Utilization of AI-Based Microsoft Edge Pdf Reader as a Support Medium for Digital Literacy and Research for Arabic Education Students

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Abstract

The massive integration of Artificial Intelligence (AI) in higher education has transformed how students The massive integration of Artificial Intelligence in higher education has radically changed the way students process knowledge and conduct academic research. This phenomenon requires digital literacy adaptation, especially for students who encounter scientific texts with high linguistic complexity. Purpose and Scope: This study aims to analyze the use of AI-based features in Microsoft Edge Pdf Reader specifically Copilot and Integrated Translator as a medium to support digital literacy and research efficiency for Arabic Language Education students. Method: This study uses a descriptive qualitative approach with an auto-ethnographic technical case study design, in which the researcher's personal practices are positioned as the main instrument. Data were collected through the documentation of digital artifacts in the form of screenshots that recorded dialogical and operational interactions with intelligent assistants. Summary of Results and Conclusions: Findings show that AI transforms static documents into interactive dialogic texts that enable analytical engagement beyond linear reading. Copilot proved effective in accelerating the extraction of key ideas from academic texts, while the integrated translation feature significantly reduced language barriers in Arabic and English primary references. This human-AI interaction enhances intellectual depth through the concept of Explainable Artificial Intelligence (XAI), which ensures system transparency. Scientific Contributions and Recommendations: This research provides practical contributions to the development of a technology-responsive Arabic Language Education curriculum to create an efficient research ecosystem that upholds human values and scientific accountability. For future research, it is recommended to explore the long-term impact of AI use on student idea originality and its effectiveness on various other digital learning platforms.

Keywords: Arabic Language Education, Artificial Intelligence, Copilot, Digital Literacy, Microsoft Edge

ملخص

أدى التكامل الهائل للذكاء الاصطناعيفي التعليم العالي إلى تغيير جذري في الطريقة التي يعالج بها الطلاب المعرفة ويجرون البحوث الأكاديمية. تتطلب هذه الظاهرة التكيف مع محو الأمية الرقمية، خاصة بالنسبة للطلاب الذين يواجهون نصوصًا علمية ذات تعقيد لغوي عالٍ. الغرض والنطاق: تهدف هذه الدراسة إلى تحليل استخدام الميزات القائمة على الذكاء الاصطناعي في قارئ ملفات بي دي إف من مايكروسوفت إيدجو تحديدًا كوفيلوتو مترجم متكامل كوسيلة لدعم محو الأمية الرقمية وكفاءة البحث لطلاب تعليم اللغة العربية. المنهجية: تستخدم هذه الدراسة نهجًا وصفياً نوعياً مع تصميم دراسة حالة تقنية ذاتية الإثنوغرافية، حيث يتم وضع الممارسة الشخصية للباحث كأداة رئيسية. تم جمع البيانات من خلال توثيق المنتجات الرقمية في شكل لقطات شاشة سجلت التفاعلات الحوارية والتشغيلية مع المساعدين الذكيين. ملخص النتائج والاستنتاجات: تشير النتائج إلى أن الذكاء الاصطناعي يحول المستندات الثابتة إلى نصوص حوارية تفاعلية تتيح المشاركة التحليلية بما يتجاوز القراءة الخطية. أثبت كوفيلوت فعاليته

في تسريع استخراج الأفكار الرئيسية من النصوص الأكاديمية، بينما قللت ميزة المترجم المدمجة بشكل كبير من الحواجز اللغوية في المراجع الأولية باللغتين العربية والإنجليزية. يعزز هذا التفاعل بين الإنسان والذكاء الاصطناعي العمق الفكري من خلال مفهوم الذكاء الاصطناعي القابل للتفسير، الذي يضمن شفافية النظام. المساهمات العلمية والتوصيات: يقدم هذا البحث مساهمات عملية لتطوير منهج تعليم اللغة العربية مستجيب للتكنولوجيا لخلق نظام بيئي بحثي فعال يحافظ على القيم الإنسانية والمساءلة العلمية. بالنسبة للبحوث المستقبلية، يوصى باستكشاف التأثير طويل المدى لاستخدام الذكاء الاصطناعي على أصالة أفكار الطلاب وفعاليته على منصات التعلم الرقمية المختلفة الأخرى.

الكلمات المفتاحية: تعليم اللغة العربية، الذكاء الاصطناعي، مايكروسوفت إيدج، محو الأمية الرقمية، مساعد الطيار

Introduction

The world of higher education is currently undergoing an existential shift with the massive integration of Artificial Intelligence (AI) into students' intellectual activities. This phenomenon is not merely about adopting new tools, but rather about how students "experience" the process of searching for and processing knowledge. The use of technologies such as ChatGPT and Copilot or other AI assistants has grown rapidly, helping to increase productivity in answering academic questions.[1] In scientific writing, AI is seen as a powerful paradigm that can help students synthesize literature more efficiently.[2] Recent research shows that AI is no longer just a tool, but a collaborative partner capable of reconstructing traditional pedagogy into a personalized learning experience.[3]

Phenomenologically, the presence of AI in document reader software, such as Microsoft Edge Pdf Reader, transforms text that was once static into a dialogical entity. Students no longer read linearly, but interact with the text through the help of algorithms. This experience reflects the evolutionary impact of AI in the teaching and learning process in higher education, where technology has become an integral part of the academic lifeworld.[4] These digitalization efforts have previously been seen through the use of Learning Management System (LMS) platforms such as Edmodo, which can transform conventional learning into interactive learning in Arabic language

[1] S Diantama, "*Pemanfaatan Artificial Intelegent (AI) dalam Dunia Pendidikan,*" DEWANTECH Jurnal Teknologi 1, no. 1 (2024): 11-18. https://journal.awatarainstitute.com/index.php/dewantech/article/view/8

[2] S Rahayu, "*Pemanfaatan Artificial Intelligence (AI) dalam Penulisan Artikel Ilmiah*," Prosiding PITNAS Widyaiswara 1, no. 1 (2024): 432-435. http://ejournal.iwi.or.id/ojs/index.php/pitnas2024/article/view/300

[3] Yueqiao Jin et al., "*Generative AI in Higher Education: A Global Perspective of Institutional Adoption Policies and Guidelines,*" Computers and Education: Artificial Intelligence 8, no. 1 (2025): 100348. DOI: https://doi.org/10.1016/j.caeai.2024.100348

[4] S.A.D. Popenici, "*Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education,*" Research and Practice in Technology Enhanced Learning 12, no. 1 (2017): 1-13. DOI: https://doi.org/10.1186/s41039-017-0062-8

education environments.[5] This transformation requires students to adapt to new challenges in digital literacy.

