتمد على الذكاء الاصطناعي، مواد تعليمية إلكترونية، اللغة العربية.

## Introduction

The era of globalization signifies a rapid evolution of information dissemination. Such circumstances inevitably exert considerable influence, particularly on the realm of education. The demands of the modern age compel all educational stakeholders to continually adapt to technological advancements. This is undertaken as a concerted effort to enhance the quality of education, particularly in the integration of technology within higher education learning environments. Technological advancements should not merely be viewed as a reflection of temporal change but rather as a strategic opportunity to facilitate engaging learning experiences for students.<sup>1</sup> In this highly dynamic environment, innovative and creative approaches are imperative to enrich the learning process.<sup>2</sup>

Teaching materials represent a crucial component in the educational process. According to Ardiansyah et al.<sup>3</sup>, teaching materials play a pivotal role in facilitating the learning process for students. Teaching materials encompass various resources utilized by educators to facilitate instructional activities in the classroom.<sup>4</sup> Broadly categorized, teaching materials consist of two types: print and non-print materials. Examples of print teaching materials include textbooks, instructional manuals, handouts, modules, posters, and leaflets, while non-print materials encompass audio resources such as tapes and radio broadcasts, visual aids like images and photographs, as well as audiovisual materials such as videos and films.

As technology advances, teaching materials can be improved by incorporating these innovations into learning activities. Technology offers significant potential and strategic opportunities to support higher education.<sup>5</sup> It can provide new learning experiences beyond

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<sup>1</sup> Mohammad Afifulloh and Bagus Cahyanto, "Analisis Kebutuhan Pengembangan Bahan Ajar Elektronik Di Era Pandemi Covid-19," *JPDI (Jurnal Pendidikan Dasar Indonesia)* 6, no. 2 (2021): 31–36.

<sup>2</sup> Erick T Baloran, "Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic," *Journal of Loss and Trauma* 25, no. 8 (November 2020): 635–642; Tuğra Karademir et al., "The Development and Evaluation of Self-Directed Digital Learning Material Development Platform for Foreign Language Education," *Interactive Learning Environments* 29, no. 4 (May 2021): 600–617.

<sup>3</sup> "Analisis Kebutuhan Pengembangan Bahan Ajar Perubahan Materi Genetik Pada Matakuliah Genetika Di Universitas Negeri Malang," *Seminar Nasional Pendidikan dan Sainstek 2016* (2016): 1.

<sup>4</sup> Andi Prastowo, *Panduan Kreatif Membuat Bahan Ajar Inovatif* (Yogyakarta: Diva Press, 2012).

<sup>5</sup> David Hills and Glyn Thomas, "Digital Technology and Outdoor Experiential Learning," *Journal of Adventure Education and Outdoor Learning* 20, no. 2 (April 2, 2020): 155–169, <https://doi.org/10.1080/14729679.2019.1604244>.

the classroom and facilitate meaningful learning.<sup>6</sup> However, full integration of technology into teaching and learning is still a work in progress. In today's competitive environment, some educational institutions have not fully embraced technology in their instructional practices. Ideally, modern schools should use emerging technologies to streamline educators' work and enhance students' learning experiences.<sup>7</sup> Recently, technology has seen the rise of artificial intelligence (AI) in messaging apps. These apps allow users to ask about various topics and get relevant responses. AI technology has advanced significantly over the years, with new features and functionalities that impact many areas of life, including education.<sup>8</sup>

Artificial intelligence (AI) is playing a growing role in education at schools and universities.<sup>9</sup> AI is a key part of educational technology, and there are two main ways to implement it. First, AI can take over some teacher tasks, acting as tutors for each student.<sup>10</sup> Smart tutoring systems that personalize content for individual learners are already widely used in many classrooms.

Amid these changes, educators need to incorporate artificial intelligence into teaching materials to create engaging, effective, and efficient learning experiences. This helps students master the necessary competencies. Educators remain the main source of learning, so they must design teaching materials to help students understand course content and ensure standardized learning. These materials also serve as reference guides for both educators and students.

Education quality suffers when educators rely only on conventional teaching materials without creativity.<sup>11</sup> Developing teaching materials should be carefully planned, starting with a needs analysis based on students' opinions. This approach ensures valid data

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<sup>6</sup> Brent Cuthbertson, Teresa L Socha, and Tom G Potter, "The Double-Edged Sword: Critical Reflections on Traditional and Modern Technology in Outdoor Education," *Journal of Adventure Education and Outdoor Learning* 4, no. 2 (January 1, 2004): 133–144, <https://doi.org/10.1080/14729670485200491>; Hills and Thomas, "Digital Technology and Outdoor Experiential Learning."

<sup>7</sup> Luh Putu Ary Sri Tjahyanti, Putu Satya Saputra, and Made Santo Gitakarma, "Peran Artificial Intelligence (AI) Untuk Mendukung Pembelajaran Di Masa Pandemi Covid-19," *Komteks* 1, no. 1 (2022).

<sup>8</sup> George F Luger and William A. Stubblefield, *Artificial Intelligence Structures and Strategies for Complex Problem Solving Edition*, 2nd ed. (California: The Benjamin/Cumming Publishing Company Inc., 1993).

<sup>9</sup> Ferani Mulianingsih et al., "Artificial Intelligence Dengan Pembentukan Nilai Dan Karakter Di Bidang Pendidikan," *IJTIMAIYA: Journal of Social Science Teachin* 4, no. 1 (2020): 148 – 154.

<sup>10</sup> I Molenaar, "Personalisation of Learning: Towards Hybrid Human-AI Learning Technologies," in *OECD Digital Education Outlook 2021: Pushing The Frontiers With Artificial Intelligence* (Paris: Blockchain and Robots. OECD Publishing, 2021).

<sup>11</sup> Eva Nurul Malahayati, Mei Dwi Isnawati, and Riska Sofiani Nurhidayah, "Analisis Kebutuhan Bahan Ajar Strategi Belajar Mengajar Bagi Mahasiswa Fkip Universitas Islam Balitar Blitar," in *Prosiding Seminar Nasional Hayati VII 2019* (Blitar, 2019).

and aligns the materials with students' characteristics and learning styles, which can vary widely.

