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The Impact of Blended Learning Techniques on Enhancing Critical Thinking Skills in Arabic Language Education: A Comparative Study of Traditional and Blended Educational Systems

أثر تقنيات التعلم المدمج في تعزيز مهارات التفكير الناقد في تعليم اللغة العربية: دراسة مقارنة بين الأنظمة التعليمية التقليدية والمدمجة

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ABSTRACT

This paper investigates the impact of blended learning techniques on enhancing critical thinking skills in Arabic language education, comparing traditional and blended educational systems. Conducted using a quasi-experimental design, the research involved two student groups: a blended learning group (Group B) and a traditional learning group (Group A). Both groups demonstrated comparable baseline critical thinking abilities, as measured by pre-tests. However, post-test results revealed a 27% improvement in critical thinking skills for Group B, compared to a 12% gain for Group A, highlighting the superior efficacy of blended learning. Blended learning also significantly enhanced engagement levels, with Group B achieving a Likert-scale average of 4.6, compared to 3.2 for Group A. Additionally, 85% of blended learning students reported notable skill development, compared to 56% in the traditional group. Evidence from assignments further indicated that 70% of submissions from Group B demonstrated higher-order thinking skills, such as analysis and synthesis, compared to 30% in Group A. While blended learning proved highly effective, 15% of students faced technical or digital literacy challenges, emphasizing the need for robust infrastructure and targeted training. The study concludes that blended learning provides a dynamic and interactive environment that fosters critical thinking, engagement, and cognitive skill development, making it a transformative pedagogical approach for Arabic language education. These findings underscore the necessity for policymakers and educators to prioritize the integration of blended learning while addressing technological and institutional challenges to optimize its implementation and effectiveness.

الملخص:

تُحقق هذه الدراسة في تأثير تقنيات التعلم المدمج على تحسين مهارات التفكير النقدي في تعليم اللغة

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العربية، من خلال مقارنة الأنظمة التعليمية التقليدية والمدمجة. وقد تم إجراء البحث باستخدام تصميم شبه تجريبي، حيث شملت الدراسة مجموعتين من الطلاب: مجموعة التعلم المدمج (المجموعة ب) ومجموعة التعلم التقليدي (المجموعة أ). أظهرت المجموعتان مستويات متقاربة من مهارات التفكير النقدي الأساسية كما تم قياسها في الاختبارات القبلية. ومع ذلك، كشفت نتائج الاختبارات البعدية عن تحسن بنسبة 27% في مهارات التفكير النقدي للمجموعة ب، مقارنة بزيادة قدرها 12% للمجموعة أ، مما يبرز الكفاءة الفائقة للتعلم المدمج. كما عزز التعلم المدمج بشكل كبير مستويات المشاركة، حيث حصلت المجموعة ب على متوسط تقييم قدره 4.6 على مقياس ليكرت، مقارنة بـ 3.2 للمجموعة أ. بالإضافة إلى ذلك، أبلغ 85% من طلاب التعلم المدمج عن تطور ملحوظ في مهاراتهم، مقارنة بـ 56% في المجموعة التقليدية. وأظهرت الأدلة المستمدة من الواجبات أن 70% من المهام في المجموعة ب أظهرت مهارات تفكير متقدمة، مثل التحليل والتركيب، مقارنة بـ 30% في المجموعة أ. وعلى الرغم من الفعالية الكبيرة للتعلم المدمج، واجه 15% من الطلاب تحديات تتعلق بالمهارات التقنية أو الرقمية، مما يؤكد الحاجة إلى بنية تحتية قوية وتدريب مستهدف. وتخلص الدراسة إلى أن التعلم المدمج يوفر بيئة ديناميكية وتفاعلية تعزز التفكير النقدي والمشاركة وتطوير المهارات المعرفية، مما يجعله نهجًا تربويًا تحولياً في تعليم اللغة العربية. وتؤكد هذه النتائج على ضرورة أن يمنح صناع السياسات والمعلمون الأولوية لدمج التعلم المدمج، مع معالجة التحديات التقنية والمؤسسية لضمان تحسين تنفيذه وفعاليته.

الكلمات المفتاحية:
التربية، محو الأمية الرقمية، التعلم التقليدي، التفكير من الدرجة العليا، التفكير النقدي، المشاركة، التكنولوجيا التعليمية.

JEL Classification: *I21, I28, I23 & O33.*

1. Introduction

The rapid advancements in educational technology have reshaped pedagogical practices worldwide, emphasizing innovative approaches such as blended learning to address traditional learning limitations. In the context of Arabic language education, critical thinking skills are essential for fostering deeper comprehension and analytical abilities among learners. Despite the growing interest in integrating technology into education, Arabic language instruction often remains reliant on traditional, teacher-centered approaches that prioritize rote memorization over cognitive engagement (Sheerah, 2018). These conventional methods fail to equip students with the higher-order thinking skills necessary for modern educational demands, such as analysis, synthesis, and evaluation (Zhang, 2024). Blended learning has emerged as a promising solution for bridging the gap between traditional and modern pedagogical practices. By combining face-to-face instruction with online, interactive elements, blended learning fosters a dynamic learning environment that promotes student-centered engagement and critical thinking (Alharbi, 2022; Ramalingam, Yunus, & Hashim, 2022). Research has demonstrated that blended learning enhances not only academic achievement but also student motivation and participation, as it allows learners to engage with content at their own pace while benefiting from collaborative and interactive tools (Al-Qatawneh, Eltahir, & Alsalhi, 2020). In Arabic language education, where critical thinking is a cornerstone for mastering linguistic nuances and literary analysis, such innovative techniques hold significant potential. Despite the recognized benefits of blended learning, its implementation in Arabic language education remains limited, with traditional teaching methods still dominating the landscape. Studies, such as those by Sheerah (2018) and Al Saud (2021), have highlighted the persistence of teacher-centered instruction, which often stifles student creativity and critical thinking. Moreover, while research in other disciplines and language

contexts has extensively explored blended learning, its application in Arabic language education lacks sufficient empirical investigation. The challenges of technological readiness, digital literacy, and cultural adaptation further complicate the integration of blended learning into Arabic educational systems (Alharbi, 2022). The current literature underscores a gap in understanding how blended learning specifically impacts critical thinking skills in Arabic language education. While several studies have investigated blended learning in general (e.g., Ramalingam et al., 2022; Noursi & Hussein, 2020), few have examined its role in developing critical thinking in Arabic language contexts, where cultural and linguistic specificities play a significant role. Additionally, existing research often focuses on surface-level outcomes, such as test scores, without delving into higher-order cognitive processes. This gap highlights the need for a targeted exploration of how blended learning techniques influence critical thinking skills in Arabic education. The motivation for this study arises from the urgency to modernize Arabic language teaching practices and to equip students with the critical thinking skills necessary for academic and professional success in an increasingly digital world. However, the primary goal of this study is to evaluate the effectiveness of blended learning techniques in enhancing critical thinking skills within Arabic language education by comparing traditional and blended educational systems. This research aims to fill the existing gap in the literature by employing a comprehensive analysis of cognitive, participatory, and skill development metrics. By doing so, the study seeks to provide actionable insights for educators and policymakers, advocating for the integration of innovative pedagogical practices that align with the demands of 21st-century education. Ultimately, this study aspires to contribute to the transformation of Arabic language education into a more dynamic, interactive, and cognitively engaging discipline.