Efforts to map the role of AI in education have been undertaken by various researchers as a basis for comparison in this study. AI improves accessibility but risks creating cognitive dependence.[6] Explore the acceptance of technology among Arab students but focus on aspects of trust in general chatbots.[7] AI assists language learning (CALL), but did not touch on phenomenological interaction with Pdf texts.[8] Discuss the crucial importance of AI literacy to avoid algorithmic bias.[9] Examining the importance of AI system transparency (XAI) in education, but has not yet focused on the subjective experiences of Arabic Language Education students in analyzing classical/digital literature.[10]

One of the biggest challenges in student research is literacy in foreign-language literature. For students of Arabic Language Education, this challenge often arises when they have to analyze primary references, digital books, and international journals in Arabic, which have complex linguistic structures. That the use of Large Language Models (LLMs) has been proven effective in increasing motivation and ease of learning among Arabic language learners in Indonesia.[11] Additionally, the integration of appropriate digital technology, such as digital audio podcasts, has also been proven effective in strengthening the understanding of complex language structures.[12] However, there is still a wide gap in research on how Arabic Language Education students subjectively interpret their "symbiosis" with AI features in Pdf Readers. The Pdf translation feature in Microsoft Edge provides an instant "language barrier removal" experience. Students no longer feel alienated from Arabic, English, or other foreign language texts because the technology is able to convey meaning in their native language with a single click. This experience boosts students' confidence in managing complex writing and research tasks. Students often experience what is known as "human-AI symbiosis" in organizational and research decision-making, where the boundaries between human agency and machines become blurred.

The urgency of digital literacy is reflected in how students must remain critical of the output produced by automated systems. Systematic studies show that strong digital literacy is necessary to

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[5] Erni Zuliana et al., "*Manajemen Pembelajaran Bahasa Arab Virtual Class (VC) Berbasis Aplikasi Edmodo pada Mahasiswa UIN Raden Intan Lampung*," Al-Fathin: Jurnal Bahasa dan Sastra Arab 5, no. 01 (2022): 18. DOI: https://doi.org/10.32332/al-fathin.v5i01.5058

[6] Helen Crompton and Diane Burke, "*Artificial Intelligence in Higher Education: The State of the Field,*" International Journal of Educational Technology in Higher Education 20, no. 1 (2023): 22. DOI: https://doi.org/10.1186/s41239-023-00392-8

[7] Natasya Hayudyo Murthiningtyas et al., "*Acceptance of ChatGPT by Students in Academic Assessment,*" Journal of Artificial Intelligence and Engineering Applications (JAIEA) 4, no. 3 (2025): 2305–13. DOI: https://doi.org/10.59934/jaiea.v4i3.1159

[8] Jiahong Su and Weipeng Yang, "*Artificial Intelligence in Early Childhood Education: A Scoping Review,*" Computers and Education: Artificial Intelligence 3, (2022): 100049. DOI: https://doi.org/10.1016/j.caeai.2022.100049

[9] Neema Florence Vincent Mosha et al., "*A Systematic Review of Artificial Intelligence in Higher Education Institutions (HEIs): Functionalities, Challenges, and Best Practices,*" Education Sciences 16, no. 2 (2026): 185. DOI: https://doi.org/10.3390/educsci16020185

[10] Mirka Saarela and Vili Podgorelec, "*Recent Applications of Explainable AI (XAI): A Systematic Literature Review,*" Applied Sciences 14, no. 19 (2024): 8884. DOI: https://doi.org/10.3390/app14198884

[11] Nely Rahmawati Zaimah et al., "*Acceptability and Effectiveness Analysis of Large Language Model-Based Artificial Intelligence Chatbot Among Arabic Learners,*" Mantiqu Tayr: Journal of Arabic Language 4, no. 1 (2023): 1–20. DOI: https://doi.org/10.25217/mantiqutayr.v4i1.3951

[12] Mochammad Raihan Alemsyah et al., "*The Effectiveness of a Digital Audio Writing Podcast Based on Imla' in Teaching Basic Arabic Nahwu,*" Mantiqu Tayr: Journal of Arabic Language 6, no. 1 (2026): 43–64. DOI: https://doi.org/10.25217/mantiqutayr.v6i1.7082

prevent technology from reducing students' analytical abilities. Therefore, the development of human-centered AI is highly relevant to ensure that technology remains safe, reliable, and trustworthy. This theoretical basis is reinforced who emphasize that AI integration must continue to prioritize human integrity.[13] In this research, the main question arises regarding how students interpret the accuracy of information presented by the AI-based Microsoft Edge Pdf Reader. The concept of Explainable Artificial Intelligence (XAI) is crucial because students need to understand "why" and "how" the system provides certain summaries or answers.

In the context of Arabic Language Education, this is very important to ensure that AI's interpretation of Arabic terms that are open to multiple interpretations remains accurate and scientifically accountable. Ignorance of how black-box algorithms work can pose ethical risks to academic integrity.Major programs such as those initiated by DARPA have emphasized the importance of XAI in building user trust in intelligent systems. For students, this new academic reality demands a deep understanding of the ethics of large language models in scientific publications in order to avoid plagiarism or unintentional data manipulation. Collaboration with virtual assistants such as Copilot has broad implications for media education and the way students view information authority.[14]

Overall, AI has become a very powerful paradigm for modern scientific research.[15] However, multidisciplinary challenges related to ethics, practice, and policy continue to overshadow this progress.[16] Through a phenomenological approach, this study aims to explore the subjective meaning of researchers in their capacity as learners/academics through lived experience using Microsoft Edge Pdf Reader. The novelty or uniqueness of this study lies in its specific focus on the dialogic interaction of Arabic Language Education students with Arabic texts through the Pdf assistant in the browser, an area that is rarely touched upon by general AI studies, which usually only focus on generative chatbots.

