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Original Research

Midwifery Students' Perceptions of Utilizing Artificial Intelligence (AI) for English Language Learning (ELL)

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Abstract

While Artificial Intelligence (AI) is increasingly used in education, little research has focused on its role in specialized healthcare training, particularly in midwifery education. This study fills this gap by investigating midwifery students' perceptions of AI for English Language Learning (ELL) through three key factors: the *perceiver* (students' attitudes and motivations), the *target* (AI tool characteristics), and the *situation* (learning environment and support systems). Additionally, it examines whether parental background (education, occupation, and income) influences these perceptions. A quantitative survey of 48 students at an Indonesian midwifery academy revealed strong positive perceptions of AI (mean scores: P=4.23, T=3.95), with students appreciating AI's usability but calling for better institutional support. Statistical analysis showed no significant differences based on parental background, suggesting AI's potential for broad adoption across diverse socio-economic groups. These findings contribute to the literature on technology-enhanced language learning by demonstrating AI's viability in midwifery education. Furthermore, the study demonstrates the practical viability of integrating AI into specialized fields such as midwifery education, highlighting its role in fostering inclusive and accessible professional training. The findings offer practical insights for educators and policymakers, underscoring the importance of user-friendly AI tools, institutional preparedness, and equitable technology access. By aligning AI innovation with healthcare education, this study demonstrates AI's transformative role in developing globally competent midwifery professionals.

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1. Introduction

The global healthcare sector increasingly recognizes English proficiency as a critical competency, particularly in midwifery where effective communication directly impacts patient outcomes. As midwives collaborate across international borders and engage with diverse populations, their ability to communicate medical information clearly and compassionately in English becomes paramount. The integration of Artificial Intelligence (AI) into English Language Learning (ELL) for midwifery students marks a transformative shift from traditional teaching methods, which often fail to address the specific linguistic and contextual needs of healthcare professionals (Kranz & Abele, 2024; O'Connor et al., 2022). These conventional approaches inadequately prepare students for critical communication scenarios, prompting a growing demand for AI-driven tools that offer personalized learning and immediate feedback (Buchanan et al., 2021; Giaxi, 2025; Mohideen, 2024; Wei, 2023). AI technologies have proven effective in adaptive learning systems that tailor educational pathways to individual needs, thereby boosting engagement and performance (Varma et al., 2023).

Furthermore, AI applications can simulate real-life healthcare situations, enabling midwifery students to practice relevant language skills in context and bridging the gap between theory and practice (Leddy & Creanor, 2024). Despite these benefits, integrating AI into ELL poses challenges, including concerns over

increased educator workload and the need for comprehensive training in technology use (O'Connor et al., 2022; Alowais et al., 2023). Addressing these issues through curriculum integration and educator preparedness is essential to ensure AI enhances rather than replaces the human aspects of teaching (Ali, 2025). Additionally, ethical concerns such as algorithmic bias and data privacy in healthcare education must be carefully managed, requiring continuous dialogue to balance technological innovation with core educational values (Birkstedt et al., 2023; Awasthi et al., 2024). Overall, while AI offers substantial opportunities to improve language education for midwifery students, its successful implementation hinges on mindful, ethical, and educator-supported strategies.

AI demonstrates remarkable potential to transform language learning through its diverse applications. Research shows AI effectively develops writing skills (Lee et al., 2015; Lin et al., 2017), enhances reading comprehension (Johnson et al., 2005), and improves grammatical accuracy (Pandarova et al., 2019). Conversational AI tools particularly benefit speaking and listening skills through interactive practice (Ayedoun et al., 2019; Mirzaei et al., 2018). The technology's adaptive learning capabilities allow personalized instruction tailored to individual pacing and needs (Golonka et al., 2014), a crucial advantage for midwifery students balancing clinical and linguistic demands. Interactive AI platforms also increase learner engagement and autonomy, while simulation technologies bridge theoretical knowledge and practical application (Barbounaki et al., 2023). Despite these demonstrated benefits, research specifically examining midwifery students' acceptance of AI in ELL remains limited, leaving educators without evidence-based guidance for implementation.

