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Language Competencies for Thai Teachers in the AI Era

Anucha Khaengkhan[1]*, Sakchai Chaiyarak[1], Alongkorn Koednet[1], Chanin Thitipetchakul[1], Venus Skunhom[1] & Sittiporn Iamsen[2]

[1] *Faculty of Education, Suan Dusit University, Bangkok, 10300 Thailand*

[2] *La-orutis Demonstration School, Bangkok, 10300 Thailand*

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Abstract

This study investigates the essential language competencies required of Thai teachers in an era increasingly shaped by Artificial Intelligence (AI), within the context of Thailand's bilingual education framework. Employing a mixed-methods approach, the research integrates quantitative data from a survey of 1,350 Thai teachers with qualitative insights from in-depth interviews with 15 educators experienced in applying AI to language instruction. Quantitative findings indicate that 87% of respondents recognize the need for advanced proficiency in both Thai and English, 92% highlight the importance of cultural competence for effective bilingual teaching, and 89% underscore the essential role of digital literacy in utilizing AI tools in education. Qualitative data further revealed a pronounced demand for professional development, with 80% of interviewed teachers identifying a lack of training programs focused on AI integration in language education. The results emphasize the necessity for teacher competencies to evolve beyond conventional linguistic skills, incorporating a robust understanding of AI technologies. The study advocates for the development of comprehensive professional development initiatives that equip educators with a balanced integration of linguistic proficiency, technological competence, and cultural awareness. This comprehensive strategy aims to prepare students for a future where bilingualism and technological fluency are intricately linked, requiring educators to navigate the complexities of teaching in the AI era effectively.

Introduction

The integration of Artificial Intelligence (AI) into educational systems constitutes not merely a passing trend but a transformative force reshaping the global educational landscape. This transformation is particularly significant in contexts such as Thailand, where the educational policy has increasingly adopted a bilingual framework, underscoring the critical importance of fluency in both Thai and English (Bozkurt et al., 2023; Mundhe, 2024; Yu & Lu, 2021). The intersection of AI technologies with this bilingual model presents a complex array of challenges and opportunities for educators. It necessitates a critical reassessment of traditional pedagogical approaches, advocating for a seamless

* Corresponding Author
Email: anucha.khaengkhan@gmail.com

integration of linguistic expertise with technological competence. This shift aligns with a broader educational imperative: enhancing the learning experience to equip students for a future in which bilingualism and technological literacy are essential (Jao, Chen, & Yeh, 2023; Kurt, 2023; Li & De Costa, 2023; Perrotta, 2024).

This scholarly investigation examines the complex language competencies required of Thai teachers in an era defined by the rise of AI. It highlights the critical integration of linguistic proficiency and technological capability, exploring how the convergence of these domains can enhance language instruction. Utilizing a mixed-methods research design, this study combines quantitative surveys—assessing current linguistic competencies among Thai teachers amid growing AI integration—with qualitative interviews that explore their experiences and interactions with AI tools in language education. This methodological approach provides a comprehensive perspective on the evolving pedagogical landscape, particularly the ways in which AI is reshaping the practice and delivery of language teaching (Abulibdeh, Zaidan, & Abulibdeh, 2024; Al-khresheh, 2024; Aung et al., 2022; Baskara, 2023; Jafarnia, Hariri, & Parvizi, 2023; Kumar & Deák, 2023; Sharma, Singh, Sharma, & Kapoor, 2024).

Central to this research are several critical domains: linguistic proficiency, cultural competency, integration of AI in language instruction, technological and digital literacy, pedagogical adaptations, and assessment and feedback mechanisms. Each represents a foundational component of the evolving skill set that essential for educators operating within today's transformed educational landscape. Linguistic proficiency, for example, now extends beyond basic fluency to encompass a nuanced understanding of language and the ability to deliver instruction that is both culturally and contextually responsive (Abrenilla, Redido, Abendan, & Kilag, 2023; Anurogo, La Ramba, Putri, & Putri, 2023; Hang, Khan, Alharbi, & Nazir, 2024; Ji, Han, & Ko, 2023; Kang, 2022; Kim, Cha, & Kim, 2021; Larasati & Ginting, 2024; Muñoz-Basols, Neville, Lafford, & Godev, 2023; Ng, Leung, Chu, & Qiao, 2021). In parallel, the study delves into the far-reaching implications of AI integration in language instruction, emphasizing the need for educators to be not only proficient in the use of AI-powered tools but also innovative in their pedagogical application. This includes adapting AI-generated content to meet the diverse and evolving needs of learners, ensuring that such content remains pedagogically sound, contextually relevant, and engaging (Anis, 2023; Koraishi, 2023; Kuddus, 2022; Ravshanovna, 2024; Salas-Pilco, Xiao, & Oshima, 2022; Sharadgah & Sa'di, 2022; Woo & Choi, 2021).