The main basis of this study is the need to understand the shift in how students "encounter" scientific texts in the era of automation. The purpose of this study is to map the structure of students' experiences in using AI and evaluate its impact on intellectual depth. Based on this background, this study formulates the following key questions: (1) How do Arabic Language Education students interpret their dialogic interactions with AI features in Microsoft Edge Pdf Reader? (2) To what extent do these features help overcome linguistic barriers in research without reducing students' critical acumen? The focus of this study is to understand whether this technology truly enriches the digital literacy experience or instead creates a dependency that reduces students' intellectual depth. Specifically, this study examines how these features help research efficiency for academic subjects in the field of Arabic Language Education. By exploring students' life experiences, this research is expected to provide a new perspective for higher education institutions in developing

[13] Yogesh K. Dwivedi et al., "*Setting the Future of Digital and Social Media Marketing Research: Perspectives and Research Propositions,*" International Journal of Information Management 59 (August 2021): 102168. DOI: https://doi.org/10.1016/j.ijinfomgt.2020.102168

[14] J.V. Pavlik, "*Collaborating With ChatGPT: Considering the Implications of Generative Artificial Intelligence for Journalism and Media Education,*" Journalism and Mass Communication Educator 78, no. 1 (2023): 84–93. DOI: https://doi.org/10.1177/10776958221149577

[15] Y. Xu, "*Artificial Intelligence: A Powerful Paradigm for Scientific Research*," Innovation 2, no. 4 (2021): 1-20. DOI: https://doi.org/10.1016/j.xinn.2021.100179

[16] Y.K. Dwivedi, "*Artificial Intelligence (AI): Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy,*" International Journal of Information Management 57, no. 7(2021): 101994. DOI: https://doi.org/10.1016/j.ijinfomgt.2019.08.002

curricula that are responsive to the presence of AI, there by creating a research ecosystem that is not only technologically advanced but also upholds human values and scientific transparency.

Method

This study uses a descriptive qualitative approach with an auto-ethnography method. This approach was chosen because the researcher places his lived experience and personal practices as the main instruments for understanding the phenomenon of technology integration in intellectual activities. The research focuses on the technical procedures for utilizing Artificial Intelligence (AI) assistants in digital service systems to support the efficiency of student research. Through this perspective, the researcher is not only an observer but also a subject who directly experiences the transformation of static text into a dialogical entity in the academic ecosystem.[17] The parts identified in this study include the technical and operational components of the software used, namely: Copilot Feature (LLM): As a dialogic assistant for text summarization and academic questions and answers, Integrated Translator: As a language analysis tool for Pdf documents,[18] and Visual Documentation Data: In the form of screenshots and narrative notes that record interactions between researchers and Arabic research texts.

The subject of this study is the researcher himself, who acts in his capacity as a learner and academic in the field of Arabic Language Education. The characteristics of the subject include active involvement in foreign language (Arabic and English) literature research and the need to analyze Arabic terminology with a high level of linguistic difficulty. The researcher also acts as an active user of AI assistant technology to optimize academic output. The selection of a single subject is consistent with the auto-ethnography design, which aims to explore the depth of subjectivity in the use of practical tools that are capable of intelligently understanding and managing documents.[19]

This research design uses a technical case study. The research stages are systematically designed as follows:

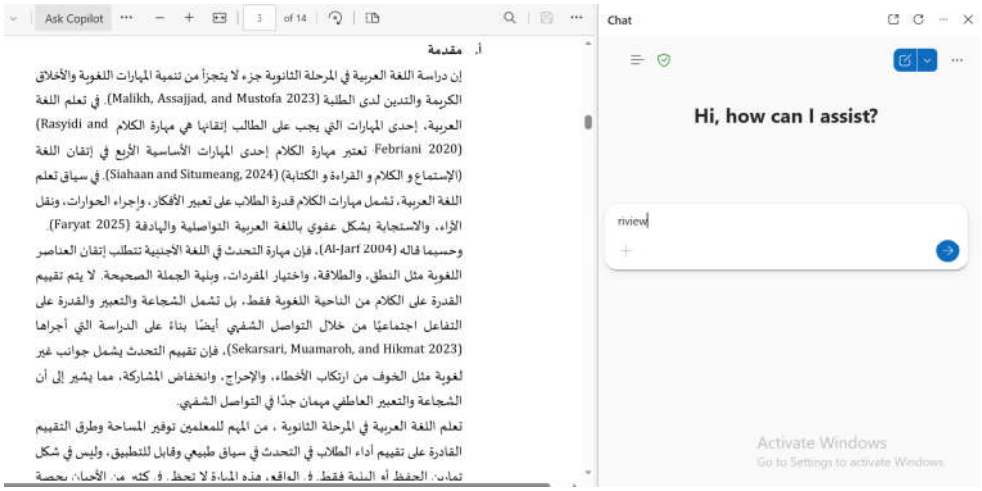

Figure 1. Visualization of Copilot Features in Pdf Reader

[17] M. H. Huang, "*Artificial Intelligence in Service,*" Journal of Service Research 21, no. 2 (2018): 155–72. DOI: https://doi.org/10.1177/1094670517752459

[18] Z. Zhou, "*Edge Intelligence: Paving the Last Mile of Artificial Intelligence With Edge Computing,*" Proceedings of the IEEE 107, no. 8 (2019): 1738–62. DOI: https://doi.org/10.1109/JPROC.2019.2918951

[19] M. Haenlein, "*A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence,*" California Management Review 61, no. 4 (2019): 5–14. DOI: https://doi.org/10.1177/0008125619864925

Based on figure 1, demonstrates the visualization of the dialogic interaction between the researcher (Who) and the AI assistant (What), which is realized through the Copilot panel on the right side of the Arabic Pdf document.The application of this feature can be explained by reviewing who and what to strengthen your research analysis, as requested in the revision. In this context: Who (Human Agency): Arabic Language Education researchers are active agencies that initiate interactions. Researchers observe Arabic documents, ask critical questions, and validate AI output. This is about the researcher's academic lifeworld. What (AI Agency): Copilot is a passive-active agency that processes data, synthesizes meaning, and generates accurate summary texts (in Indonesian) in real-time. Explainable AI (XAI) theory is crucial here to understand the logic of "what," especially in Arabic, which is open to multiple interpretations.[20]