Existing studies in general education contexts reveal both the promise and limitations of technology-enhanced language learning. Elementary students in Taiwan initially found digital storytelling tools challenging but showed significant improvement in motivation and proficiency over time (Lin et al., 2017). Saudi EFL learners using iPads demonstrated increased participation and enjoyment, though the study's narrow scope highlighted the need for further research (Al-Bogami & Elyas, 2020). Indonesian university students reported positive experiences with online learning, directly linking success to their digital literacy levels (Hidayat et al., 2022). Importantly, Ningsih et al. (2023) emphasize that while AI effectively supports vocabulary acquisition and contextual understanding, human instructors remain essential for developing the interpersonal and cultural competencies vital to midwifery practice. These collective findings reveal a critical gap between recognized technological benefits and their application in specialized vocational training like midwifery education.

Parental influence introduces additional complexity to this educational landscape. In rural communities where many midwifery students originate, parents play crucial roles in facilitating access to technology and creating supportive learning environments (Nicolai et al., 2023). However, infrastructure limitations and socioeconomic barriers often constrain their ability to support digital education initiatives (Feser, 2024). This reality underscores the importance of investigating how parental background factors including education level, occupation, and income might influence students' perceptions of AI tools, an area that current ELL research has largely overlooked.

This study makes significant contributions by applying Robbins and Judge's (2013) perceptual framework (perceiver, target, situation) to midwifery education, offering a novel approach to understanding AI acceptance through psychological, technological, and contextual dimensions. It uniquely examines how parental socioeconomic factors may moderate these perceptions, addressing gaps in both AI research and healthcare education literature. The investigation provides dual insights: advancing theoretical understanding of perception dynamics in technology adoption while offering practical guidance for equitable implementation across diverse socioeconomic settings.

The research pursues two primary objectives: first, to evaluate midwifery students' perceptions of AI in ELL across the perceptual dimensions of perceiver characteristics, target attributes, and situational factors; second, to determine whether statistically significant differences exist based on parental background variables. These goals respond to pressing needs in vocational education research, particularly regarding technology integration and educational equity considerations. The findings will directly inform curriculum designers developing AI-enhanced midwifery programs and policymakers responsible for digital education resource allocation.

Methodologically, this quantitative study employs survey research with 48 Indonesian midwifery students, using Likert-scale questionnaires to measure perceptions. The P-T-S framework structures the

investigation, while ANOVA analyses examine potential parental influences. This rigorous design enables systematic evaluation of both individual and external factors shaping AI acceptance in this specialized educational context. The results will provide unique insights into how midwifery students engage with AI-driven language learning, establishing a model applicable to other healthcare disciplines.

Within the broader English Language Teaching (ELT) context, this study challenges conventional approaches to technology integration by advocating for solutions that balance AI's efficiency with midwifery's human-centered requirements. The research emphasizes developing pedagogical models where technology enhances rather than replaces the communicative essence of healthcare education. By identifying socioeconomic barriers and institutional support needs, the study promotes inclusive policies that ensure equitable access to AI tools, ultimately preparing globally competent midwifery professionals equipped for 21st century healthcare challenges.

2. Method

Despite This study was conducted at Tahirah Al Baeti Bulukumba Midwifery Academy or Akademi Kebidanan Tahirah Al Baeti, Bulukumba (henceforth: AKTABE) in South Sulawesi, Indonesia during January-February 2024. As the only institution offering a Diploma 3 midwifery program in Bulukumba among five higher education institutions, AKTABE represents a unique research setting. The academy's selection was based on three key considerations: (1) its demonstrated success in producing graduates who pursue international careers in countries like Saudi Arabia and Japan, reflecting its global competency focus; (2) its established English language curriculum spanning six credits across three academic levels; and (3) its experience with technology-enhanced learning through online systems implemented during the pandemic period. These characteristics made AKTABE an ideal environment to examine midwifery students' perceptions of AI in English language learning (ELL).