Additionally, this investigation foregrounds the pivotal role of technological and digital literacy, positioning educators as frontline navigators in the increasingly complex digital environments that students must traverse. Pedagogical adaptations are meticulously examined, underscoring the development of innovative instructional strategies tailored to the specific demands of bilingual education within an AI-driven context. The study also highlights the transformative potential of AI in enabling personalized learning experiences, particularly through advanced assessment and feedback mechanisms that support differentiated instruction and learning autonomy (Aeni, Muthmainnah, Al Yakin, Yunus, & Cardoso, 2023; Farrow, 2021; Islamov, 2021; Lepage-Richer & McKelvey, 2022; Markauskaite et al., 2022; Puri & Baskara, 2023).

By synthesizing these multifaceted insights, this paper advocates for a redefined framework of language competencies for Thai educators—one that is both reflective of and responsive to the demands of AI integration in education. It contends that empowering teachers with a strategic combination of linguistic proficiency and technological insight is critical to advancing the bilingual educational experience in Thailand. Ultimately, this research seeks to provide a roadmap for educators to navigate the complexities of teaching in the AI era, equipping them to prepare students for a future in which bilingualism and digital fluency are seamlessly intertwined. In doing so, it lays the foundation for student success in an increasingly interconnected and rapidly evolving global landscape.

Objectives

1. To examine the language competencies required of Thai teachers within the context of AI integration in education
2. To identify the essential linguistic and technological competencies necessary for effective teaching in the AI era

Research methodology

To investigate the evolving landscape of language competencies required of Thai teachers in the AI era, this study adopted a structured, three-step methodological approach. Designed to capture both the depth and breadth

of these competencies, the methodology aligns with the distinctive integration of AI within Thailand's educational context. The research process unfolded in three sequential steps:

Step 1: Document Analysis

The initial step involved a comprehensive document analysis focusing on existing literature, policy directives, and educational resources pertaining to language competencies for Thai teachers within the context of AI integration. The analysis covered national educational frameworks, including the National Education Plan B.E. 2560–2579, Thai Ministry of Education guidelines, and strategies for implementing AI technologies in teaching. Additionally, it drew on academic research on language development, instructional use of AI, and the evolving intersection of linguistic and technological skills in 21st-century classrooms. The objective of this step was to establish a foundational understanding of prevailing practices and to identify existing gaps in the integration of linguistic and technological competencies within teacher training programs. Insights from this review informed the design of subsequent research instruments and provided a contextual grounding for interpreting primary data.

Step 2: In-depth Interviews and Participants

Building on insights from the document analysis, the second step employed qualitative methods through in-depth interviews with 15 Thai teachers, selected via a Snowball sampling technique. This approach was chosen to facilitate access to participants with relevant experience in bilingual education and AI integration, particularly those not easily identified through conventional sampling strategies. The selection criteria were strategically developed to ensure representation across a diverse cross-section of the educational landscape in Thailand. Key criteria included:

Geographical Diversity

Teachers were drawn from various regions across Thailand—including urban, rural, and semi-urban areas—to capture localized challenges and opportunities in in language instruction and AI integration.

School Type

The sample included teachers from different types of schools, including public, private, and demonstration schools, to reflect diverse pedagogical environments and institutional approaches to AI adoption.

Teaching Experience

Participants ranged from novice teachers with 1–5 years of teaching experience to veteran educators with over 15 years in the profession. This spectrum allowed for comparative insight into how AI integration is understood and enacted at different career stages.

Grade Level

Teachers instructing students across early childhood, primary, and secondary levels were included to examine variations in AI implementation corresponding to development stages and language acquisition needs.

Step 3: Survey of 1,350 Thai Teachers

The final step expanded the research to a broader educational context through a large-scale survey of 1,350 Thai teachers from the four main regions of Thailand. A voluntary sampling method was employed to encourage wide participation across varying institutional and geographical settings. The survey was conducted via Google Forms, chosen for its accessibility, user-friendliness, and efficiency in data collection. The instrument was meticulously constructed to gather diverse perspectives on the integration of AI in language teaching and to identify the emerging language competencies deemed essential in this evolving educational landscape.