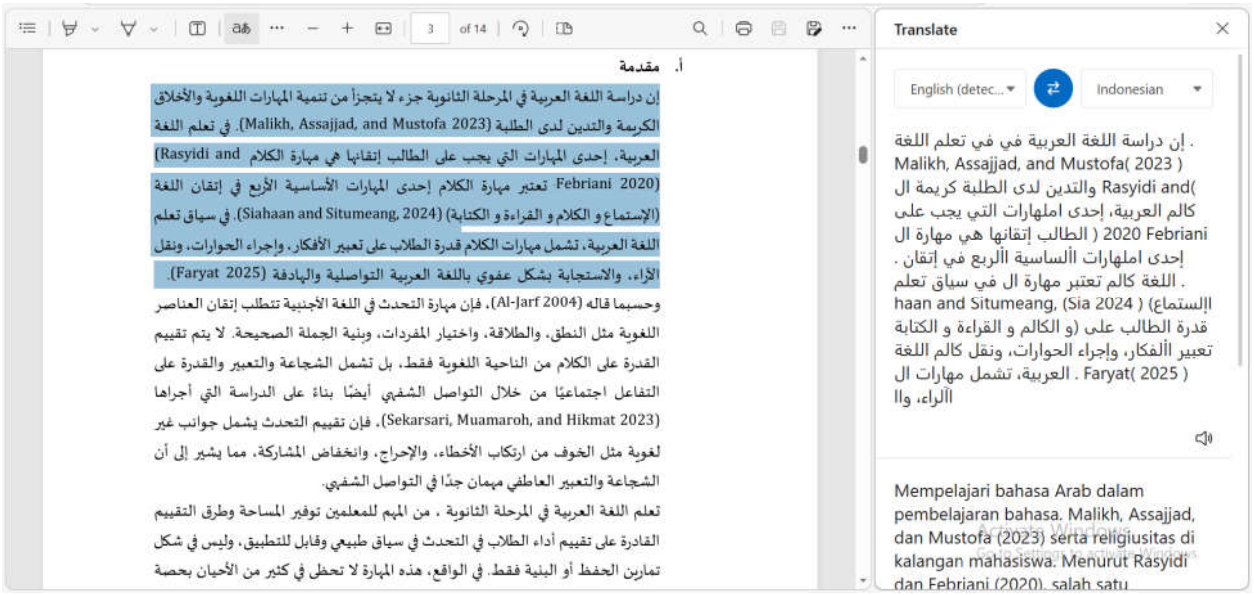

Figure 2. Visualization of the Integrated Translator Feature in Pdf Reader

Based on figure 2, demonstrates the visualization of language barrier removal, which is realized through the Integrated Translator feature that is directly integrated into Pdf documents. The application of this feature can also be explained by reviewing who and what to strengthen your research analysis, as requested in the revision. In this context: Who (Human Agency): Arabic Language Education researchers are active agents who overcome language barriers through instant interaction. Researchers observe Arabic documents, ask critical questions, and validate AI output. This is about the academic lifeworld of researchers. What (AI Agency): Integrated Translator is a passive-active agency that processes data, synthesizes meaning, and generates clear translations (in Indonesian) in real-time. Explainable AI (XAI) theory is crucial here for validating the accuracy of complex Arabic terminology, such as 'epistemological truth'.

[20] T. Davenport, "*How Artificial Intelligence Will Change the Future of Marketing,*" Journal of the Academy of Marketing Science 48, no. 1 (2020): 24–42. DOI: https://doi.org/10.1007/s11747-019-00696-0

Result and Discussion

A. Operationalization of AI Features in Navigation and Academic Text Analysis

Technical documentation shows that the use of AI assistants (Copilot) in Microsoft Edge Pdf Reader can change the way students navigate documents from linear reading to dynamic interactive analysis. This provides a significant advantage for Arabic Language Education students in dissecting Arabic scientific texts, which often have complex sentence structures and deep diction. In the reality of modern research, artificial intelligence is no longer just an additional tool, but a powerful paradigm that facilitates scientific discovery through intelligent data processing.[21] Students use this feature to instantly extract key points, which significantly improves productivity in completing complex document analysis tasks.[22]