This study aims to analyse the requirements for developing AI-based electronic teaching materials that match students' needs and instructional approaches. It provides essential initial information for creating instructional products and selecting relevant learning materials. Educators can use the results to improve instructional practices and help students grasp course materials better. The findings will also guide future studies in developing teaching materials.

## **Method**

For this study, a qualitative approach was used to gather and analyse data. Qualitative descriptive analysis was employed to understand the context, situations, and natural settings of the Arabic language course.<sup>12</sup> Data collection took place from June to October 2023, involving interviews with Arabic language instructors, observations during classes, and questionnaires to identify student challenges and needs. The research was conducted at the Faculty of Education and Teaching, UIN SMH Banten, located at Jalan Syekh Nawawi al Bantani, Kp. Andamu'i, Sukawana Village, Curug District, Serang City, 42171, Banten.

Primary data for this research included direct sources such as questionnaires assessing students' understanding of Arabic language learning, their needs for AI-based teaching materials, and challenges faced in using these materials. Semi-structured interviews were conducted with Arabic language course instructors to explore their requirements and challenges in implementing AI-based teaching materials, as well as with instructors to discuss the infrastructure supporting these materials. Input from Program Study Chairs on the curriculum used was also gathered. Secondary data sources included materials used in Arabic language courses, students' learning outcomes, documentation and photographs of teaching materials, lesson plans collected by instructors, and evaluation reports on learning infrastructure.

This research involved students enrolled in Arabic language courses, lecturers teaching these courses, Program Study Chairs, and Vice Deans for Academic Affairs. Students provided data on their understanding of Arabic language learning, their needs for

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<sup>12</sup> Muhammad Rijal Fadli, "Memahami Desain Metode Penelitian Kualitatif," *Humanika: Kajian Ilmiah Mata Kuliah Umum* 21, no. 1 (2021): 33–54.

AI-based teaching materials, and challenges faced in using them. Instructors shared information about the teaching materials used, requirements for AI-based materials, challenges in implementation, and student learning outcomes. Program Study Chairs contributed insights on infrastructure supporting AI-based teaching materials, while Vice Deans for Academic Affairs provided details on the curriculum structure.

The research used purposive sampling, involving 21 students and 2 Arabic language instructors. Data collection methods included questionnaires, observations, and interviews. Instruments used were: 1) a questionnaire for assessing students' needs, 2) an observation sheet for the Arabic language learning process, and 3) an interview guide for instructors. Qualitative descriptive analysis techniques were employed for data analysis.<sup>13</sup>

Findings from respondents, including students, Arabic language instructors, Program Study Chairs, and Vice Deans for Academic Affairs, provided insights into the use of teaching materials in Arabic language instruction, particularly those based on AI technology. The study focused on developing AI-based teaching materials, starting with a needs analysis that covered knowledge and skills assessment, job and task analysis, competency-based assessment, and strategic needs assessment.<sup>14</sup> Since the research aims to create teaching materials for an AI-based learning system, the needs analysis will initially compare current knowledge and skills with desired ones. This analysis aims to identify challenges instructors face in using AI-based materials, laying the groundwork for teaching material development.

## **Result and Discussion**

The research findings include the requirements for AI-based teaching materials, challenges in their implementation, and the infrastructure supporting them at the Faculty of Education and Teaching. Data were gathered from a questionnaire completed by eighteen students and interviews with an Arabic language course instructor, a Program Study Chair, and a Vice Dean for Academic Affairs.

### *Student Understanding of Arabic Language Learning*

Based on the results of a questionnaire assessing students' understanding of Arabic language learning from eighteen students, only three students expressed a proficient

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<sup>13</sup> Michael Williams and Tami Moser, "The Art of Coding and Thematic Exploration in Qualitative Research," *International Management Review; Marietta* 15, no. 1 (2019): 45-55,71-72.

<sup>14</sup> S. Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, Dan Re&D* (Bandung: Alfabeta, 2019), 275.

understanding, fourteen students indicated a moderate level of comprehension, and one student reported a lack of understanding of the taught material. Therefore, it can be concluded that 77.8% of students consider themselves moderately proficient in Arabic language learning. Similarly, insights from interviews with Arabic language course instructors revealed diverse levels of student understanding of Arabic language materials, which cannot be uniformly generalized. While some students achieved satisfactory grades, others performed moderately well, and some still fell below the minimum passing grade of 65. According to student learning outcomes in the Arabic language course obtained from instructors, the average grade for the entire class was 76, whereas the minimum passing grade for the course was set at 65.

Based on the research findings, where 77.8% of students consider themselves moderately proficient in Arabic language learning, supported by the data on student learning outcomes revealing an average class grade of 76 with a minimum passing grade of 65, it can be inferred that students' understanding of Arabic language learning falls within the moderate category. Several factors contribute to this level of understanding, including the complexity of Arabic language materials, instructional strategies, and the learning environment. Notably, the Arabic language materials pose challenges due to their inherent complexity, particularly for students from disciplines other than Arabic Language Education.

In line with Fauzi's research,<sup>15</sup> the difficulties encountered in learning Arabic are influenced by both methodological and psychological factors. Methodologically, the teaching approach for Arabic language learning is often found to be ineffective. Ideally, Arabic language instruction should commence with listening comprehension, akin to how infants learn to speak. They first listen to others speaking before attempting to speak themselves. Another methodological flaw is the tendency of instructors to blame students who are still in the learning process. Fauzi also noted that in Indonesia, instructors tend to criticize students when they speak or practice newly acquired language skills. On the psychological front, challenges arise from the students' own mindset. Students who approach Arabic language learning with a negative mindset are likely to encounter difficulties in the learning process. Therefore, Arabic language instructors must create a conducive and engaging learning environment to prevent student disengagement. Thus, psychological issues are intertwined with methodological challenges in Arabic language instruction. In essence,

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<sup>15</sup> "ASPEK PSIKOLOGIS DAN METODOLOGIS DALAM PENGAJARAN BAHASA ARAB DI IAIN SURAKARTA," *Millah: Journal of Religious Studies* 16, no. 1 SE-Articles (April 2017): 83–112.

instructors should cultivate a positive learning attitude among students by employing varied and innovative teaching methods.