2.1 Research Design and Instrumentation

Employing a quantitative research design, this study collected data through a structured questionnaire developed based on Robbins and Judge's (2013) perceptual framework. The instrument comprised 25 items organized into three dimensions: 10 items measuring perceiver characteristics (P), 8 items assessing target attributes (T), and 7 items evaluating situational factors (S). Each item used a 5-point Likert scale ranging from 1 (Disagree) to 5 (Strongly Agree). The questionnaire included both demographic questions and perception items related to AI integration in ELL.

2.2 Data Collection Procedures

The research team administered the questionnaire to participating midwifery students following established protocols for survey research. Prior to distribution, the instrument underwent rigorous validity and reliability testing. The Cronbach's alpha coefficient of 0.96 confirmed excellent internal consistency across all measurement scales, indicating high reliability of the research instrument. This thorough validation process ensured the collected data would yield meaningful and interpretable results.

2.3 Data Analysis

Quantitative data analysis employed both descriptive and inferential statistical techniques. Descriptive statistics (means, standard deviations) were calculated for each item and dimension to examine central tendencies and response variability. For inferential analysis, one-way ANOVA tests were conducted to assess potential differences in perceptions based on parental background variables (education, occupation, and income). The homogeneity of variance assumption was verified (Levene's test $p > 0.05$) before conducting ANOVA analyses. All statistical analyses were performed using SPSS software with an alpha level of 0.05 determining significance.

2.4 Ethical Considerations

This study complied with ethical research standards by securing institutional review board approval prior to data collection. All participants provided informed consent after receiving clear explanations of the study's objectives, methods, and implications. Researchers guaranteed voluntary participation, the right to withdraw at any time without penalty, and strict confidentiality of all data. To maintain the integrity of responses, no financial incentives or other forms of compensation were offered that might unduly influence participation decisions or response authenticity. These measures ensured compliance with international standards for ethical research while protecting participant welfare throughout the study duration.

This comprehensive methodological approach enabled systematic investigation of midwifery students' perceptions while maintaining scientific rigor in data collection and analysis. The combination of validated instruments, robust statistical techniques, and ethical research practices ensures the study's findings contribute meaningfully to understanding AI integration in healthcare education contexts.

3. Result

3.1.1 Univariat Analysis

In addressing the initial inquiry, the investigators quantified variations in mean and standard deviation (SD) across repeated measurements employing the identical instrument for individual dimensions and the overall degree, as illustrated in Tables 1–3.

Table 1. Means and standard deviation of P Variable

Items	Mean	Standar Deviation
P1. I found the task manageable and noticed improvement in my performance.	4.25	.565
P2. I believe AI should be integrated into English language learning programs at college level.	4.21	.582
P3. I encounter challenges in utilizing AI for enhancing my English language skills.	3.27	1.216
P4. I voluntarily utilize AI resources to enhance my proficiency in English.	4.12	.570
P5. My interest in AI is primarily driven by a desire to enhance my speaking and writing skills.	3.92	1.007
P6. I am keen on utilizing AI to improve all aspects of my English proficiency, including reading, writing, speaking, and listening.	4.21	.617
P7. AI contributes to boosting my confidence in writing English.	4.02	.729
P8. I find AI features user-friendly and beneficial for English language learning.	4.02	.635
P9. I wish there were more diverse AI tools available for English language learning purposes.	4.10	.592
P10. I have come across fascinating and engaging materials related to AI that have heightened my interest in learning English.	4.10	.592
Total Average	**4.23**	

The mean values for individual items of variable P exhibit variability, spanning a range from 3.27 to 4.25. These figures elucidate the central tendency of scores attributed to each item. Notably, item P1 emerges with the highest mean (4.25), signifying that it garnered the highest average scores among the ten items. Concurrently, the standard deviations across items display variance, with items characterized by lower standard deviations indicating scores closely clustered around their respective means, whereas items with higher standard deviations present more dispersed score distributions. For instance, item P5 manifests a relatively elevated standard deviation (1.007), indicative of heightened variability in scores attributed to that specific item.