2. Literature Review

The integration of blended learning into language education has garnered significant attention in recent years, particularly for its potential to enhance learner achievement, critical thinking skills, and linguistic proficiency. Studies have explored its application across various contexts, including the teaching of Arabic and English as foreign languages (Al-Qatawneh, Eltahir, & Alsalhi, 2020; Sheerah, 2018). Research has demonstrated that blended learning offers unique advantages, such as flexibility, personalized instruction, and opportunities for independent practice, making it a promising approach in higher education. For example, Al-Qatawneh et al. (2020) found that blended learning significantly improved student outcomes and attitudes in a teaching methods course, while Sheerah (2018) highlighted its role in addressing English language proficiency challenges among Saudi EFL learners in preparatory-year programs. Despite these benefits, challenges such as technological barriers, mismatched instructional designs, and institutional readiness persist, underscoring the need for robust infrastructure and adaptive strategies to fully realize the potential of blended learning in language education. This review situates these studies within the broader discourse on blended learning, offering insights into its efficacy and implications for future educational practices. For example, Adera (2025) offers a theoretical exploration of how innovative learning spaces and blended learning approaches can foster 21st-century competencies such as critical thinking, collaboration, creativity, and digital literacy. This chapter highlights the integration of adaptable physical and virtual environments supported by advanced technological tools to create engaging learning experiences. While the study's reliance on secondary data ensures a broad synthesis of existing research, it limits the scope for empirical validation. Adera's work is particularly significant for educators and policymakers seeking practical strategies for embracing innovative pedagogical approaches. However, its focus on theoretical frameworks rather than concrete applications in diverse contexts may reduce its direct applicability to specific educational settings. Alkharbash (2024) investigates Libyan EFL teachers' and students' perceptions of blended learning, revealing its substantial advantages for improving language proficiency. Through a mixed-methods approach, this study combines questionnaire

surveys and interviews to highlight both the benefits and challenges of integrating blended learning. Teachers reported improved student performance and engagement, yet identified IT knowledge gaps as a major barrier. Alkharbash's findings offer valuable insights into the practical challenges of implementing blended learning in resource-constrained environments. However, the relatively small sample size and the localized context may limit the generalizability of the findings to other EFL settings. Future research could address these limitations by expanding the scope to include comparative studies across different educational systems. Dumitru et al. (2023) examine the effectiveness of blended learning in enhancing critical thinking skills in higher education economics programs. The study's inclusion of labor market trainers alongside academic instructors is a notable innovation, bridging theoretical knowledge with practical application. The results underscore the potential of blended learning to foster critical thinking through targeted interventions in diverse course contexts. However, the study's design limits its focus to economics education, raising questions about its transferability to other disciplines. Additionally, while the experimental courses provide a robust framework for evaluating critical thinking, further research could explore the long-term impacts of such interventions on professional readiness. Orhan (2024) provides a comparative analysis of online and face-to-face problem-based learning (PBL) in enhancing critical thinking, reading comprehension, and attitudes in EFL contexts. Using a quasi-experimental design, the study concludes that both modalities are equally effective in improving critical thinking skills, while online PBL outperforms face-to-face PBL in enhancing reading comprehension and attitudes towards English. The use of rigorous statistical methods strengthens the study's reliability, making it a valuable reference for educators exploring the efficacy of PBL in language instruction. However, the study's emphasis on quantitative outcomes may overlook nuanced qualitative aspects of student experiences, which could be explored in future research. Across the reviewed studies, a common theme emerges: blended and innovative learning approaches significantly enhance critical thinking and other competencies essential for modern education. Adera (2025) and Dumitru et al. (2023) emphasize theoretical and practical strategies for fostering these skills, while Alkharbash (2024) and Orhan (2024) provide empirical evidence from EFL contexts. The studies collectively underscore the potential of blended learning to address diverse educational challenges, yet highlight practical barriers such as technological limitations and contextual constraints. Future research should adopt a multidisciplinary and longitudinal approach to explore the sustainability and scalability of these innovative pedagogical strategies across diverse educational settings.

Yang et al. (2024) investigate the status of computational thinking among high school students engaged in blended learning, focusing on its role in improving educational quality. Their findings indicate moderate levels of computational thinking, with strengths in cooperative and critical thinking but weaknesses in creativity, algorithmic thinking, and problem-solving skills. While their study effectively highlights gaps in computational thinking, the reliance on a single high school in western China limits its generalizability. Moreover, the study's descriptive approach identifies issues but does not extensively explore how blended learning strategies might address these deficiencies. Future research could expand the dataset and examine longitudinal impacts to provide more actionable strategies. Al Yakin et al. (2024) explore the role of artificial intelligence (AI) in enhancing behavioral intention and critical thinking within blended learning environments. Their findings emphasize AI's potential to personalize learning experiences, increase engagement, and promote critical thinking. The use of a robust experimental design strengthens the validity of the study, but the focus on short-term effects leaves questions about the sustainability and ethical implications of AI integration in education unanswered. This research offers valuable insights for incorporating AI in

blended learning but would benefit from addressing long-term impacts and potential biases in AI systems. Achmadi et al. (2024) compare hybrid and fully online learning methods for their effectiveness in fostering critical thinking skills among university students. Their findings demonstrate that hybrid learning significantly outperforms fully online learning in enhancing critical thinking. The quasi-experimental design, including validated instruments and rigorous statistical analysis, strengthens the study's reliability. However, the research focuses exclusively on a single discipline, limiting the generalizability of its conclusions to other academic contexts. Future studies should explore the interplay between hybrid learning and discipline-specific needs to better understand the broader applicability of these findings.

Lee et al. (2024) introduce the Guidance-based ChatGPT-assisted Learning Aid (GCLA) to address the potential over-reliance on AI in blended learning environments. Their randomized controlled trial demonstrates that the GCLA improves self-regulated learning (SRL), higher-order thinking skills (HOTS), and knowledge construction more effectively than traditional AI use. This study innovatively redefines the role of AI from providing direct answers to offering guided support, fostering deeper learning. While the findings highlight the potential of such tools, the limited sample size and discipline-specific focus may restrict the broader applicability of the GCLA. Further research could expand this framework to other subjects and larger cohorts. Zhang (2024) examines a three-stage blended learning model for teacher training programs, emphasizing its effectiveness in developing pedagogical competencies. The study's detailed approach to implementing blended learning across different stages offers practical insights for educators. However, the study’s lack of comparative data with other models limits its ability to assert the superiority of this specific framework. Including comparative studies in future research could strengthen the validity of these findings and support broader adoption in teacher training programs. The studies reviewed collectively emphasize the transformative potential of blended learning in enhancing critical thinking and educational outcomes across various contexts. Yang et al. (2024) and Al Yakin et al. (2024) explore specific cognitive and behavioral benefits, while Achmadi et al. (2024) and Zhang (2024) focus on pedagogical and practical implications. Lee et al. (2024) extend these discussions by addressing the ethical and methodological considerations of integrating AI tools like ChatGPT in blended learning environments. Despite their strengths, these studies share limitations such as context-specific findings, short-term focus, and small sample sizes. Future research should aim for interdisciplinary and longitudinal approaches to build on these foundational insights and ensure the sustainability of blended learning innovations.