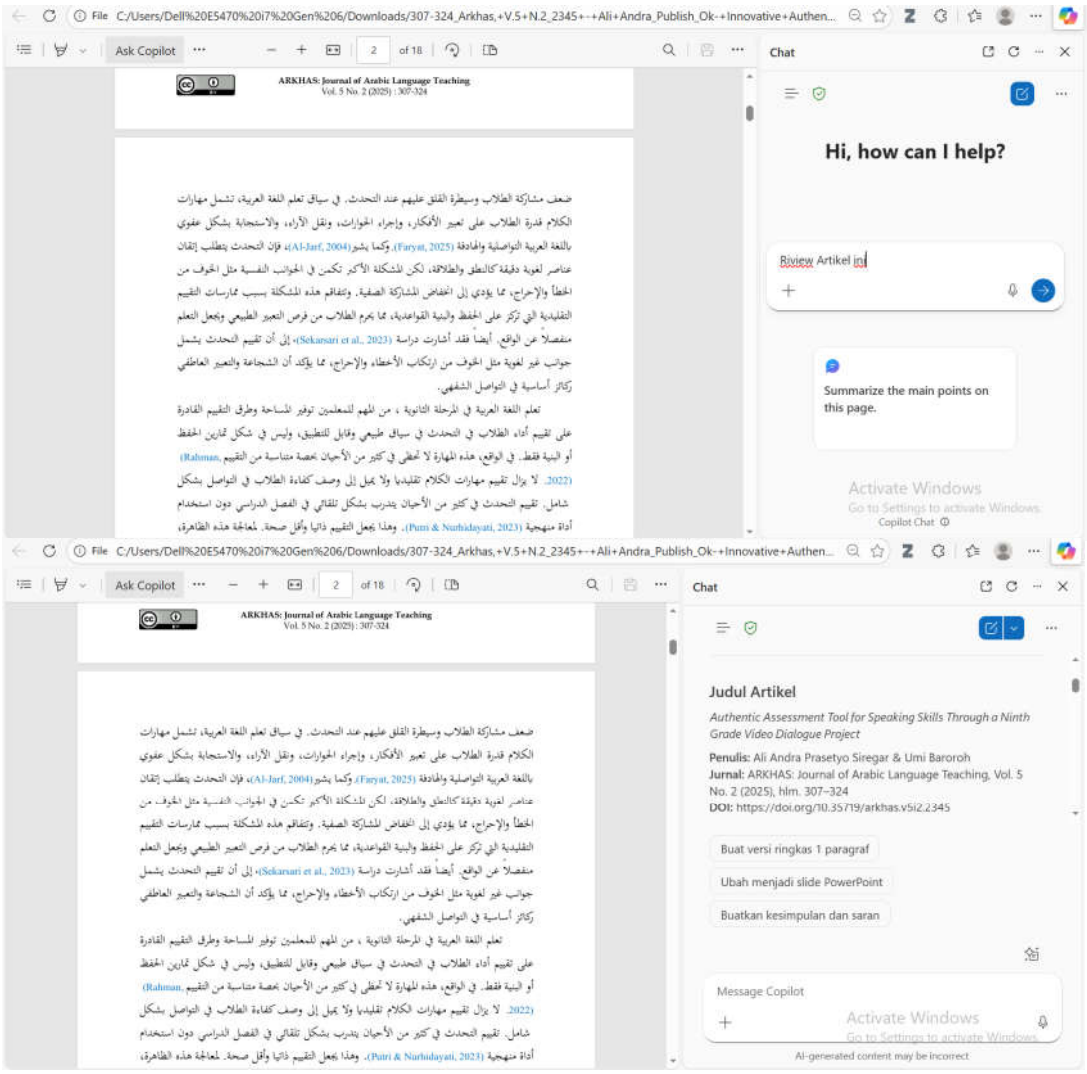

Figure 3. Screenshot of the Copilot Feature on the Right Side of The Screen Processing a Summary and Responding to a Request from an Open Scientific Journal Pdf

[21] E. J. Topol, "*High-Performance Medicine: The Convergence of Human and Artificial Intelligence,*" Nature Medicine 25, no. 1 (2019): 44–56. DOI: https://doi.org/10.1038/s41591-018-0300-7

[22] S. Noy, "*Experimental Evidence on the Productivity Effects of Generative Artificial Intelligence,*" Science 381, no. 6654 (2023): 187–92. DOI: https://doi.org/10.1126/science.adh2586

Based on Figures 3, interaction with virtual assistants enables rapid identification of research methodologies and results without having to manually search through hundreds of pages. This is particularly relevant in building digital literacy, where the ability to sort through accurate information amid an abundance of data is a key determinant of research success.[23] This ease of navigation allows students to focus on high-level synthesis, which is part of the evolution of smart services in supporting intellectual activities.[24]

The steps for using the Microsoft Edge Pdf reader and its CoPilot feature are as follows:

1. Open the Pdf document using Microsoft Edge.

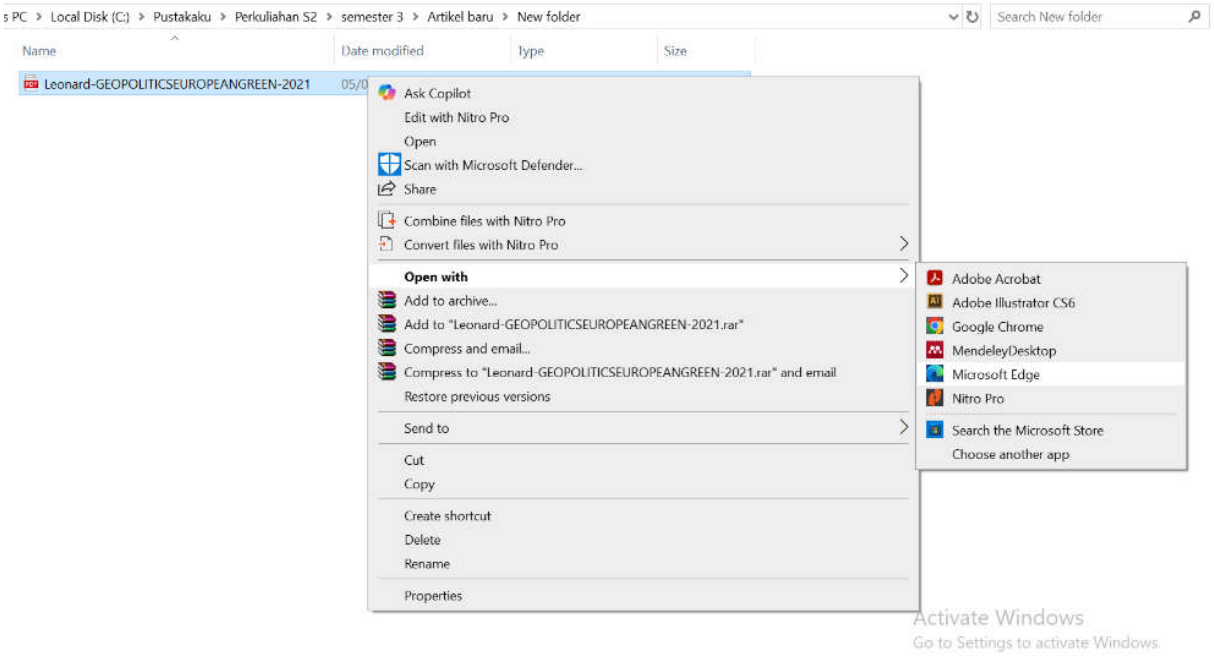

Figure 4. Opening a Pdf with Microsoft Edge

Based on Figures 4, The process begins by opening a research Pdf file (e.g., a journal or digital book in Arabic) using the Microsoft Edge application. The document is displayed in its entirety on the main screen before any digital interaction takes place. This image shows the document loading stage, where the system recognizes all text elements in the Pdf. At this stage, there is interaction between Who (Arabic Language Education researchers as subjects with intellectual needs) and What (Microsoft Edge as Edge Intelligence infrastructure). Researchers select Arabic text with complex linguistic structures, while the system prepares data to be processed by intelligent algorithms in real time.