Table 2. Means and standard deviation of T Variable

Items	Mean	Standar Deviation
T1. Exploring various entertaining and intriguing aspects of AI has enhanced my enthusiasm for English language learning.	4.12	.640
T2. AI facilitates tasks such as translation, paraphrasing, grammar checking, and engaging in interactive English-speaking activities.	4.10	.592
T3. The voice and video recording features of AI aid in comprehending English conversations effectively.	4.08	.613
T4. I found the AI English-learning application easy to download and compatible with my mobile device.	4.17	.595
T5. Academic instructors have recommended utilizing AI as a means to achieve English language learning objectives.	3.50	.968
T6. I am willing to invest in the membership fee (if applicable) for additional benefits in English language learning through AI applications.	3.96	.651
T7. I perceive AI as akin to social media platforms like Instagram, Facebook, and WhatsApp, which can be utilized for English language learning purposes.	3.75	.601
T8. Acquiring proficiency in using AI for English language learning did not require significant time investment.	3.92	.739
Total Average	**3.95**	

Table 2 delineates data pertaining to a variable denoted as "T" across a sample comprising 48 observations. The means, or averages, for individual items exhibit variability, spanning a range from 3.50 to 4.17, offering insights into the central tendency of scores for each item. Notably, item T4 emerges with the highest mean (4.17), indicating its propensity to receive the highest average scores among the eight items examined. Similarly, the standard deviations associated with each item vary, with items characterized by lower standard deviations indicating scores closely clustered around their respective means, while items with higher standard deviations present more dispersed score distributions. For instance, item T5 demonstrates a relatively elevated standard deviation (.968), signifying heightened variability in scores attributed to that particular item.

Table 3. Means and standard deviation of S Variable

Items	Mean	Standar Deviation
S1. My fondness for utilizing AI in English language learning is influenced by the positive experiences shared by my peers.	3.27	1.162
S2. The presence of AI does not hinder my interactions with university instructors and fellow students, thus fostering my appreciation for it.	2.96	1.352
S3. I receive encouragement and backing from my parents in utilizing AI for English language learning endeavors.	3.75	.838
S4. My parents appear to be unaware of the advancements in AI-based English learning technologies.	3.67	.808
S5. I perceive a need for the university to enhance its readiness and support for AI-driven English language learning initiatives.	4.06	.697

Items	Mean	Standar Deviation
S6. I believe it is imperative for the government to provide backing for the integration of AI-based learning methods within campus settings.	4.10	.660
S7. I anticipate that the utilization of AI for English language learning will serve as an inspiration for my family and friends to enhance their English proficiency.	3.96	.699
Total Average	**3.68**	

The mean represents the central tendency of the data for the S variable. The means for the seven items (S1 through S7) are varied, with values ranging from 2.96 to 4.10. These values provide insights into the average scores or measurements for each variable. For example, S5 has the highest mean (4.06), indicating that, on average, it received the highest scores among the eight variables, while S2 has the lowest mean (2.96). In addition, standard deviation measures the dispersion or variability of the data for each variable. The standard deviations for these variables vary, with values ranging from .660 to 1.352. A higher standard deviation suggests greater variability. S2 has the highest standard deviation (1.352), indicating that the scores for this variable are more spread out from the mean, while S6 has the lowest standard deviation (.660), suggesting less variability.