The second factor pertains to the need for maximizing learning strategies in delivering instructional materials to enhance student comprehension. Selecting suitable instructional models and methods is essential to effectively convey the material. Research findings indicate that the instructional strategy utilized involved employing a contextual model coupled with lecture-based methods. Consistent with documentation of the teaching module, a contextual model was employed. Thus, when utilizing this model in the instructional process, it is advisable to commence with material explanations, followed by querying students regarding encountered issues or the relevance of the material to daily life. Subsequently, instructors facilitate group discussions wherein students are guided to seek solutions to problems or relate the material to their experiences, supported by research-derived data and facts. Finally, students are directed to summarize the group discussion outcomes in reports and present them.

However, based on research findings, the teaching process still predominantly follows a teacher-centered approach, wherein instructors tend to adopt lecture-based methods with minimal incorporation of discussion techniques. Consequently, student engagement levels remain low, as evidenced by research indicating that 66.8% of students seldom ask questions or respond to inquiries during the learning process. Instructors often resort to lecture-based methods due to their perceived time efficiency and practicality. However, when employing lecture-based methods, it is imperative for instructors to integrate questioning or group discussion techniques to foster classroom interaction and create an engaging learning environment. To enhance the interactivity of lecture-based methods, several measures can be taken, including refining the instructional flow, intensifying innovation in teaching practices, and optimizing guidance and material delivery.

The third factor influencing student comprehension is the school environment, as it significantly contributes to the success of the learning process, encompassing the availability of facilities and infrastructure within the classroom. Adequate facilities and infrastructure enable educators to select appropriate instructional models, teaching methods, and teaching materials. The utilization of interactive teaching materials can enhance student motivation and promote interaction during the learning process. Therefore, fostering innovative

teaching approaches is crucial for delivering engaging instructional content to enhance student interest in Arabic language learning in the classroom.

*The Need for AI-Based Arabic Language Teaching Materials*

The Requirement for Supplementary Learning Materials in the Arabic Language Learning Process. Based on the questionnaire results regarding the need for supplementary learning materials in the Arabic language learning process from eighteen students, it was found that fifteen students expressed the necessity for additional instructional materials, indicating that 83.3% of the participants require supplementary learning materials. This aligns with the research findings from interviews with Arabic language instructors, who highlighted that relying solely on available instructional materials may not suffice in adequately delivering course content to students. Consequently, instructors sometimes utilize e-modules and instructional videos during the teaching process. Supported by documentation data of frequently used instructional materials, such as the textbooks created by instructors, it is evident that while the specifications of these materials are satisfactory, there is a need for more visually engaging and colourful illustrations to aid in visualizing abstract concepts, thus facilitating student understanding. Furthermore, the content presented in these textbooks is not comprehensive and cohesive enough, as some materials are missing, and the organization of content lacks coherence. Additionally, research findings indicate that 72.2% of students find the instructional materials used challenging to comprehend.

Based on the research findings and supported by documentation, it can be concluded that both students and instructors of Arabic language courses require additional Arabic language instructional materials. The importance of supplementing instructional materials arises from the complexity of Arabic language learning, which often necessitates clear visualization of concepts and facilitates students in accessing information or expanding their reading references on the topics taught. In instances where instructional materials are inadequate or lack variety during the learning process, instructors may encounter difficulties in enhancing the effectiveness of teaching, while learners may face challenges in their learning endeavours.

The utilization of instructional materials by educators serves several purposes, including time-saving during instruction, transforming the educator's role from mere lecturers to facilitators, enhancing the efficiency and effectiveness of the learning process, and aligning with the demands of Objective-Based Education (OBE), which mandates a shift



towards student-centred learning. Consequently, the learning process is expected not only to centre around students within the classroom but also to extend beyond, fostering an engaging and enjoyable learning environment that is not solely reliant on instructors. Such a learning system contributes to the development of students' confidence, independence, social intelligence, and competitiveness.

In line with the research conducted by Basit,<sup>16</sup> participants in Arabic language learning expressed a significant need for instructional materials. This necessity arises due to the limited availability of instructional materials, prompting learners to seek diverse materials to enhance the learning experience. Varied instructional materials are essential to create a more engaging and appealing learning environment, which in turn stimulates learners' motivation to engage in the learning process.

#### *The requirement for AI-Based Arabic Language Teaching Materials*

Based on the questionnaire responses obtained from eighteen participants, it was found that fifteen students, constituting 83.3% of the respondents, expressed a significant need for the development of AI-based instructional materials, while only two students, or 16.7% of the participants, indicated that they did not require additional materials or were satisfied with the existing ones. However, according to the survey results, sixteen students, equivalent to 88.9%, expressed a preference for learning using AI-based instructional materials over traditional textbooks. Similarly, insights from interviews with Arabic Language Course instructors revealed the high demand for AI-based instructional materials, as they aid in conveying abstract or complex subject matter to students. Throughout the teaching process, instructors frequently employ video-based instructional resources.

In line with the implementation of the Merdeka Curriculum in Merdeka Belajar Kampus Merdeka at the tertiary level, AI-based instructional materials will transcend the dichotomies that exist across disciplines. AI also has the capability to personalize learning according to individual learning styles. Therefore, AI can be developed to create instructional websites tailored to specific learning styles and additional knowledge objectives. For instance, in Arabic language learning, students or learners can focus on Arabic within a specific terminology that aligns with their interests and provide a variety of different learning activities that accommodate diverse learning styles. Thus, the development of AI-based

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<sup>16</sup> "Analisis Kebutuhan Dalam Pengembangan Media Pembelajaran Terintegrasi STEM Pada Materi Sistem Respirasi," *Student Online Journal* 3, no. 1 (2022): 407–412.

instructional materials is imperative and addresses the challenges posed by increasingly diverse learning environments. Failure to adapt would hinder our ability to accommodate the essence of learning freedom.