[23] R. van Kessel, "*Digital Health Literacy as a Super Determinant of Health: More Than Simply the Sum of its Parts,*" Internet Interventions 27, no. 1 (2022): 1-3. DOI: https://doi.org/10.1016/j.invent.2022.100500

[24] M. H. Huang, "*Artificial Intelligence in Service,*" Journal of Service Research 21, no. 2 (2018): 155–72. DOI: https://doi.org/10.1177/1094670517752459

2. Once the Pdf is open, it will display the entire document.

Figure 5. Microsoft Edge Pdf reader display

Based on Figures 5, The image above shows the initiation stage, where research documents (both journals and digital books) are presented visually in their original layout. The Microsoft Edge navigation panel provides full access to all pages, allowing users to review the content structure, metadata, and text complexity thoroughly before further processing.

3. At the top of the Pdf, you will see the Ask Copilot feature. Click on it to open the Ask Copilot feature column on the right side of the Pdf file.

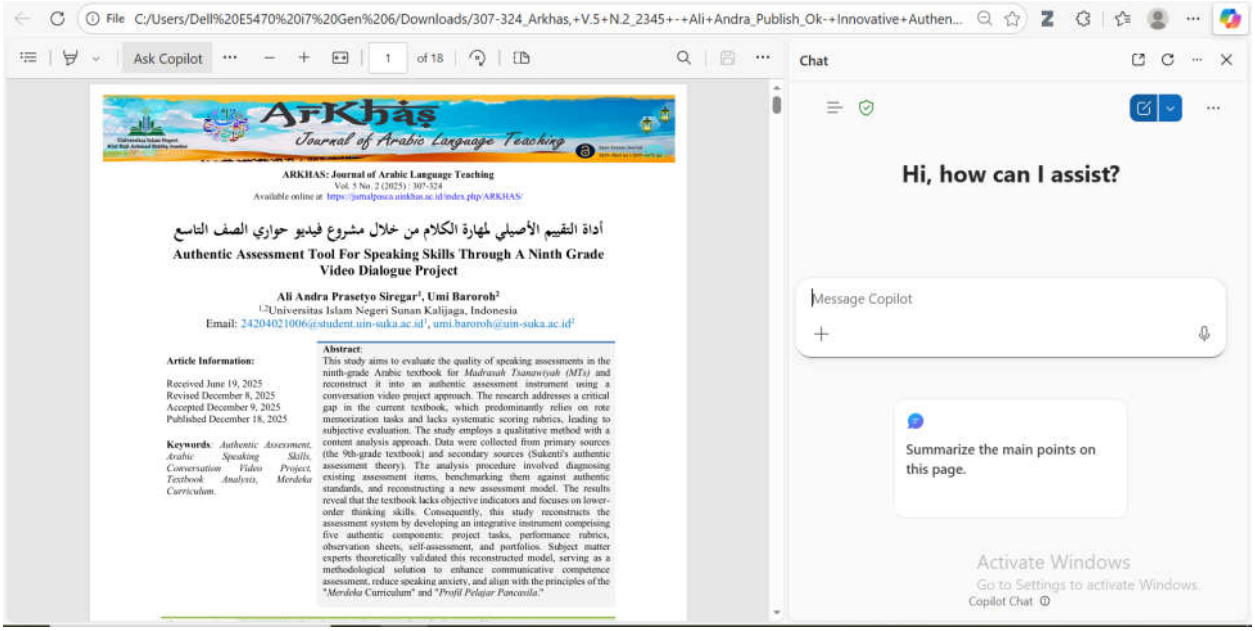

Figure 6. Ask Copilot Column Display

Based on Figures 6, the researcher clicks on the Copilot icon located at the top right or uses the right-click feature on the text to bring up the "Ask Copilot" option. The Copilot side panel appears, providing a dialog interface between the user and the machine. This step activates the AI agency (What) to assist the researcher. Phenomenologically, this panel is not just an additional feature, but a "dialog partner" that changes the way researchers interact with text from linear reading to prompt-based navigation.

4. In this column, users can ask any questions related to the article they are viewing, and Ask Copilot will answer them directly.