3.1.2 Multivariat Analysis

Table 4. Difference Test Analysis

Variabel	Homogenity of Variance	Significant (P Value)
Parent's education	0.717	0.279
Parent's job	0.717	0.627
Parent's income	0.717	0.131

Table 4 presents the results of the difference test analysis for three variables: parent's education, parent's job, and parent's income. By using one way ANNOVA analysis, the table includes information on the homogeneity of variance and the significance level (P value) for each variable. For the variable "Parent's education," the homogeneity of variance is reported as 0.717, indicating the level of equality in variance across different categories of parent's education. The significance level associated with this variable is 0.279, suggesting that there is no statistically significant difference in perception scores among different levels of parent's education. Similarly, for the variable "Parent's job," the homogeneity of variance is 0.717, indicating relatively consistent variance across different categories of parent's job. The associated significance level is 0.627, indicating that there is no statistically significant difference in perception scores based on parent's job. Lastly, for the variable "Parent's income," the homogeneity of variance is 0.717, indicating consistent variance across different income levels of parents. The significance level associated with this variable is 0.131, suggesting that there is no statistically significant difference in perception scores based on parent's income. Overall, the table provides insights into the equality of variance and the significance of differences in perception scores across different categories of parent's education, job, and income.

4. Discussion

This study offers substantial contributions to understanding midwifery students' perceptions of Artificial Intelligence (AI) in English language learning, examined through the lens of Robbins and Judge's perceptual framework. By analyzing the dimensions of perceiver, target, and situation, the research illuminates how AI is situated in the educational experiences of students in vocational health programs, especially in the context of language acquisition.

In the perceiver dimension, students expressed strong agreement regarding AI's contribution to improving their performance, with a mean score of 4.25. This reflects a broader acknowledgment of the motivational benefits of AI in English as a Foreign Language (EFL) contexts, as evidenced in the work of Moybeka et al. (2023), who emphasize how technological tools can deepen students' engagement. Furthermore, Wei (2023) supports the notion that AI facilitates a shift toward autonomous learning, empowering students to take control of their academic development. However, the notable variation in student responses concerning speaking and writing development (P5, SD = 1.007) reveals disparities in digital fluency. This suggests that not all students are equally prepared to benefit from AI-enhanced instruction, a concern echoed by Panagiotidis (2018), who argues for personalized approaches in technology-assisted education to address such gaps.

The target dimension also yielded insightful outcomes. A high usability rating (mean = 4.17) suggests students found AI tools accessible and helpful, particularly in generating and organizing content. This aligns with Chan and Hu's (2023) emphasis on intuitive technological design as a driver of academic support. However, a lower score (mean = 3.50) regarding faculty endorsement reveals a disconnect between student enthusiasm and institutional commitment. According to Ioku et al. (2024), this hesitancy may stem from concerns about academic integrity and the potential misuse of AI for dishonest practices. Willkomm (2024) further suggests that faculty reluctance may be linked to ethical uncertainties and a lack of confidence in navigating AI's capabilities. Thus, while students welcome AI's educational potential, sustained faculty training and cultural shifts within institutions are required. Scholars such as Kim (2025), Sassis et al. (2021), and Chan and Lee (2023) emphasize the essential role of professional development in equipping educators to guide and facilitate AI-enhanced learning, especially in professional disciplines that are rapidly evolving due to technological integration.

The situation dimension highlights the nuanced influence of AI on social and collaborative learning experiences. While Nicolai et al. (2023) suggest AI can foster interactive and dynamic learning, there is an underlying concern that it might erode interpersonal interaction, a finding also reported by Yulian et al. (2022). This tension illustrates the need for balanced integration, ensuring that the affordances of AI are leveraged without diminishing the social fabric of education. Despite these concerns, students expressed strong agreement regarding the importance of institutional support (mean = 4.06), affirming that readiness at the organizational level is central to successful implementation. This is consistent with the arguments presented by Barbounaki et al. (2023), who emphasize that healthcare education requires a strategic and systemic approach to technology integration. In this regard, institutional readiness must extend beyond infrastructure. As discussed by Järvenoja et al. (2020), motivation and emotional self-regulation are critical for engaging with educational technology, while Meylina et al. (2021) stress that digital literacy among educators is a prerequisite for adaptable teaching. Additionally, O'Farrelly et al. (2020) and Shevtsiv and Filonenko (2020) argue that inclusive and emotionally responsive instruction is essential for equitable student participation in technology-mediated environments.