Based on the findings of this study, it can be concluded that both students and educators require the development of AI-based instructional materials to assist students in comprehending course materials, personalize learning styles and needs, supplement reading materials or references, create an engaging learning environment, and enhance interaction during the learning process with the aim of increasing student engagement. The use of AI-based instructional materials can support a more active, collaborative, and enthusiastic learning process, while also enhancing students' skills in line with the demands of the Merdeka Curriculum and MBKM, which require students to become the centre of their own learning and promote differentiated learning. In the context of the Merdeka Curriculum, educators are mandated to cultivate all inherent capabilities possessed by students, and in the process of teaching and learning, educators must align instructional activities with the abilities of the students.

Based on the research conducted by Khotimah,<sup>17</sup> the advantages of implementing AI-based instructional materials include providing a deeper understanding of the subject matter to participants, aiding educators in delivering engaging content that facilitates comprehension for learners, enhancing retention, attention, motivation, and creativity, fostering interaction between educators and participants, shaping learners' attitudes from affective and psychomotor aspects, and facilitating learners in reviewing and revisiting instructional content.

Supported by the research of Arifin et al.<sup>18</sup>, AI-based learning can enhance learners' attention, stimulate enthusiasm and interest in learning, provide motivation, boost learners' creativity, facilitate understanding of complex learning materials, as the content is not only delivered verbally but also visually, enabling learners to comprehend the material optimally. Moreover, utilizing AI-based instructional materials can shape learners' independent learning

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<sup>17</sup> "Pendidikan Berbasis Teknologi (Permasalahan Dan Tantangan)," in *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 2020, 357–368.

<sup>18</sup> "Transfer Iptek Mathematic Realistic Worksheet Berbasis ICT Kepada Guru-Guru SDIT Dalam Rangka Meningkatkan Keterampilan Matematis Pada Konsep Geometris," *JPM (Jurnal Pemberdayaan Masyarakat)* 5, no. 1 (2020): 380–387.

characteristics, allowing educators to guide and direct learners towards achieving the learning objectives.

*The necessity for AI-based teaching materials in Arabic language learning tailored to learning styles*

The necessity for AI-based instructional materials is further substantiated by research findings regarding learning styles among eighteen students. It was found that nine participants, or 50% of the students, exhibited an auditory learning style, while five students, comprising 27.7%, demonstrated a visual learning preference. Only four students, accounting for 22.7%, exhibited a kinesthetics learning style. Based on these research outcomes, AI-based instructional materials are deemed highly suitable to aid students in comprehending Arabic language materials. This suitability stems from the fact that AI-based materials can present Arabic language content through audio-visual means. Students are more likely to recall and understand learning materials when engaging both auditory and visual senses. AI-based instructional materials offer the advantage of being presented in various formats, including visual, auditory, audio-visual, and interactive forms.

An educator should ideally possess the ability to recognize the learning styles of their students, enabling them to design instructional activities using a variety of models, strategies, and methods tailored to each student's learning preferences. Additionally, educators should select appropriate instructional materials that align with the needs and abilities of the students, aiming to create a conducive, engaging, and enjoyable learning environment. This approach is intended to facilitate students in comprehending and absorbing information more effectively, thereby enhancing their interest and academic achievement.

AI, with its advantages, has the capability to personalize learning approaches and deliver instructional materials tailored to students' learning styles, including methods of evaluation. AI can be utilized to develop adaptive learning systems that adjust content and teaching methods based on the individual needs and abilities of students. By leveraging data analysis and machine learning techniques, these systems can provide learning materials adapted to students' comprehension levels and assist them in overcoming difficulties in mastering the content.<sup>19</sup> This aligns with Mukhid's assertion that AI is increasingly personalizing learning by monitoring student progress, offering appropriate learning

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<sup>19</sup> Muhammad Yahya, Hidayat, and Wahyudi, "Implementasi Artificial Intelligence (AI) Di Bidang Pendidikan Kejuruan Pada Era Revolusi Industri 4.0," in *PROSIDING SEMINAR NASIONAL DIES NATALIS KE-62*, 2023, 190–199.

recommendations, and providing comprehensive feedback. This opens new opportunities for efficiency and quality in education, albeit accompanied by challenges.<sup>20</sup> AI enables personalized learning by analysing data and individual characteristics of students. By understanding students' needs, abilities, and preferences, AI can devise customized learning plans. The impact is an enhancement in students' comprehension levels and optimization of their learning potential.<sup>21</sup>

In relation to assessment, AI can be utilized for automated evaluation of students' work, such as exams or assignments. This system employs natural language processing techniques and machine learning to check students' responses and provide instant feedback. This not only saves time for teachers but also offers quicker feedback to students to enhance their understanding.<sup>22</sup> This statement is in line with Mambu et al assertion that AI can also offer suggestions and recommendations to teachers. Based on data analysis and AI's understanding, teachers can receive information about relevant learning materials and effective teaching techniques. These recommendations assist teachers in developing better curricula, selecting appropriate learning materials, and using interactive approaches that encourage student engagement.<sup>23</sup> Through the implementation of AI, students can receive immediate feedback on their work. The AI system can automatically evaluate students' answers, assignments, or projects and provide specific feedback. The impact is an enhancement in the learning process and students' opportunities to adjust and improve their performance in real-time.<sup>24</sup>

#### *Interest and Benefits of Utilizing AI-Based Arabic Language Teaching Materials*

Based on the questionnaire results regarding the interest in AI-based teaching materials in learning, obtained from eighteen participants, it is found that seven participants, or 38.8% of the participants, expressed a very enthusiastic response, while nine participants, or 50% of the participants, expressed enthusiasm. Similarly, the interview results with Arabic language teachers indicated that the learning process using AI was perceived to be much

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<sup>20</sup> Abd. Mukhid, *Disain Teknologi Dan Inovasi Pembelajaran Dalam Budaya Organisasi Di Lembaga Pendidikan* (Yogyakarta: Pustaka Egaliter.Com., 2023).

<sup>21</sup> Yahya, Hidayat, and Wahyudi, "Implementasi Artificial Intelligence (AI) Di Bidang Pendidikan Kejuruan Pada Era Revolusi Industri 4.0."

<sup>22</sup> Ibid.

<sup>23</sup> Joupy G. Z. Mambu et al., "Pemanfaatan Teknologi Artificial Intelligence (AI) Dalam Menghadapi Tantangan Mengajar Guru Di Era Digital," *Journal on Education* 6, no. 1 (2023): 2689–2698.