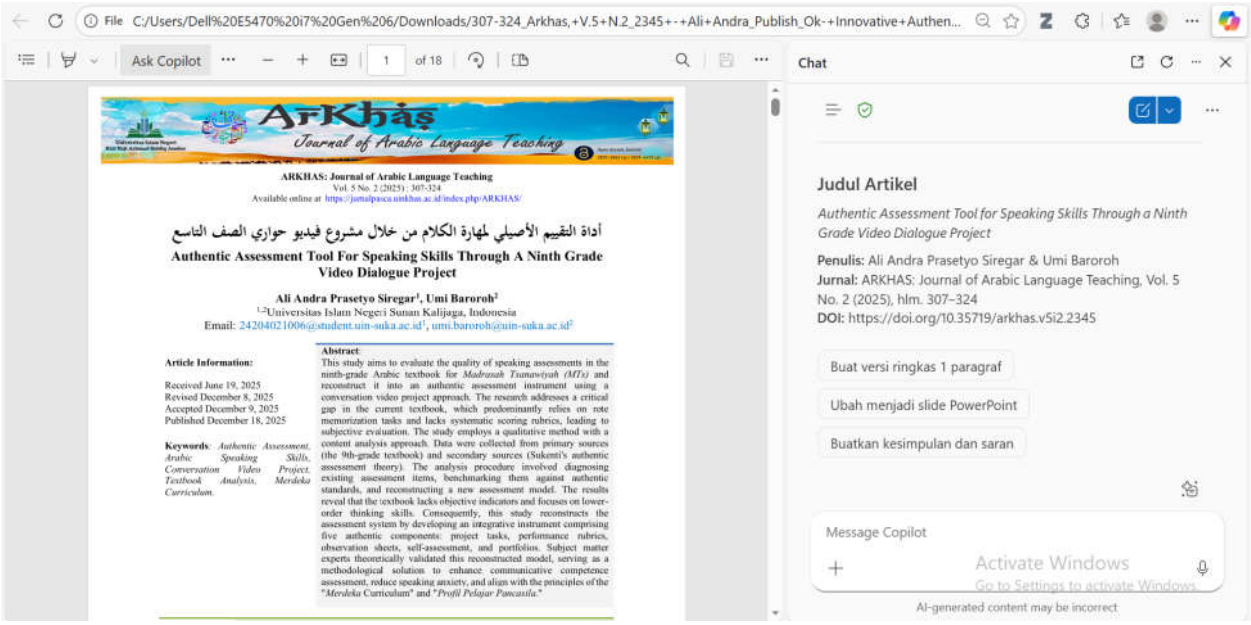

Figure 7. Copilot Responds to User Requests

Based on Figures 7, This image shows that researchers can enter commands (prompts) such as "Please summarize this document" or ask specific questions related to the content of the text in Indonesian. Copilot presents a summary of important points accompanied by direct links to specific pages in the Pdf. Here, the human-AI symbiosis works optimally. Who (the researcher) provides the direction for analysis, while What (Copilot) efficiently synthesizes the literature. The inclusion of references back to the original pages demonstrates the application of Explainable AI (XAI), where the system is transparent and allows researchers to verify the validity of information to maintain academic integrity.

B. Transforming Accessibility through Language and Translation Feature Integration

The results of the study also reveal that language barriers, which have been a major obstacle for students in accessing international literature, can be effectively mitigated through integrated translation features. This experience is particularly relevant for Arabic Language Education students who often encounter primary references in Arabic and secondary references in English. This experience of "breaking down barriers" provides more inclusive access toglobal scientific sources that were previously difficult to access due to linguistic constraints.[25] Through real-time language

[25] M. del Pilar Arias López, "*Digital Literacy as a New Determinant of Health: A Scoping Review,*" Plos Digital Health 2, no. 10 (2023): 1-21. DOI: https://doi.org/10.1371/journal.pdig.0000279

conversion within the Pdf reader window, students can gain a deep understanding of the research context without having to use external translation tools, which often disrupt their concentration while reading.

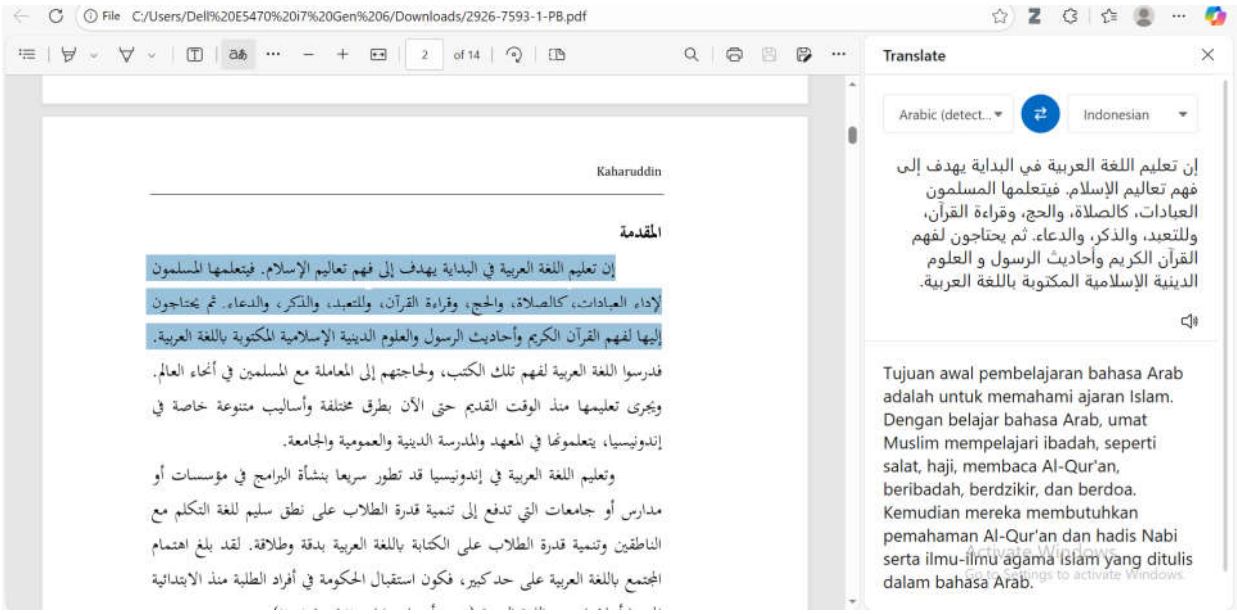

Figure 8. Screenshot of the Process of Selecting Foreign Text in a Pdf Document and the Appearance of the Automatic Translation Results into Indonesian through the Microsoft Edge Feature.

Based on Figures 8, the accuracy of AI-based translation enables a more precise understanding of technical terms. In the context of Arabic Language Education, this includes accuracy in translating specific terms in the fields of *Nahwu*, *Sharaf*, and *Balaghah* found in journal texts. The availability of this easily understandable digital information is an important foundation in building research resilience, especially for students who are preparing international-scale scientific publications.[26] The implementation of this technology ultimately supports the achievement of multidimensional digital literacy in higher education environments.[27] The steps for using it are the same as those mentioned above when using Ask Copilot. However, on the initial screen, just click on the translator logo.

[26] E. Mörelius, "*Digital Interventions to Improve Health Literacy among Parents of Children Aged 0 to 12 Years with a Health Condition: Systematic Review,*" Journal of Medical Internet Research 23, no. 12 (2021): 1-13. DOI: https://doi.org/10.2196/31665

[27] D. Zhou, "*Does Digital Literacy Reduce the Risk of Returning to Poverty? Evidence from China,*" Telecommunications Policy 48, no. 6 (2024): 102768. DOI: https://doi.org/10.1016/j.telpol.2024.102768

Figure 9. Translator Features

Based on Figures 9, This image shows that when there are difficult words or sentences (advanced Arabic terminology), researchers use the Integrated Translator feature by highlighting the text to get an instant translation. A translation pop-up appears, converting the Arabic text into the native language (Indonesian) without switching windows. This step is a phase of "breaking down language barriers." What (the Translator feature) functions as a linguistic deconstruction tool that helps Who (researchers) understand the essential meaning of the primary text. This increases the confidence of Arabic Language Education students in dealing with international journals or digital books that were previously considered too difficult to analyze independently.