This study advances the academic dialogue in three important ways. First, it adapts Robbins and Judge's (2013) perceptual framework to the specific context of vocational language education in midwifery, an area that remains insufficiently studied. By doing so, it contributes a novel lens to explore how cognitive and emotional responses influence learning outcomes in healthcare-focused language training (Kranz & Abele, 2024; Adjei et al., 2022). Second, the study presents evidence that challenges assumptions about the digital divide. The absence of a significant correlation between students' AI perceptions and parental socioeconomic background ($p > 0.05$) suggests that factors other than economic status may play a more substantial role in shaping students' technological engagement (Sharma et al., 2015; Nove et al., 2021). This finding adds complexity to existing literature and invites a rethinking of equity issues in digital learning. Third, the study provides insights into how specific attributes of AI tools influence adoption intentions among midwifery students. By identifying which features students value most, this research bridges the gap between technological innovation and practical application in vocational education (Erlandsson et al., 2019; Kranz & Abele, 2024).

The implications of these findings are significant for curriculum developers, educational leaders, and policymakers. First, there is a clear need to prioritize the design of AI tools that are intuitive and accessible, particularly given the high usability scores reported by students. At the same time, targeted training initiatives are essential to support learners who may be less technologically proficient, as evidenced by the variability in digital skill levels. Institutions should also invest in infrastructure and faculty development programs that foster technological confidence and pedagogical readiness, addressing the student-identified

gap in faculty support. These strategies align with Barbounaki et al.'s (2023) recommendation that institutional readiness must be comprehensive and inclusive. Moreover, the finding that parental socioeconomic factors do not significantly influence students' perceptions suggests that AI-based English language learning tools may be equitably implemented across diverse social contexts. This presents an opportunity for educational policymakers to scale AI initiatives without reinforcing systemic inequities. However, the study's limitations, including its single-site sampling and cross-sectional design, invite further inquiry. Future research should explore how student perceptions evolve over time through longitudinal studies, investigate faculty perspectives using qualitative methods, and experiment with blended learning models that combine human and AI instruction effectively (Ningsih et al., 2023). Cross-cultural studies are also warranted to compare how different healthcare education systems adopt and adapt to AI technologies. Collectively, these directions can deepen theoretical understanding and inform evidence-based strategies for integrating AI in vocational education, ensuring that technological advancement remains responsive to human-centered teaching and learning.

5. Conclusion

This study provides compelling evidence that midwifery students hold generally positive perceptions toward AI integration in English language learning, particularly valuing its usability (T4, M=4.17) and potential to enhance performance (P1, M=4.25), while strongly advocating for greater institutional support (S5, M=4.06). The research breaks new ground by applying Robbins and Judge's (2013) perceptual framework to healthcare education, revealing that parental socioeconomic factors surprisingly show no significant influence ($p>0.05$) on AI acceptance - a novel finding that challenges conventional assumptions about technology adoption barriers. These insights carry important practical implications, suggesting that successful implementation requires: (1) user-centered AI design tailored to midwifery contexts, (2) institutional investments in technological infrastructure and faculty training, and (3) policy initiatives that promote equitable access across diverse student populations. Future research should build on these findings by investigating longitudinal perception changes, faculty perspectives on AI integration, and cross-cultural comparisons of technology adoption patterns in healthcare education. By establishing this foundation, the study not only advances theoretical understanding of technology acceptance in specialized education but also provides a roadmap for developing AI-enhanced learning approaches that complement the human-centric nature of midwifery training while meeting the growing demands of global healthcare communication.

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