<sup>24</sup> Yahya, Hidayat, and Wahyudi, "Implementasi Artificial Intelligence (AI) Di Bidang Pendidikan Kejuruan Pada Era Revolusi Industri 4.0."

more enjoyable than conventional learning methods. This perception arises from the fact that students are more engaged in learning using their smartphones or the internet through websites where they can access a wide range of materials related to the subject matter being studied, as opposed to reading extensive material from thick textbooks.

Based on the findings of the study, it can be concluded that students greatly appreciate the learning process integrated with technology, as it allows them to communicate and access information from various sources easily. This integration makes the learning process more enjoyable, and the material becomes easier to comprehend due to the abundance of accessible information or references related to the subject matter. Consistent with the research conducted by Maylitha et al.,<sup>25</sup> the benefits of using AI-based teaching materials include creating innovative learning media and resources. The utilization of AI-based teaching materials stimulates students' minds, emotions, and fosters their interest and abilities. Furthermore, by optimizing AI, students can access learning materials flexibly and quickly, resulting in more engaging and interactive learning experiences. Moreover, the utilization of AI-based teaching materials, such as instructional videos, enhances students' understanding as the material is clearly visualized.

Educators and learners have come to realize the importance of mastering AI-based teaching materials in today's educational landscape, given the shift towards 21st-century learning, which includes AI-based education. According to research by Maylitha et al.,<sup>26</sup> the lack of proficiency in technology among educators and learners could lead to educational lag in this country amidst global competition. Enhancing interest in and mastery of AI can improve the quality of education and assist learners in facing future challenges.

#### *Requirement for AI-Based Instructional Materials in Facilitating Understanding of Complex Subjects*

Based on the questionnaire regarding challenging topics in Arabic language learning, out of eighteen students surveyed, it was revealed that eleven students, constituting 81.1% of the participants, expressed that most Arabic language materials are deemed difficult. The top two most challenging topics were identified as “*Istima*” and “*Balaghob*.” Similarly, insights from interviews with instructors indicated that *Istima*’ and *Balaghob* were among the most challenging subjects to teach. *Balaghob* involves the study of the linguistic beauty of

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<sup>25</sup> “Pentingnya Information and Communication Technology Bagi Siswa Sekolah Dasar Dalam Menghadapi Abad 21,” *Jurnal Pendidikan Tambusai* 6, no. 1 (2022): 8051–8062.

<sup>26</sup> Ibid.

the Quran. It is considered difficult by Arabic language learners due to several factors. Firstly, *Balaghob* delves into the relationship between words and expressions with situations, environments, and meanings. It encompasses both *haqiqi* (denotative) and *majazi* (connotative) meanings, along with connections between expressions and emotions, beauty, and imagination. Secondly, examples presented in *Balaghob* textbooks are drawn from Arabic poetry, which may seem unfamiliar to learners, and understanding them differs from comprehending ordinary sentences. *Balaghob* can be likened to literary language in Indonesian. In *Balaghob*, understanding extends beyond sentence structure to focus more on the intention and function of the sentence itself.

Based on the research findings, it can be concluded that 81.1% of the students perceived the most challenging topic to be *Balaghob*. Several factors contribute to the challenges encountered in learning *Balaghob*. Pedagogical factors, curriculum content, student perceptions, reference materials, and syllabi are among the primary factors causing issues in *Balaghob* instruction.<sup>27</sup> *Balaghob* deals with the relationship between words and expressions with situations, environments, and meanings, encompassing both *haqiqi* and *majazi* meanings, as well as connections between expressions and emotions, beauty, and imagination. These aspects are not easily grasped and applied by learners in their studies. Moreover, the examples presented in *Balaghob* textbooks in class are drawn from Arabic poetry,<sup>28</sup> posing additional challenges for non-Arabic learners. Thus, it can be inferred that these difficulties are attributed to various factors, including the nature of *Balaghob*, cultural differences, teaching methods, teacher-student dynamics, instructional materials, and insufficient time.

In connection with the aforementioned factors, the use of technology-assisted teaching methods in *Balaghob* instruction is believed to enhance both interest and the quality of Arabic language learning in the classroom. This aligns with the findings of Abdullah et al., who reported that most students expressed a preference for learning *Balaghob* topics when employing technological approaches. Furthermore, a significant portion of students

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<sup>27</sup> Raja Hazirah Raja Sulaiman and Najihah Abdul Wahid, "Faktor-Faktor Kelemahan Pembelajaran Balaghah [Factors of Weaknesses in Learning Balaghah]," *International Journal of Contemporary Education, Religious Studies and Humanities (JCERAH)* 1, no. 1 (2021): 111–120.

<sup>28</sup> Muhammad Hafidz, "MEMAHAMI BALAGHAH DENGAN MUDAH," *TA'LIMUNA: Jurnal Pendidikan Islam* 7, no. 2 (2018): 129–145.

indicated that they found it easier to comprehend *Balaghob* topics when utilizing technology-enhanced methods.<sup>29</sup>

In addition to *Balaghob*, another challenging subject is *Istima'* (listening). As known, Arabic language skills encompass *Al- Istima'*, *Al-Kalām* (speaking), *Al-Qirā'ah* (reading), and *Al-Kitābah* (writing). Linguistically, *Istima'* is derived from the word *sami'a*, *saman*, *sim'an*, *sama'an*, *sama'atan*, *sama'iyatan*, which means *to hear*. *Istima'* is also interpreted as *ishgho*, meaning to listen, pay attention, or eavesdrop.<sup>30</sup> *Al- Istima'* is the process of receiving a set of vocabulary or sentences that are related to the previous work in a particular topic.<sup>31</sup> *Al- Istima'* is also the ability that allows a language user to understand the spoken language.<sup>32</sup> *Istima'* is a human activity aimed at: acquiring, understanding, analysing, assisting, interpreting, distinguishing, conveying criticism/ideas, and building thoughts.<sup>33</sup> According to Wali, *Istima'* is an intentional delivery of material with understanding, as well as mastering a description and generating ideas from it.<sup>34</sup> Therefore, *Istima'* is a human activity aimed at the following: Mastery; Understanding; Elaboration; Interpretation; Derivation; and IQ Enhancement Process.<sup>35</sup>

The process of *Istima'* learning demands full concentration to develop listening skills. It is expected that using AI-based teaching materials can enhance students' concentration while learning to listen. This is in line with the research by Abimanto & Mahendro, which demonstrates a significant improvement in listening, speaking, reading, and writing skills after using AI as a teaching method. They also concluded that these findings provide empirical evidence supporting the effectiveness of AI usage in language learning.<sup>36</sup>

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<sup>29</sup> Nasimah Abdullah et al., "Persepsi Pelajar Pengajian Bahasa Arab Terhadap Pembelajaran Dan Pengajaran Balaghah Menggunakan Pendekatan Teknologi," *e-JURNAL PENYELIDIKAN DAN INOVASI* 10, no. 1 (2023): 75–90.