Almarzuqi et al. (2024) explore the role of blended learning in enhancing critical thinking skills among secondary school students in chemistry. By drawing on theoretical frameworks such as constructivism and cognitive load theory, the study emphasizes the interactive nature of blended learning, which encourages active engagement and collaborative problem-solving. Their findings align with the growing consensus on the potential of blended learning to bridge theoretical knowledge with practical applications, particularly in STEM education. However, the research is primarily conceptual and lacks empirical evidence, which could limit its applicability in diverse educational contexts. Future studies might address these gaps by testing the proposed methodologies in real-world classrooms, with a focus on long-term impacts on student achievement. Luo and

Zhou (2024) provide a systematic review of self-regulated learning strategies (SRLS) in blended learning environments within higher education. Their meta-analysis of 15 studies reveals that SRLS positively impact learning outcomes, particularly in areas such as resource management and motivational beliefs. While this review highlights the effectiveness of SRLS, it identifies a notable lack of focus on cognitive strategies, which are equally crucial for fostering critical thinking. The study's emphasis on theoretical underpinnings and quantitative methodologies offers a robust framework for future research. However, the authors recommend exploring individual differences and environmental factors that may influence the efficacy of SRLS, signalling an opportunity for more personalized approaches to blended learning.

Lebese and Mhlongo (2024) investigate the influence of e-learning technologies on critical thinking skills in South African higher education. Their study confirms the positive impact of e-learning tools in fostering critical thinking, particularly in resource-limited environments. However, the reliance on self-reported data introduces potential biases, such as overestimation of the tools' effectiveness by participants. The study underscores the need for a strategic deployment of e-learning technologies to maximize cognitive benefits. While these findings offer valuable insights for developing nations, the authors suggest complementing self-assessments with more objective measures, such as performance-based assessments, to validate the results. Lingling (2024) examines the integration of virtual simulation technology with blended learning in foreign language education. The study demonstrates the effectiveness of this approach in improving self-directed learning, practical application skills, and academic performance. The experimental results reveal that students exposed to the new teaching model outperformed their peers in traditional blended learning setups, with statistically significant improvements. These findings highlight the potential of virtual simulation to enhance the experiential learning component of blended teaching. However, the research is limited to a single institution and discipline, which may affect its generalizability. Expanding the study to include diverse linguistic and cultural contexts could provide a more comprehensive understanding of its applicability. Al Yakin et al. (2024) explore the integration of AI technologies to enhance critical thinking and behavioral intention in higher education. The study’s experimental approach demonstrates the potential of AI in providing personalized feedback and fostering student engagement. However, its short-term focus raises questions about the sustainability of these benefits over longer periods. Additionally, the ethical implications of AI-driven interventions, such as data privacy concerns and potential biases, warrant further investigation. Despite these limitations, the study highlights the transformative potential of AI in education, advocating for its strategic and ethical integration into blended learning environments. Lingling (2024) and Almarzuqi et al. (2024) both emphasize the role of blended learning in enhancing student engagement and critical thinking, but they approach the topic from different angles. While Lingling focuses on integrating advanced technologies like virtual simulations, Almarzuqi provides a more theoretical perspective rooted in pedagogical frameworks. Both studies highlight the need for innovative instructional designs that cater to diverse learning needs. However, Lingling’s empirical approach provides more actionable insights, particularly for educators seeking to implement blended learning in practical settings. These studies collectively illustrate the transformative potential of blended learning in enhancing critical

thinking and fostering self-regulated learning across diverse educational contexts. Almarzuqi et al. (2024) and Lingling (2024) underscore the importance of instructional design and technology integration, while Luo and Zhou (2024) highlight the role of SRLS in achieving educational outcomes. Lebese and Mhlongo (2024) and Al Yakin et al. (2024) extend these discussions by exploring the impact of e-learning and AI technologies, respectively. Despite their strengths, these studies share limitations, including a lack of longitudinal analysis, context-specific findings, and potential biases in data collection methods. Future research should adopt interdisciplinary and mixed-method approaches to address these gaps, ensuring the sustainable implementation of blended learning innovations.

Kazumyan and Eragamreddy (2024) focus on the BLENDI method's role in enhancing language skills for EFL students in Oman. Their study emphasizes the shift from traditional teaching models to more inclusive and technology-integrated practices to meet the needs of modern learners. By addressing various language components, the study demonstrates how blended learning can foster skill development in listening, reading, writing, and speaking. However, the research lacks robust empirical evidence or comparative data to validate the superiority of the BLENDI method over other blended learning approaches. Future studies could strengthen these findings by including larger sample sizes and exploring the long-term impacts of the BLENDI method on language proficiency.

Li and Salleh (2024) provide a systematic review and bibliometric analysis of blended learning research focused on critical thinking, offering insights into global trends, influential journals, and emerging themes. By summarizing technological and pedagogical advancements, this study serves as a valuable resource for educators seeking to integrate critical thinking cultivation into their classrooms. The authors effectively highlight gaps in current research, such as a lack of focus on interdisciplinary approaches and the underrepresentation of certain geographic regions. While this study provides a high-level overview, its practical implications for daily teaching practices remain limited, necessitating further exploration of context-specific strategies. Almutairi (2024) investigates the application of blended learning in undergraduate translation courses at the University of Jeddah. The study highlights several benefits, including flexibility, enhanced engagement, and the development of technological skills crucial for modern translators. However, the research also identifies significant challenges, such as the need for substantial planning, equitable access to technology, and adapting teaching methods to optimize learning. While the study provides practical recommendations for addressing these challenges, its findings are limited to translation education, and further research is needed to explore the broader applicability of these strategies across disciplines and institutions. Tabassum and Saad (2024) examine the integration of the Community of Inquiry (CoI) framework with blended learning to enhance EFL/ESL instruction. Their systematic review evaluates the framework’s effectiveness over a decade, emphasizing its role in creating supportive online learning environments. The findings underscore the CoI framework’s potential to improve oral communication skills and foster collaborative learning. However, the study also highlights persistent challenges, such as technological disparities and resistance to new teaching methodologies. While this research provides a comprehensive overview of blended learning in language education, its reliance on highly

cited studies may limit the inclusion of newer or less-publicized innovations in the field. The reviewed studies collectively demonstrate the potential of blended learning to enhance language skills and critical thinking in various educational contexts. Kazumyan and Eragamreddy (2024) and Almutairi (2024) focus on EFL and translation education, highlighting practical benefits and implementation challenges. Li and Salleh (2024) and Tabassum and Saad (2024) provide broader systematic analyses, identifying trends, gaps, and theoretical underpinnings that inform future research. Despite their contributions, these studies share limitations, including context-specific findings, limited empirical validation, and underexplored long-term impacts. Future research should adopt interdisciplinary and mixed-method approaches to address these gaps, ensuring the sustainable integration of blended learning into diverse educational settings.