The survey instrument was developed with six key components to ensure comprehensive data collection:

Demographic Information

Items gathered background data, including age, teaching experience, educational level, subject area, and geographic location. This information facilitated contextual analysis and allowed for trend identification across variable such as region, experience level, or school type.

Perceived Language Competencies in the AI Era

Likert scale questions (ranging from "Strongly Agree" to "Strongly Disagree") were employed to validate competencies identified in the document analysis and interviews. Teachers rated the importance of language-related skills—such as digital literacy, critical thinking, and adaptability--considered essential for instruction in the context of AI integration.

Use of AI Tools in Language Teaching

This section included multiple-choice and open-ended items regarding the types of AI tools teachers had used (e.g., language learning apps, AI-driven assessment tools, or virtual teaching assistants), their usage, frequency, and perceived instructional effectiveness.

Challenges and Opportunities in AI Integration

Respondents were asked to identify the

challenges encountered in AI integration, including limited resources, inadequate training, or resistance to technology. Open-ended responses qualitative insights and teacher-generated suggestions for addressing these challenges, contributing valuable qualitative data to complement the quantitative results.

Suggestions for Enhancing Language Competencies

Teachers proposed strategies for improving language competencies to align with the demands of AI-enhanced teaching. Responses provided insight into the perceived needs for professional development and instructional training teachers.

Validation of Research Findings

This section included items designed to confirm and generalize findings from the previous research steps, ensuring resonance of previously identified competencies and AI tools across a broader national sample.

Data analysis

1. Multiple Regression Analysis

A multiple regression analysis will be conducted to examine the extent to which various independent variables predict teachers' AI competency. The following independent variables will include:

1.1 Geographical Location: Categorized by region (e.g., North, Central, Northeast, South)

1.2 Teaching Experience: Grouped by years of service (e.g., 0–5 years, 6–10 years, 11+ years)

1.3 Access to AI Training: Based on reported access to professional development or training related to AI integration

1.4 Educational Background: Highest level of education attained, (e.g., bachelor's or master's degree)

The dependent variable—AI competency—will be measured through survey responses encompassing three dimensions: (1) use of AI tools in language teaching, (2) familiarity with AI technologies, and (3) self-assessed effectiveness in integrating AI into classroom instruction.

2. Analysis of Variance (ANOVA)

An Analysis of Variance (ANOVA) will be conducted to compare mean AI competency levels across different teacher categories. Specifically, the following groupings will be analyzed:

2.1 Geographical Location: Differences in AI competency between teachers in urban and rural schools across Thailand's regions.

2.2 Teaching Experience: Comparisons among novice (0–5 years), intermediate (6–10 years), and experienced (11+ years) teachers to assess how professional tenure influences AI competency.

Ethics and data protection

This study underwent ethical review by the Ethics Committee responsible for overseeing research involving human participants and received approval under the certification number SDU-RDI-SHS 2024-015, issued by Suan Dusit University. To safeguard the rights of the participants, the researcher clearly communicated the objectives of the study, the methodologies employed, and the participants' rights prior to data collection. Participation in the study was entirely voluntary. Participants were informed of their right to either consent or decline to participate, as well as their right to withdraw from the study at any stage without consequence. Confidentiality was rigorously maintained through anonymization of participant data and the secure destruction of documents upon the completion of the research.

Limitations

While this multi-step methodology offered a comprehensive overview of language competencies among Thai teachers in the AI era, certain limitations should be acknowledged. These include potential biases inherent in self-reported data and the rapidly evolving nature of AI technologies, which may require continuous updates to the research framework. Despite these constraints, this study provides a meaningful contribution to the field by offering actionable insights for educators, policymakers, and stakeholders engaged in bilingual education and AI integration.

Results

The exploration of language competencies for Thai teachers in the AI era—conducted through a structured methodology comprising document analysis, in-depth interviews, and a nationwide survey—has yielded valuable insights into the evolving landscape of bilingual education in Thailand. These findings highlight the critical intersection of linguistic proficiency and technological capability, emphasizing the need for an enhanced educational framework that effectively incorporates AI tools into language instruction.

Quantitative Findings from Statistical Analyses

1. Regression Analysis Results

The multiple regression analysis indicated that both geographical location and teaching experience were

statistically significant predictors of AI competency among Thai teachers. Specifically, teachers based in urban areas demonstrated significantly higher AI competency scores than their rural counterparts ($p < .05$), suggesting that access to AI tools and resources may contribute to the disparity. Additionally, teaching experience was positively correlated with AI competency ($p < .01$), indicating that more experienced teachers tend to exhibit greater proficiency in integrating AI technologies into their instructional practices.