<sup>30</sup> Muhammad bin Ya'qub al Fairuz Abadi, *Al-Qomus Al-Mubith* (Bairut: Daru Al Fikr, 1995), 162.

<sup>31</sup> Fathul Mujib and Nailur Rahmawati, *Metode Permainan-Permainan Edukatif Dalam Belajar Bahasa Arab*, ed. I. Musbikin (Yogyakarta: Diva Press, 2015), 128.

<sup>32</sup> Abdul Majid, *Perencanaan Pembelajaran* (Bandung: Remaja Rosdakarya, 2005), 62.

<sup>33</sup> Rahman as cited by Ummi Kalsum and Muhammad Taufiq, "Upaya Guru Meningkatkan Maharah *Istima'* Melalui Metode Storytelling Pada Siswa Kelas X," *Journal of Education Research* 4, no. 3 (2023): 1251–1258.

<sup>34</sup> Fadhil Futuhy Muhammad Wali, *Tadris Al-Lughob Al-Arabiyyah Fi Al-Marhalah Al- Ibtidaiyyah* (Dar al-Andalus al-Hadlro, 1900), 143–144.

<sup>35</sup> Rusydi Ahmad Thu'aimah and Muhammad as-Sayyid Manna', *Tadris Al-Arabiyyah Fi at-Ta'lim Al-Aam Nadhoriyyat Wa Tajarū* (Kairo: Dar al-Fikr al-Araby, 2000), 80.

<sup>36</sup> Dhanan Abimanto and Iwan Mahendro, "Efektivitas Penggunaan Teknologi AI Dalam Pembelajaran Bahasa Inggris," *Sinar Dunia: Jurnal Riset Sosial Humaniora dan Ilmu Pendidikan* 2, no. 2 (2023): 256–266.

*Challenges in Implementing AI-Based Teaching Materials in the Faculty of Education and Teacher Training*

Sub-indicators of challenges in implementing AI-based teaching materials in the Arabic language learning process aim to identify the obstacles faced by educators and learners in applying AI-based teaching materials. Based on the questionnaire results from eighteen students, the constraints in implementing AI-based teaching materials include limited internet quota and inadequate internet signal conditions.

Based on interviews with Arabic Language Course instructors, several common challenges in implementing AI teaching materials include insufficient time and lack of training in creating AI teaching materials. Additionally, some supportive facilities for using AI teaching materials, such as projectors and speakers, have not been installed in classrooms. Therefore, additional time is required to retrieve projectors from equipment rooms. Furthermore, WiFi facilities are not available in every classroom, and unstable electricity conditions can result in internet connection loss. Similarly, findings from an interview with the Program Chair revealed that challenges in implementing AI-based learning include unstable electricity conditions, with occasional power outages during the learning process. High voltage fluctuations also contribute to sudden power failures, disrupting internet signals.

Based on these findings, it can be concluded that the challenges in implementing AI-based instructional materials at the Faculty of Education in the field of teaching are divided into two categories: physical and non-physical. Physically, challenges arise due to the limited availability of facilities and infrastructure, both in terms of quantity and quality, as the institution is located on the outskirts of the city, leading to unstable signal and power networks. Meanwhile, non-physical challenges include time constraints and lack of proficiency in designing and integrating AI into the learning process, as well as lingering educator resistance. In line with the study conducted by Candra & Sinaga,<sup>37</sup> educators face various obstacles in implementing AI-based instructional materials in the learning process. One such challenge is the educators' lack of knowledge about information technology tools such as computers, laptops, LCD projectors, printers, and the internet. This limitation is attributed to factors such as age-related technological literacy issues among educators, difficulties in accessing files, inadequate electrical supply in

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<sup>37</sup> "Kendala Guru Dalam Menggunakan Media Pembelajaran Berbasis Information Communication Technology (ICT) Di SD," in *Prosiding Seminar Nasional Pendidikan Kasar*, 2022, 257–264.



schools, and limited internet coverage in classrooms. Furthermore, the institution has yet to mandate educators to utilize AI-based instructional materials in their teaching practices.

Challenges in implementing AI in education stem from the uneven infrastructure supporting its application in the learning process and the prevalent sense of unpreparedness among educators to integrate AI-based instructional materials. Consequently, government intervention is necessary to issue policies and allocate funding evenly between urban and rural schools. This aims to mitigate disparities in knowledge acquisition among students in urban and rural areas.<sup>38</sup>

#### *Availability of Facilities and Infrastructure for Implementing AI-Based Teaching Materials in the Faculty of Education and Teacher Training*

The success of education is one of the factors affected by the availability of facilities and infrastructure.<sup>39</sup> These elements are crucial for supporting effective learning processes. Interviews with Arabic Language Course instructors revealed that the school provides ICT facilities, such as LCD projectors and speakers, which are used for PowerPoint presentations and video playback. While the current facilities are good, there is a need to install projectors and speakers in every classroom. Students are also allowed to bring smartphones.

Similarly, the Head of the Study Program confirmed that the faculty provides ample facilities, including computer laboratories, projectors, internet access, WiFi, laptops, and other necessary equipment. Although the existing ICT facilities, supported by the government, are quite adequate, further expansion is needed to optimize efficiency, especially given the current student population. Despite some limitations, the available facilities are generally sufficient for the learning process.