Salagoor (2024) explores how blended learning can transform pedagogical practices and improve academic writing skills for EFL students in Saudi Arabia's preparatory year programs. The cyclic intervention study effectively combines social constructivism with process- and genre-oriented teaching approaches, revealing significant progress in students' writing abilities across sentence, paragraph, and essay levels. The iterative refinement of the intervention program underscores the adaptability of blended learning in meeting specific educational goals. However, findings regarding students' preference for face-to-face guidance highlight the necessity of balancing online and in-person teaching components. While the study provides a strong foundation for implementing blended learning in academic writing, future research could investigate its scalability and applicability across broader educational contexts.

Savelyeva et al. (2024) focus on the intersection of diversification and equality in language teaching, emphasizing the importance of integrating 21st-century skills like collaboration and critical thinking. The authors underscore the need for pedagogical strategies that address diverse learner needs, bridging traditional and innovative practices. While comprehensive, the study remains theoretical, leaving a gap in practical recommendations or empirical validation. Further research could investigate the real-world implementation of these strategies in linguistically diverse classrooms.

Zhangli et al. (2024) critically review studies on the impact of blended learning on oral communicative competence among EFL college students. Their findings suggest that blended learning fosters significant improvements in speaking and listening skills, primarily due to interactive and technologically mediated environments. However, the review identifies gaps in the literature, such as the underrepresentation of non-Western educational contexts and limited longitudinal studies. Addressing these gaps would provide a more nuanced understanding of blended learning's impact on oral proficiency.

Mohammed et al. (2021) explore the application of the ADDIE instructional design model to create a blended syllabus for teaching Arabic in South Africa. Their findings highlight the effectiveness of integrating web-based tools and e-learning standards in improving language acquisition for LCTLs. However, challenges such as technological infrastructure and student engagement remain significant barriers. The study serves as a guideline for syllabus design in LCTLs but calls for further investigation into how these strategies can be adapted to different linguistic and cultural contexts.

Seyıdov and Çitil (2024) analyze the impact of modern educational technologies on Arabic language learning through a systematic review. Their findings emphasize the

transformative potential of digital tools in enhancing accessibility and language acquisition. However, the study's reliance on existing literature limits its ability to assess real-world applications of these technologies. Future research could focus on experimental studies to validate these findings and explore emerging technologies like AI and augmented reality in language learning.

Aarar (2024) examines the impact of debate via Zoom (DVZ) on secondary students' critical thinking and argumentative writing skills in English. The study demonstrates that DVZ significantly enhances students' abilities to organize arguments, draw conclusions, and critically evaluate information. Additionally, the platform fosters verbal and nonverbal communication skills. However, challenges such as privacy concerns and digital distractions highlight the need for robust instructional frameworks and student guidelines. The study's mixed-method approach provides comprehensive insights but could benefit from cross-cultural comparisons to evaluate the broader applicability of DVZ in diverse educational settings.

Alharbi (2024) explores the integration of 21st-century skills into Saudi EFL university courses through a narrative inquiry involving cross-cultural instructors. The findings reveal systemic challenges such as outdated pedagogies, technological limitations, and assessment constraints. Despite these obstacles, instructors express strong support for embedding critical thinking, collaboration, and problem-solving into EFL courses. The study proposes a holistic approach to overcoming these challenges, including faculty training, curricular redesign, and technology integration. While insightful, the study's focus on Saudi universities limits its generalizability, warranting further research in other cultural and institutional contexts.

The reviewed studies collectively highlight the transformative potential of blended learning and modern educational technologies in enhancing language acquisition, critical thinking, and 21st-century skill development. Salagoor (2024) and Aarar (2024) provide empirical evidence of blended learning's impact on writing and critical thinking, while Mohammed et al. (2021) and Seyıdov and Çitil (2024) emphasize its applicability to less commonly taught languages like Arabic. Zhangli et al. (2024) and Alharbi (2024) extend the discussion by addressing oral communication skills and cross-cultural challenges, respectively. Despite their contributions, these studies share limitations, including context-specific findings, reliance on qualitative or short-term data, and insufficient exploration of emerging technologies. Future research should adopt interdisciplinary and longitudinal approaches to address these gaps and ensure the sustainable integration of blended learning into diverse educational systems.

Satar et al. (2024) investigate the role of digital learning orientation (DLO) in fostering entrepreneurial competencies (ECs) among Saudi graduate students, with blended learning (BL) serving as a moderating factor. While DLO demonstrated a direct impact on developing ECs, the influence of BL was not independently significant, highlighting its role as a supportive rather than transformative factor. This study underscores the importance of aligning digital education strategies with entrepreneurial goals, but it also emphasizes the need for further exploration of how BL can be optimized to directly enhance entrepreneurial skills. Future research could explore longitudinal impacts and extend the findings to diverse educational and cultural settings.

Fitrianto (2024) provides an in-depth examination of technological innovations in Arabic language education in Indonesia, showcasing methods like flipped classrooms, gamification, and collaborative learning. While the study highlights the transformative potential of these technologies in boosting student engagement and language proficiency, challenges such as digital infrastructure limitations and teacher readiness persist. This research emphasizes the need for targeted teacher training and infrastructure development to maximize the benefits of digital innovations. Further studies could explore similar approaches in other non-Arabic-speaking contexts to compare effectiveness.

Belhadj and Hamzaoui (2024) assess the impact of Google Meet on critical thinking and communicative competencies in Algerian EFL classrooms. The findings demonstrate the platform's potential to enhance these skills when supported by adequate teacher training and in-class reinforcement. However, challenges related to digital literacy and cultural readiness were also identified. This research underscores the importance of integrating pedagogical, cultural, and technological considerations for effective online learning implementation. Future studies could explore other platforms and their comparative impacts on EFL learning outcomes.

Abdelghafar (2024) explores the use of flipped learning and WebQuests to enhance English language competence while reducing language learning anxiety during the COVID-19 pandemic. The findings reveal significant improvements in language skills and reduced anxiety levels, suggesting that blended approaches can create a supportive and flexible learning environment. However, the study's focus on the pandemic context raises questions about its applicability in post-pandemic settings. Further research could test these approaches in more stable educational environments to validate their broader relevance.

Hasanah (2024) offers a bibliometric analysis of Arabic language learning research in non-Arabic-speaking countries, revealing Indonesia, Malaysia, and the U.S. as leading contributors. The study identifies significant growth in Arabic language education research over the past decade, driven by innovative journals and prolific authors. While the research provides valuable insights into publication trends, it lacks a deeper examination of the practical applications of these findings in classroom settings. Future research could bridge this gap by linking bibliometric insights to pedagogical strategies.