The interaction between students and AI assistants in Microsoft Edge Pdf Reader creates a deep cognitive symbiosis, where AI not only presents data but also becomes a dialogue partner in analyzing scientific theories. For researchers in the field of Arabic Language Education, this symbiosis is particularly evident when analyzing complex linguistic rules and Arabic literary aesthetics (*Balaghah*) in digital texts. Phenomenologically, this experience revives the original vision of artificial intelligence pioneers about machines capable of assisting human logical thinking processes.[28] However, at the heart of this experience is the issue of trust. Students tend to place greater trust in systems that can explain the basis for their conclusions, a concept known as Explainable Artificial Intelligence or XAI.[29]

System transparency is crucial so that students are not trapped in misinformation that may be generated by "black box" algorithms. In the context of Arabic literature, which is rich in philosophical and theological meaning, this transparency is an absolute requirement so that AI interpretations of Arabic terms remain within the corridor of scientific truth. Building trust between humans and AI requires clarity on how decisions or summaries are drawn from the original text.[30]

[28] J. McCarthy, "*A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence,*" AI Magazine 27, no. 4 (2006): 12–14. DOI: https://doi.org/10.1609/aimag.v27i4.1904

[29] E. Tjoa, "*A Survey on Explainable Artificial Intelligence (XAI): Toward Medical XAI,*" IEEE Transactions on Neural Networks and Learning Systems 32, no. 11 (2021): 4793–813. DOI: https://doi.org/10.1109/TNNLS.2020.3027314

[30] E. Glikson, "*Human Trust in Artificial Intelligence: Review of Empirical Research,*" Academy of Management Annals 14, no. 2 (2020): 627–60. DOI: https://doi.org/10.5465/annals.2018.0057

Therefore, Copilot's ability to include back references to specific pages in Pdf documents is the most vital feature in maintaining the integrity of the student research process. This proves that AI technology must be designed to complement and strengthen human capabilities, not replace them.[31]

Although it offers tremendous convenience, the integration of AI into student research poses ethical challenges that must be managed wisely by educational institutions. The emergence of this new academic reality demands strict ethical standards regarding the use of large language models in scientific writing and analysis.[32] Students need to realize that the efficiency offered by AI must remain under the control of human critical thinking to avoid covert plagiarism or data bias. This challenge is a wake-up call for the Arabic Language Education academic community to ensure that the use of AI assistants does not erode students' original ability to produce ideas in Arabic. Every student interaction with AI is personal and influenced by their perception of the benefits of this technology.[33] In the future, efficiency driven by AI assistants will become the standard in various public services and higher education.[34] Future scientific breakthroughs are predicted to rely heavily on the ability to collaborate between human and machine intelligence, as is beginning to be seen in the field of complex scientific discovery.[35] Students who are accustomed to using AI-based tools such as Microsoft Edge Pdf Reader are actually training themselves to adapt to a future of transparent and accountable research.[36]

The use of this practical tool also has significant social implications in the context of digital literacy equality, especially in the Indonesian educational environment.[37] Particularly within the Arabic Language Education Study Program, this technology paves the way for equal access to Arabic-language primary references for students from various backgrounds. With technology integrated directly into web browsers, students from various economic backgrounds can access advanced research assistance at no additional cost. This is in line with digital transformation efforts that place human resource readiness as the key to success in facing technological disruption in the future.[38] In-depth knowledge of decision-making in the era of Big Data is key for students to

[31] V. Kaul, "*History of Artificial Intelligence in Medicine,*" Gastrointestinal Endoscopy 92, no. 4 (2020): 807–12. DOI: https://doi.org/10.1016/j.gie.2020.06.040

[32] G. Eysenbach, "*The Role of ChatGPT, Generative Language Models, and Artificial Intelligence in Medical Education: A Conversation With ChatGPT and a Call for Papers,*" Jmir Medical Education 9, no. 1 (2023): 46885. DOI: https://doi.org/10.2196/46885

[33] S. Puntoni, "*Consumers and Artificial Intelligence: An Experiential Perspective,*" Journal of Marketing 85, no. 1 (2021): 131–51. DOI: https://doi.org/10.1177/0022242920953847

[34] Z. Ullah, "*Applications of Artificial Intelligence and Machine Learning in Smart Cities,*" Computer Communications 154, no. 2 (2020): 313–23. DOI: https://doi.org/10.1016/j.comcom.2020.02.069

[35] X. Yang, "*Concepts of Artificial Intelligence for Computer-Assisted Drug Discovery,*" Chemical Reviews 119, no. 18 (2019): 10520–94. DOI: https://doi.org/10.1021/acs.chemrev.8b00728

[36] J. Jiménez-Luna, "*Drug Discovery with Explainable Artificial Intelligence,*" Nature Machine Intelligence 2, no. 10 (2020): 573–84. DOI: https://doi.org/10.1038/s42256-020-00236-4

[37] B Alim dkk., "*Pemanfaatan AI melalui Teknik Prompting untuk Pengembangan Media Pembelajaran Pendidikan Jasmani,*" Jurnal Bina 6, no. 1 (2025): 154-165. DOI: https://doi.org/10.55081/jbpkm.v6i1.5249

[38] T. Davenport, "*How Artificial Intelligence Will Change the Future of Marketing,*" Journal of the Academy of Marketing Science 48, no. 1 (2020): 24–42. DOI: https://doi.org/10.1007/s11747-019-00696-0

become competent researchers.[39] Ultimately, this human-AI collaboration will shape a more inclusive, intelligent research culture that continues to uphold human values and scientific truth.[40]

Closing

This study concludes that the integration of Copilot and Integrated Translator features in Microsoft Edge Pdf Reader significantly transforms the intellectual activities of Arabic Language Education students from linear reading to efficient and independent interactive analysis. These findings are highly relevant to readers as they provide practical solutions for dissecting linguistic barriers in complex primary literature without sacrificing students' critical acumen. By placing these results in the context of previous digital literacy studiesas discussed in the Mantiqu Tayr journal this research proves that human-centered AI symbiosis can mitigate the risk of information bias while offering realistic implications for the development of a future research ecosystem that is transparent, reliable, and upholds academic integrity.

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