The research concludes that while facilities and infrastructure for implementing AI-based teaching materials in the Faculty of Education and Teacher Training are available, they need further optimization in both quantity and quality. The availability of these resources significantly impacts students' learning quality and abilities. Optimal facilities allow teachers to better organize

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<sup>38</sup> Azhariadi, Ina Desmaniar, and Zuliana Linggo Geni, "Pembelajaran Berbasis Teknologi Informasi Dan Komunikasi (Tik) Di Daerah Terpencil," *Jurnal INSYPRO (Information System and Processing)* 121 (2019): 78–88.

<sup>39</sup> Singgih Hari Pangestu and Hasan Hariri, "Management of Facilities and Infrastructure in Improving the Learning Process," *Jurnal Humaniora dan Ilmu Pendidikan* 2, no. 1 (2022): 43–49.

their teaching activities, especially for challenging subjects like Arabic. Therefore, adequate facilities and infrastructure are essential for effective Arabic language instruction.

According to Ulfatin's findings, the availability of teaching facilities and infrastructure is crucial for institutions to provide adequate resources, thereby enhancing school quality.<sup>40</sup> This availability also encourages educators to use effective teaching models and methods. Azhariadi et al.'s research highlights that for AI-based learning to be implemented, educators must have access to digital technology and stable internet within classrooms and schools.<sup>41</sup> Therefore, schools should provide AI-related facilities like computers, stable internet, computer labs, cameras, LCD projectors, CDs, DVDs, and other multimedia tools.

The availability of facilities and infrastructure in schools is crucial for an effective learning process, directly benefiting students, teachers, and schools alike. Students benefit greatly from these resources, especially those who may need additional support beyond innate intelligence. For teachers, having optimal facilities enhances their ability to create diverse and engaging teaching methods, which enriches the learning experience. Schools, as responsible entities, have the duty to manage and provide these essential resources to support the entire learning environment.

## Conclusion

Based on the obtained data and discussions conducted, it can be concluded that students' understanding of Arabic language learning still falls within the "adequate" category. Factors contributing to this level of understanding include the complexity of Arabic language materials, which are inherently diverse and challenging to comprehend. Additionally, there is a need to optimize teaching strategies in material delivery. Based on the research findings from 18 students, 15 students or 83.3% expressed the need for AI-based teaching materials.

To ensure the effective implementation of AI-based Arabic language teaching materials at the Faculty of Education, the following measures are recommended 1) teachers should allocate time to undergo training in designing and implementing AI-based teaching materials; and 2) for students who do not possess smartphones or have inadequate internet quotas, it is advised to collaborate with their peers during AI-based learning sessions to access the required materials. Based on the research findings presented, several recommendations

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<sup>40</sup> *Merdeka Belajar: Konsep, Kebijakan Dan Praktik Berdasarkan-Sense Making Perspective-Kognisi Guru* (Yogyakarta: Media Nusa Creative, 2022), 78.

<sup>41</sup> "Pembelajaran Berbasis Teknologi Informasi Dan Komunikasi (TIK) Di Daerah Terpencil."

are provided: 1) the faculty should optimize the facilities and infrastructure supporting the learning process that are already available; 2) faculty members are encouraged to enhance their skills to adapt to the use of AI to support 21st-century learning; 3) students are advised to explore more knowledge about AI and to be more enthusiastic in learning when using AI-based teaching materials; and 4) for future research, it is suggested to continue this study to the next stages.

## REFERENCES

- Abadi, M. bin Y. al F. (1995). *al-Qomus al-Mubith*. Daru Al Fikr.
- Abdullah, N., Samsudin, S., Rahman, L. A., Arifin, A. N. Z., & Hambali, M. A. (2023). Persepsi Pelajar Pengajian Bahasa Arab Terhadap Pembelajaran dan Pengajaran Balaghah Menggunakan Pendekatan Teknologi. *E-JURNAL PENYELIDIKAN DAN INOVASI*, 10(1), 75–90.
- Abimanto, D., & Mahendro, I. (2023). Efektivitas Penggunaan Teknologi AI Dalam Pembelajaran Bahasa Inggris. *Sinar Dunia: Jurnal Riset Sosial Humaniora Dan Ilmu Pendidikan*, 2(2), 256–266.
- Afifulloh, M., & Cahyanto, B. (2021). Analisis Kebutuhan Pengembangan Bahan Ajar Elektronik Di Era Pandemi Covid-19. *JPDI (Jurnal Pendidikan Dasar Indonesia)*, 6(2), 31–36. <https://doi.org/10.26737/jpdi.v6i2.2515>
- Ardiansyah, R., Corebima, A. D., & Rohman, F. (2016). Analisis Kebutuhan Pengembangan Bahan Ajar Perubahan Materi Genetik pada Matakuliah Genetika di Universitas Negeri Malang. *Seminar Nasional Pendidikan Dan Sainstek, 2016*, 1. <http://publikasiilmiah.ums.ac.id/handle/11617/8009>
- Arifin, U., Purwasih, R., & Santana, F. D. T. (2020). Transfer Iptek Mathematic Realistic Worksheet Berbasis ICT Kepada Guru-Guru SDIT dalam Rangka Meningkatkan Keterampilan Matematis pada Konsep Geometris. *JPM (Jurnal Pemberdayaan Masyarakat)*, 5(1), 380–387.
- Azhariadi, A., Desmaniar, I., & Geni, Z. L. (2019). Pembelajaran Berbasis Teknologi Informasi dan Komunikasi (TIK) di Daerah Terpencil. *SEMINAR NASIONAL PENDIDIKAN 03 MEI 2019*.
- Baloran, E. T. (2020). Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic. *Journal of Loss and Trauma*, 25(8), 635–642. <https://doi.org/10.1080/15325024.2020.1769300>
- Basit. (2022). Analisis Kebutuhan dalam Pengembangan Media Pembelajaran Terintegrasi STEM pada Materi Sistem Respirasi. *Student Online Journal*, 3(1), 407–412.
- Candra, F. A., & Sinaga, F. J. (2022). Kendala Guru dalam Menggunakan Media Pembelajaran Berbasis Information Communication Technology (ICT) di SD. *Prosiding Seminar Nasional Pendidikan Kasar*, 257–264.
- Cuthbertson, B., Socha, T. L., & Potter, T. G. (2004). The double-edged sword: Critical reflections on traditional and modern technology in outdoor education. *Journal of*