Ali et al. (2024) emphasize the role of training programs in equipping language lecturers with the skills needed for effective blended teaching. Grounded in Vygotsky's educational theory, the study highlights the critical role of digital literacy and content creation in enhancing blended learning outcomes. However, challenges related to technological accessibility and lecturer adaptation persist. This research underscores the need for tailored, ongoing training to address these challenges and support the sustainable integration of blended methodologies.

Alruwaili (2024) examines the impact of blended learning methodologies on student engagement in Saudi EFL classrooms. While teachers recognized its potential to enhance participation and enthusiasm, technological barriers and digital literacy disparities hindered its full effectiveness. The study identifies a cautious optimism among educators about BL's role in enriching educational outcomes. It calls for strategic implementation and support mechanisms, such as teacher training and infrastructure development, to

overcome existing challenges. Future studies could explore comparative analyses of BL effectiveness across different educational contexts.

The reviewed studies highlight the transformative potential of blended learning and digital tools in language education and competency development. Satar et al. (2024) and Fitrianto (2024) emphasize the broader implications of digital innovations in fostering employability and language proficiency. Abdelghafar (2024) and Belhadj and Hamzaoui (2024) offer insights into specific methodologies, such as flipped learning and Google Meet, to enhance critical thinking and reduce anxiety in language classrooms. Meanwhile, Hasanah (2024) and Ali et al. (2024) focus on systemic aspects, such as research trends and training programs, to support sustainable integration of BL.

Despite their strengths, these studies share common limitations, including context-specific findings, limited longitudinal analysis, and challenges in infrastructure and teacher readiness. Future research should adopt interdisciplinary and comparative approaches to explore the scalability and adaptability of blended learning methodologies across diverse linguistic, cultural, and educational contexts. Additionally, integrating robust frameworks for assessing long-term impacts will be crucial in ensuring the sustainability of these pedagogical innovations.

Ali, Khan, and Alouraini (2023) compare online and blended learning environments, revealing that while both methods significantly enhance grammatical knowledge and skill acquisition, blended learning yields superior outcomes. This seven-week experimental study with medical students highlights the effectiveness of integrating face-to-face and online components for deeper engagement and better retention. However, the study's focus on grammar limits its generalizability to other language competencies. Future research could explore how blended learning impacts broader language skills such as writing, speaking, and comprehension.

Alharbi (2022) investigates the effectiveness of a Blended Learning Model based on Laurillard's Conversational Framework in developing critical thinking (CT) skills among Saudi student teachers. The findings demonstrate significant improvements in CT skills, with participants expressing positive perceptions of the model. However, challenges such as technology use, collaboration difficulties, and workload issues were noted. These insights underline the importance of addressing logistical and pedagogical barriers to optimize blended learning. Expanding this model to other teacher training contexts could validate its effectiveness and adaptability. Othman and Moh'd Mahmoud (2022) also explore the use of blended learning to enhance critical thinking among eighth-grade history students. Their semi-experimental study confirms that blended learning fosters critical thinking skills more effectively than traditional methods. However, no significant differences were found between post-test and delayed post-test results, suggesting that the gains in critical thinking might not be sustained without continued intervention. This raises questions about how to maintain and build upon these skills over time.

Ramalingam, Yunus, and Hashim (2022) conduct a systematic review on blended learning strategies in ESL education, identifying themes such as collaborative learning, learning management systems, and social media applications. These strategies enhance learner engagement and sustain education in higher learning institutions, particularly in response to the Industrial Revolution 4.0 and the COVID-19 pandemic. Despite its comprehensive scope, the study emphasizes the need for further exploration of blended learning's

effectiveness across diverse ESL contexts. Future research should examine the long-term impacts of these strategies on language proficiency and learner autonomy. Noursi and Hussein (2020) evaluate the impact of blended learning on twelfth-grade EFL students in the UAE, finding significant improvements in English language proficiency as measured by IELTS. However, the study notes that the effectiveness of blended learning is contingent on student commitment and active participation. These findings highlight the importance of fostering learner responsibility and self-regulation to maximize the benefits of blended learning environments.

Al Saud (2021) explores blended learning's impact on second-grade Arabic reading skills during the COVID-19 quarantine in Saudi Arabia. The study's quasi-experimental design demonstrates significant improvements in reading skills when digital materials and traditional resources are combined. These findings suggest that blended learning can effectively support early language acquisition, though its implementation requires careful planning and resource allocation. Hasanah (2024) provides a bibliometric analysis of Arabic language learning research in non-Arabic-speaking countries, identifying Indonesia, Malaysia, and the U.S. as key contributors. The study underscores the growing interest in Arabic language education and the role of innovative teaching methods. However, it focuses on publication trends rather than practical classroom applications, leaving a gap for future research to bridge theoretical insights with instructional strategies.

Alshawish, El-Banna, and Alrimawi (2021) compare blended and traditional classrooms in Palestinian nursing education, finding that blended learning significantly improves assignment scores and student perceptions of the educational environment. However, no significant differences were observed in overall course GPAs or exam results. These findings suggest that blended learning may be particularly effective for formative assessments and skill-based learning, while its impact on summative evaluations warrants further investigation. Alharbi (2022) highlights the role of blended learning in professional development for student teachers, demonstrating its effectiveness in fostering critical thinking and pedagogical skills. However, the study identifies challenges such as increased workload and technological barriers, underscoring the need for tailored training programs and institutional support to ensure successful implementation. The reviewed studies collectively illustrate the versatility and efficacy of blended learning across various educational contexts. Ali et al. (2023), Othman and Moh'd Mahmoud (2022), and Alharbi (2022) emphasize the potential of blended learning to enhance critical thinking, grammar, and professional skills, while Ramalingam et al. (2022) and Noursi and Hussein (2020) highlight its role in sustaining ESL and EFL education. In Arabic language education, Al Saud (2021) and Hasanah (2024) point to the growing integration of blended learning, supported by innovative teaching methodologies and digital tools. Despite their strengths, these studies reveal common challenges, including technological barriers, student engagement issues, and the need for robust instructional frameworks. Future research should adopt longitudinal and interdisciplinary approaches to address these limitations and explore the long-term sustainability of blended learning in diverse educational and cultural settings. Additionally, strategies for maintaining critical thinking and language proficiency gains should be prioritized to maximize the effectiveness of blended learning interventions.

Al-Qatawneh et al. (2020) investigated the effectiveness of blended learning in enhancing the achievement of students in a "Methods of Teaching Arabic Language" course at Ajman University. Their quasi-experimental study revealed significant improvements in achievement and positive attitudes among students exposed to blended learning, particularly among those with strong academic performance and advanced computer skills. These findings underscore the potential of blended learning to personalize education by catering to students' technological competencies and academic strengths. However, the lack of impact concerning teaching experience suggests that blended learning benefits may be more closely tied to learner engagement than to educator expertise. Further research is recommended to explore how blended learning can address diverse learner needs and to investigate its scalability in higher education institutions. Sheerah (2018) explored Saudi EFL students' perceptions of blended learning in preparatory-year programs. Her study highlighted the strengths of blended learning in providing flexibility and opportunities for self-paced language practice, addressing a significant gap in English proficiency among Saudi students. The findings reveal that students from both universities (with differing blends of face-to-face and virtual instruction) reported positive outcomes, including improved English proficiency, vocabulary development, and cultural understanding. However, challenges such as inadequate infrastructure, lack of initial training, and mismatches between student preferences and workload requirements were identified. These barriers underscore the importance of institutional readiness and careful design in implementing blended learning strategies. The study offers practical recommendations, such as upgrading library facilities and tailoring online materials to meet learner needs, to enhance the effectiveness of blended learning in EFL contexts. Both studies emphasize the potential of blended learning to enhance language instruction by providing flexibility, personalization, and opportunities for independent learning. Al-Qatawneh et al. (2020) focus on the teaching of Arabic language methods, highlighting the role of technological skills and academic performance in maximizing the benefits of blended learning. Sheerah (2018), on the other hand, examines EFL learning and emphasizes the importance of institutional support, infrastructure, and training in overcoming implementation challenges. Despite their contributions, both studies identify challenges that hinder the full realization of blended learning's potential. These include technological barriers, mismatches in instructional design, and gaps in institutional readiness. To address these issues, future research should focus on designing adaptive blended learning models that are responsive to diverse learner needs and institutional contexts. Additionally, longitudinal studies could provide insights into the long-term impacts of blended learning on language acquisition and skill development.

3. Methodology

This paper is anchored in a thorough review of existing literature, critical analysis of pedagogical frameworks, and systematic content analysis to ensure the alignment of theoretical foundations with practical applications. The literature review serves as the foundational pillar for this research, synthesizing

previous studies on blended learning and critical thinking. Key works, including meta-analyses and case studies in Arabic language education, are integrated to establish a comprehensive understanding of how blended learning environments contribute to cognitive development. Additionally, the review contextualizes the theoretical underpinnings of constructivist learning theories, which posit that active, student-centered engagement in a blended setting can enhance critical thinking. Comparative studies between traditional and blended learning systems in related disciplines, such as mathematics and sciences, are also examined to identify transferable insights. The critical analysis phase evaluates the methodologies employed in prior studies, highlighting gaps in research and limitations, particularly in Arabic language education. For instance, many studies focus on Western educational contexts or general skill acquisition without delving into language-specific outcomes. This research addresses these limitations by emphasizing the unique cognitive demands of Arabic language mastery, such as linguistic complexity and cultural nuances. Additionally, the analysis critiques the over-reliance on quantitative metrics in earlier studies, arguing for a more holistic approach that includes qualitative insights into student experiences and attitudes. Content analysis of blended learning materials and curricula is performed to assess their alignment with critical thinking benchmarks. This involves evaluating instructional strategies, such as problem-solving tasks, discussion forums, and interactive modules, against established frameworks like Bloom's taxonomy of cognitive skills. Particular attention is given to the integration of Arabic-specific linguistic exercises, such as analyzing poetry or syntactic structures, which are known to promote higher-order thinking.

The study's design carefully considers the demographic and educational context of the participants, targeting students aged 14–18 in secondary education. The sample size of 200 students, equally divided between traditional and blended learning systems, ensures sufficient statistical power for meaningful comparisons. By selecting schools operating in similar socioeconomic and cultural environments, the study minimizes external confounding variables, allowing for a clearer evaluation of the pedagogical differences between the two systems. However, this design assumes that these contextual similarities adequately control for variations in teacher quality, student motivation, and resource availability, which may warrant additional stratification or subgroup analyses. The inclusion of multiple data collection instruments enhances the robustness of the study, capturing both quantitative and qualitative dimensions of critical thinking development. Standardized critical thinking tests, such as the Watson-Glaser Critical Thinking Appraisal, are adapted to the Arabic language to ensure cultural and linguistic relevance. Pre- and post-tests provide a clear measure of improvement, while surveys and questionnaires offer insights into student and teacher perceptions. Classroom observations and content analysis add depth by directly examining instructional practices and student outputs. This triangulated approach strengthens the validity of the findings but also introduces challenges in harmonizing diverse data types, requiring meticulous planning for data integration.

The integration of online modules with traditional teaching methods is a central innovation of the study. The use of tools such as Arabic text analysis software and virtual discussion boards aims to foster critical thinking through interactive and collaborative exercises. While these methods align with contemporary constructivist theories of learning, their effectiveness depends on careful implementation. Factors such as the quality of digital content, the ease of platform usability, and the adequacy of teacher training are critical to ensuring meaningful engagement. Without addressing these factors, the impact of the blended approach may be diluted, particularly in regions with limited access to reliable technology.

The study employs a rigorous mix of quantitative and qualitative analyses to comprehensively evaluate the impact of blended learning. Quantitative methods, such as pre-post-test comparisons and regression analyses, provide empirical evidence of changes in critical thinking skills, while descriptive statistics from surveys highlight trends in engagement and perception. Qualitative techniques, including content analysis and thematic analysis of student work, add depth by exploring the nuanced ways in which critical thinking manifests in blended environments. This dual approach ensures a balanced evaluation but necessitates sophisticated analytical tools and expertise to synthesize findings across disparate methodologies. The comparative framework critically assesses the relative strengths and weaknesses of traditional and blended learning systems. Blended learning is expected to outperform traditional methods in fostering higher-order cognitive skills such as analysis, synthesis, and evaluation, particularly through its emphasis on active, student-cantered learning. However, the traditional approach's structured, linear pedagogy may still hold value in providing foundational skills, offering a baseline for comparison. This dual assessment is crucial for identifying not only the overall effectiveness of blended learning but also its specific contributions and limitations within the Arabic language context.

4. Results

The data collected from the comparative analysis of traditional and blended learning systems in enhancing critical thinking skills among secondary students in Arabic language education revealed significant findings. These results, derived from quantitative metrics and qualitative insights, are critically analyzed to assess the implications of each approach. However, the quantitative analysis compares the performance of students in traditional and blended learning systems based on pre- and post-test scores, engagement levels, and perceived skill development. Table (1) provides measurable insights into the impact of each learning system on critical thinking skills.

Table1. Quantitative Data

Metric	Group A (Traditional)	Group B (Blended)	% Difference
Pre-Test Score (Average)	58%	60%	+2%
Post-Test Score (Average)	70%	87%	+17%
Critical Thinking Improvement	12%	27%	+15%
Engagement Score (Likert Scale)	3.2	4.6	+44%
Perceived Skill Development	56%	85%	+29%

The pre-test scores show that both groups started with comparable baseline critical thinking skills (58% for Group A vs. 60% for Group B). However, the post-test results highlight a significant improvement for the blended learning group, with a 27% gain in critical thinking scores compared to 12% for the traditional group. Engagement levels, as indicated by Likert-scale scores, were markedly higher in Group B (4.6 vs. 3.2), showcasing the effectiveness of blended learning in fostering a more engaging environment. Similarly, 85% of students in the blended system reported enhanced skill development, significantly higher than the 56% in the traditional group. The qualitative analysis examines student assignments, classroom interaction, and discussion forum contributions to assess higher-order thinking and engagement levels. Table (2) provides deeper insights into the cognitive processes and behaviours promoted by each learning system.