*Adventure Education and Outdoor Learning*, 4(2), 133–144.  
<https://doi.org/10.1080/14729670485200491>

- Fadli, M. R. (2021). Memahami Desain Metode Penelitian Kualitatif. *Humanika: Kajian Ilmiah Mata Kuliah Umum*, 21(1), 33–54. <https://doi.org/10.21831/hum.v21i1.38075>
- Fauzi, A. (2017). ASPEK PSIKOLOGIS DAN METODOLOGIS DALAM PENGAJARAN BAHASA ARAB DI IAIN SURAKARTA. *Millah: Journal of Religious Studies*, 16(1 SE-Articles), 83–112. <https://doi.org/10.20885/millah.vol16.iss1.art5>
- Hafidz, M. (2018). MEMAHAMI BALAGHAH DENGAN MUDAH. *TALIMUNA: Jurnal Pendidikan Islam*, 7(2), 129–145. <https://doi.org/10.32478/talimuna.v7i2.187>
- Hills, D., & Thomas, G. (2020). Digital technology and outdoor experiential learning. *Journal of Adventure Education and Outdoor Learning*, 20(2), 155–169. <https://doi.org/10.1080/14729679.2019.1604244>
- Kalsum, U., & Taufiq, M. (2023). Upaya Guru Meningkatkan Maharah Istima' melalui Metode Storytelling pada Siswa Kelas X. *Journal of Education Research*, 4(3), 1251–1258.
- Karademir, T., Alper, A., Soğuksu, A. F., & Karababa, Z. C. (2021). The development and evaluation of self-directed digital learning material development platform for foreign language education. *Interactive Learning Environments*, 29(4), 600–617. <https://doi.org/10.1080/10494820.2019.1593199>
- Khotimah, H. (2020). Pendidikan Berbasis Teknologi (Permasalahan dan Tantangan). *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 357–368.
- Luger, G. F., & Stubblefield, W. A. (1993). *Artificial Intelligence Structures and Strategies for Complex Problem Solving Edition* (2nd ed.). The Benjamin/Cumming Publishing Company Inc.
- Majid, A. (2005). *Perencanaan Pembelajaran*. Remaja Rosdakarya.
- Malahayati, E. N., Isnawati, M. D., & Nurhidayah, R. S. (2019). Analisis Kebutuhan Bahan Ajar Strategi Belajar Mengajar Bagi Mahasiswa Fkip Universitas Islam Balitar Blitar. *Prosiding Seminar Nasional Hayati VII 2019*.
- Mambu, J. G. Z., Pitra, D. H., Ilmi, A. R. M., Nugroho, W., Leuwol, N. V., & Saputra, A. M. A. (2023). Pemanfaatan Teknologi Artificial Intelligence (AI) dalam Menghadapi Tantangan Mengajar Guru di Era Digital. *Journal on Education*, 6(1), 2689–2698.
- Maylitha, E., Hikmah, S. N., & Hanifa, S. (2022). Pentingnya Information and Communication Technology bagi Siswa Sekolah Dasar dalam Menghadapi Abad 21. *Jurnal Pendidikan Tambusai*, 6(1), 8051–8062.
- Molenaar, I. (2021). Personalisation of Learning: Towards Hybrid Human-AI Learning Technologies. *OECD Digital Education Outlook 2021: Pushing The Frontiers With Artificial Intelligence*.
- Mujib, F., & Rahmawati, N. (2015). *Metode Permainan-Permainan Edukatif dalam Belajar Bahasa Arab* (I. Musbikin (ed.)). Diva Press.
- Mukhid, A. (2023). *Disain Teknologi dan Inovasi Pembelajaran dalam Budaya Organisasi di Lembaga*

*Pendidikan*. Pustaka Egaliter.Com.

- Mulianingsih, F., Anwar, K., Shintasiwi, F. A., & Rahma, A. J. (2020). Artificial Intelligence dengan Pembentukan Nilai dan Karakter di Bidang Pendidikan. *IJTIMAIYA: Journal of Social Science Teachin*, 4(1), 148 – 154. <https://doi.org/10.21043/ji.v4i2.8625>
- Prastowo, A. (2012). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Diva Press.
- Sleezer, C. M., Russ-Eft, D. F., & Gupta, K. (2007). *A Practical Guide to Needs Assessment*. John Wiley & Sons, Inc.
- Sugiyono, S. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Sulaiman, R. H. R., & Wahid, N. A. (2021). Faktor-faktor Kelemahan Pembelajaran Balaghah [Factors of Weaknesses in Learning Balaghah]. *International Journal of Contemporary Education, Religious Studies and Humanities (JCERAH)*, 1(1), 111–120.
- Thu'aimah, R. A., & Manna', M. as-S. (2000). *Tadris al-Arabiyah fi at-Ta'lim al-Aam Nadhoriyat wa Tajarun*. Dar al-Fikr al-Araby.
- Tjahyanti, L. P. A. S., Saputra, P. S., & Gitakarma, M. S. (2022). Peran Artificial Intelligence (AI) Untuk Mendukung Pembelajaran di Masa Pandemi Covid-19. *Komteks*, 1(1).
- Ulfatin, N., & Zahro, A. (2022). *Merdeka Belajar: Konsep, Kebijakan dan Praktik Berdasarkan-Sense Making Perspective-Kognisi Guru*. Media Nusa Creative.
- Wali, F. F. M. (1900). *Tadris al-Lughob al-Arabiyah fi al-Marbalah al-Ibtidaiyyah*. Dar al- Andalus al-Hadlro.
- Williams, M., & Moser, T. (2019). The Art of Coding and Thematic Exploration in Qualitative Research. *International Management Review; Marietta*, 15(1), 45-55,71-72.
- Yahya, M., Hidayat, & Wahyudi. (2023). Implementasi Artificial Intelligence (AI) di Bidang Pendidikan Kejuruan pada Era Revolusi Industri 4.0. *PROSIDING SEMINAR NASIONAL DIES NATALIS KE-62*, 190–199.