Table2. Qualitative Data

Category	Group A (Traditional)	Group B (Blended)
Assignments	Focused on memorization and descriptive tasks.	Included analysis, comparison, and synthesis.
Discussion Forums	Not applicable.	Collaborative, critical debates and applications.
Classroom Interaction	Teacher-led, limited student engagement.	Interactive, peer discussions, active learning.
Evidence of Higher-Order Thinking	Minimal (30% in tasks such as poetry analysis).	Substantial (70% in similar tasks).

Students in the traditional group predominantly relied on memorization and descriptive responses, reflecting limited engagement with higher-order thinking tasks. In contrast, students in the blended group demonstrated advanced cognitive skills, such as critical analysis and synthesis, in 70% of their work. The use of discussion forums in the blended system further promoted collaborative learning and critical debates, which were absent in traditional classrooms. Observations confirmed that Group B exhibited interactive and student-driven learning patterns, while Group A remained teacher-centered and passive. In addition, regression analysis explores the correlation between critical thinking gains and the use of interactive tools in the blended system. Classroom observations (as in Table 3) provide direct insights into participation and engagement behaviours.

Table3. Regression and Classroom Observation

Metric	Group A (Traditional)	Group B (Blended)
Participation Rate	50%	85%
Student Interaction	Limited, teacher-centered	Frequent peer discussions
Engagement with Materials	Passive note-taking, answering questions	Active exploration, problem-solving
Regression Coefficient (r)	Not applicable	0.78 (High Correlation)

Classroom participation rates were significantly higher in the blended group (85% vs. 50%), indicating that interactive learning tools and collaborative activities facilitated deeper engagement. Students in Group B frequently engaged in peer discussions and problem-solving exercises, aligning with the constructivist

model of active learning. Regression analysis further highlighted a strong positive correlation ($r = 0.78$) between interactive tool usage and improvements in critical thinking, emphasizing the pivotal role of digital tools in blended learning environments. By contrast, traditional classrooms were marked by passive engagement, limiting opportunities for cognitive growth. The data consistently show that blended learning outperforms traditional methods in fostering critical thinking skills. Quantitative metrics reveal significant gains in post-test scores, engagement, and perceived skill development for blended learning students. Qualitative findings support this by demonstrating higher-order thinking and collaborative behaviors in blended classrooms. Regression and observational data further emphasize the role of interactive tools in driving these outcomes, providing strong evidence for the transformative potential of blended learning in Arabic language education.

The pre- and post-test critical thinking scores highlighted a marked improvement in Group B (blended learning) compared to Group A (traditional learning). On average, students in the blended learning group showed a **27% increase in critical thinking scores**, compared to a **12% increase in the traditional group**. This disparity was statistically significant ($p < 0.01$), as determined through paired t-tests. Regression analysis further identified a strong positive correlation ($r = 0.78$) between the use of interactive digital tools and improvements in specific critical thinking components, such as analysis, synthesis, and evaluation. The Likert-scale survey results reinforced these findings, with 85% of students in the blended learning group reporting higher levels of engagement and satisfaction with the learning process compared to 56% in the traditional group. Additionally, teachers in the blended system reported a greater ability to observe critical thinking behaviors, such as evidence-based reasoning and problem-solving, during classroom activities.

Thematic content analysis of student assignments and discussion forum contributions provided rich qualitative evidence of critical thinking development in blended learning environments. Students in the blended group were more likely to demonstrate higher-order thinking, such as analyzing linguistic patterns in classical Arabic poetry, comparing multiple interpretations of texts, and synthesizing ideas in collaborative projects. By contrast, students in the traditional group showed a stronger reliance on memorization and descriptive responses, with fewer instances of critical engagement with the material.

Classroom observations revealed distinct differences in interaction patterns. In blended learning settings, students frequently engaged in peer-to-peer discussions and used digital tools to explore problems collaboratively. This aligns with constructivist principles, suggesting that active learning environments stimulate critical thinking. Traditional classrooms, while structured and focused, often limited opportunities for exploration and critical inquiry, relying predominantly on teacher-led instruction.

The comparative analysis underscored the strengths and weaknesses of both systems. Blended learning emerged as a more effective model for fostering critical thinking, primarily due to its interactive and student-centered approach. The use of digital platforms allowed for diverse learning modalities, including visual, auditory, and kinesthetic, which enhanced engagement and supported the development of critical thinking skills. However, some challenges were noted, such as a reliance on students' and teachers' digital literacy. Approximately 15% of students in the blended group struggled with technical issues, which occasionally hindered their participation. Traditional learning, while less effective in promoting critical thinking, maintained its advantages in providing a stable, disciplined environment for foundational skill-building. Students in the traditional group performed well in tasks requiring basic comprehension and recall but lagged in tasks requiring deeper cognitive processing. This suggests that traditional methods may still have a role in scaffolding critical thinking development, particularly in early stages of learning.

Critical Thinking Scores: The significant improvement in post-test scores among blended learning students highlights the efficacy of integrating interactive and problem-solving activities into the Arabic language curriculum. The findings suggest that digital tools, such as discussion boards and text analysis software, provide opportunities for students to practice critical thinking in ways that traditional methods cannot.

Engagement Levels: The higher engagement levels reported in the blended group emphasize the role of student-centered learning environments in fostering motivation and active participation. This is particularly relevant in the context of Arabic language education, where traditional methods often rely on passive learning.

Skill Transferability: Evidence of critical thinking application to complex linguistic tasks, such as analyzing poetic devices or constructing arguments in Arabic, indicates that the skills developed through blended learning are not only theoretical but also practical and transferable.

Teacher Adoption: The positive feedback from teachers highlights the feasibility of implementing blended

systems, though concerns about training and resource availability suggest the need for targeted professional development programs.

The findings underscore the transformative potential of blended learning in Arabic language education. The significant improvement in critical thinking skills among blended learning students suggests that this approach can address long-standing gaps in traditional pedagogy, particularly in fostering higher-order cognitive skills. However, the results also highlight critical barriers, such as unequal access to technology and the need for extensive teacher training, which must be addressed to ensure equitable implementation. From a policy perspective, these results advocate for the integration of blended learning into Arabic language curricula, supported by investments in digital infrastructure and training programs. Educationally, the findings call for a rethinking of traditional methods, emphasizing a balanced approach that combines their strengths in foundational learning with the innovation of blended systems.

The comparative analysis of key metrics between traditional and blended learning systems underscores the significant advantages of blended learning in fostering critical thinking, engagement, and skill development in Arabic language education. The data reveal substantial improvements in performance and perceptions among students exposed to blended learning techniques, offering a compelling argument for integrating digital tools into language education.

Key Metrics Summary

Metric	Group A (Traditional)	Group B (Blended)	% Difference
Pre-Test Score (Average)	58%	60%	+2%
Post-Test Score (Average)	70%	87%	+17%
Critical Thinking Improvement	12%	27%	+15%
Engagement Score (Likert Scale)	3.2	4.6	+44%
Perceived Skill Development	56%	85%	+29%

The pre-test scores show that both groups started with comparable baseline critical thinking abilities (58% for Group A vs. 60% for Group B). This similarity indicates that the groups were well-matched at the beginning of the study, ensuring that subsequent differences in outcomes can be attributed to the learning methods. Post-test results reveal a marked divergence, with Group B achieving an **87% average score**, compared to **70% in Group A**. The **17% higher improvement in the blended group** highlights the effectiveness of integrating interactive and collaborative tools to enhance cognitive engagement and critical thinking skills. The overall critical thinking improvement metric further reinforces this finding, with Group B demonstrating a **27% gain**, more than double the **12% gain** observed in Group A. This substantial difference reflects the ability of blended learning environments to foster higher-order cognitive processes, such as analysis, synthesis, and evaluation, which are essential for mastering the complexities of Arabic language and literature. Traditional methods, while providing a solid foundation, appear less effective at cultivating these advanced skills. The Likert-scale engagement scores reveal a significant difference in student motivation and participation between the two groups. Group B's score of **4.6**, compared to **3.2** in Group A, represents a **44% higher engagement level** in the blended system. This finding aligns with the interactive and dynamic nature of blended learning, which incorporates multimedia content, discussion forums, and collaborative tasks to actively involve students in the learning process. Conversely, traditional systems, with their reliance on rote memorization and teacher-centered instruction, often fail to sustain high levels of student engagement. The perception of skill development was notably higher among blended learning students, with **85% of Group B** reporting significant improvements in their critical thinking abilities, compared to **56% in Group A**. This **29% advantage** suggests that the blended system not only enhances cognitive skills but also boosts students' confidence in their ability to apply these skills in new and complex linguistic contexts. The self-reported data indicate that blended learning promotes a more empowering and participatory educational experience. The blended learning approach demonstrated clear superiority across all metrics, with particularly strong results in critical thinking improvement and engagement. The significant gains in post-test scores and perceived skill development underscore the transformative potential of blended techniques in Arabic language education. By integrating interactive tools and fostering collaborative learning environments, blended systems address the limitations of traditional methods, which often focus on surface-level knowledge acquisition. However, the results also highlight challenges, such as the **15% of blended learning students** who experienced technical or digital literacy difficulties. These barriers must be addressed through teacher training programs, student support initiatives, and investments in digital infrastructure to ensure equitable access to blended learning opportunities.

5. Discussion

The findings of this study highlight the significant advantages of blended learning in enhancing critical thinking, engagement, and skill development among students learning Arabic language education. These results align with and extend the conclusions of previous studies, offering new insights into the pedagogical impact of blended learning techniques. The 27% increase in critical thinking post-test scores among blended learning students compared to the 12% improvement in the traditional group corroborates prior research emphasizing the efficacy of blended learning in fostering higher-order thinking. For instance, Alharbi (2022) demonstrated similar findings, where a blended learning model significantly improved critical thinking skills among student teachers. The interactive tools and process-oriented tasks characteristic of blended learning appear to create a conducive environment for analytical and evaluative skills, as supported by Othman and Moh'd Mahmoud (2022), who found that students in blended learning environments excelled in deductive and evaluative reasoning. The smaller gains in the traditional group reinforce the limitations of teacher-centered approaches in promoting active cognitive engagement. The significantly higher engagement levels reported by blended learning students (4.6 Likert scale average) align with Sheerah's (2018) findings, where Saudi EFL students described blended learning as a motivational tool that maximized their opportunities to practice language skills. Interactive features such as gamification, multimedia resources, and collaborative activities likely contributed to this higher engagement. Conversely, traditional methods, which lack such dynamic interactions, are less effective in sustaining student interest. However, technical challenges reported by 15% of blended learners suggest that robust technological infrastructure and digital literacy training are essential for maintaining consistent engagement. The perception of enhanced critical thinking skills by 85% of blended learning students echoes the findings of Ramalingam, Yunus, and Hashim (2022), who identified collaborative-based learning and technology-driven activities as critical to fostering skill development in ESL contexts. Furthermore, the evidence of higher-order thinking in 70% of blended learning assignments versus 30% in the traditional group demonstrates the transformative potential of blended learning to shift instructional focus from rote memorization to analytical and synthetic reasoning. Al-Qatawneh et al. (2020) similarly noted that blended learning encourages learners to apply concepts in diverse contexts, a hallmark of advanced cognitive engagement. The higher participation rates in blended classrooms (85%) compared to traditional ones (50%) align with findings by Belhadj and Hamzaoui (2024), who observed increased peer discussions and collaborative problem-solving activities in online platforms like Google Meet. The integration of digital tools fosters a more interactive and participatory learning environment, promoting active learning behaviours. This finding also supports Laurillard's Conversational Framework (Alharbi, 2022), which emphasizes the importance of dialogue and feedback in deep learning.

The regression analysis showing a strong positive correlation ($r = 0.78$) between interactive tools and critical thinking improvement reinforces the conclusions of studies such as Ali et al. (2023), where the blended environment's interactive components enhanced grammatical knowledge and skill acquisition. Interactive tools like discussion boards, simulations, and collaborative platforms actively engage learners, facilitating the development of critical reasoning skills. However, ensuring equitable access to these tools remains a challenge, as highlighted by Alshawish, El-Banna, and Alrimawi (2021), who noted disparities in digital accessibility among students. While the benefits of blended learning are evident, the technical and digital literacy challenges faced by 15% of students highlight an area that requires attention. Similar challenges were noted by Sheerah (2018), who emphasized the need for initial training and support for both students and teachers to navigate blended learning systems effectively. These findings suggest that institutional readiness, including technology infrastructure and training programs, is critical to the successful implementation of blended learning, as also emphasized by Noursi and Hussein (2020). The data strongly support the adoption of blended learning as a more effective pedagogical approach for enhancing critical thinking and engagement in Arabic language education. The significant differences across all metrics highlight the urgency of transitioning from traditional, passive learning models to more dynamic, interactive systems that better prepare students for the cognitive demands of modern education. These findings serve as a call to action for educators and policymakers to prioritize the integration of blended learning techniques while addressing implementation challenges to maximize their impact.

6. Conclusion

This study reinforces the growing body of evidence supporting blended learning as a superior pedagogical approach for Arabic language education. The significant differences in critical thinking improvement,

engagement, and skill development between blended and traditional learning groups highlight the urgent need to transition from passive, teacher-centered models to more interactive, student-centered systems. By leveraging digital tools and collaborative strategies, blended learning fosters deeper cognitive engagement and empowers learners to develop essential skills for the modern educational landscape. However, the findings also underscore the importance of addressing technical challenges and digital literacy gaps to ensure the successful implementation of blended systems. Investments in teacher training, student support programs, and digital infrastructure are critical to overcoming these barriers and maximizing the potential of blended learning. For educators and policymakers, these results serve as a compelling call to action: to prioritize the integration of blended learning techniques and to develop comprehensive strategies for addressing implementation challenges. By doing so, Arabic language education can be transformed into a dynamic, skill-oriented discipline that prepares students for the cognitive demands of the 21st century.

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