Notably, access to AI training emerged as the strongest predictor ($p < .001$), highlighting the critical role of targeted for professional development programs in equipping teachers with skills necessary to adopt and apply AI technologies in the classroom.

2. ANOVA Results

The ANOVA analysis revealed significant differences in AI competency based on both region and teaching experience. Teachers from the Central region demonstrated significantly higher levels of AI competency compared to those from the Northeast and South regions ($F = 4.78$, $p < .01$), suggesting regional disparities in access to technology and training opportunities.

Additionally, teachers with 6–10 years of experience showed significantly higher AI competency scores than novice teachers ($F = 5.23$, $p < .01$). This finding underscores the need for targeted support and training for less experienced educators to enhance their familiarity with AI technologies.

Table 1 Multiple Regression Analysis Predicting AI Competency Among Thai Teachers (N = 1,350)

Predictor Variable	B	SE	β	t	p
Geographical Location (Urban = 1)	0.22	0.07	0.12	3.14	0.002*
Teaching Experience	0.27	0.06	0.18	4.50	<0.001**
Access to AI Training	0.45	0.05	0.41	9.08	<0.001**
Educational Background	0.13	0.06	0.09	2.17	0.030*
Model Summary					
$R^2 = 0.38$	Adjusted $R^2 = 0.37$	$F = 205.41$	$p < .001$		

*p < .05, ** p < .001

Table 1 presents the results of the multiple regression analysis examining factors that predict AI competency among Thai teachers. The overall regression model was statistically significant ($F = 205.41$, $p < .001$) and accounted for 38% of the variance in AI competency, indicating a strong explanatory capacity. Geographical location was a significant predictor, with teachers in urban areas demonstrating higher AI competency than those in rural settings ($\beta = 0.12$, $p < .05$), suggesting disparities in access to technological resources. Teaching experience also showed a positive and significant relationship with AI competency ($\beta = 0.18$, $p < .001$), indicating that increased professional experience enhances teachers' ability to integrate AI into instructional practices. Notably, access to AI training emerged as the strongest predictor ($\beta = 0.41$, $p < .001$), underscoring the critical importance of targeted professional development in strengthening teachers' AI-related competencies.

Document Analysis

The document analysis phase provided a comprehensive review of existing literature, educational policies, and AI integration strategies, establishing a foundational understanding of the critical competencies required for language teaching in an AI-driven educational context. Several key themes emerged:

1. Linguistic Proficiency: The analysis underscored the enduring importance of strong foundational language skills in both Thai and English. Effective communication remains a cornerstone of education, even in the era of AI-enhanced instruction.

2. Cultural Competency: Recognizing the significance of cultural context in language education, many documents emphasized the need for teachers to incorporate culturally relevant content. This ensures that language instruction remains locally grounded while embracing global perspectives.

3. Technological Literacy: With the growing influence of AI in education, technological literacy has become an essential competency. The documents highlighted the importance of educators being not only familiar with AI tools but also understanding their applications and limitations in enhancing language instruction.

4. AI-Enhanced Pedagogy: A notable emphasis was placed on developing pedagogical strategies that leverage AI to enrich language learning. This included the use of AI for adaptive learning, personalized instruction, and data-informed teaching practices that enable teachers to respond more effectively to diverse student needs.

These findings established a conceptual framework for understanding the intersection of language competencies and AI technologies in education, guiding the subsequent phases of the research.

In-depth Interviews with Experienced Teachers

In-depth interviews with 15 experienced Thai

teachers provided valuable qualitative insights into the practical realities of integrating AI into language instruction. While participants reported varying levels of familiarity with AI tools, there was unanimous recognition of the potential benefits AI offers in personalizing learning, enhancing student engagement and fostering more dynamic classroom environments. The interviews revealed several key competencies that teachers identified as essential for thriving in an AI-enhanced educational landscape:

1. Adaptive Pedagogy: Teachers emphasized the importance of adjusting instructional strategies based on real-time feedback and data generated by AI tools. These technologies offer insights into student performance, enabling educators to tailor their teaching to better meet the diverse learner needs.

2. Cultural Integration: Participants highlighted the potential of AI to support the inclusion of culturally relevant content in language lessons. Through AI-driven content generation or analysis, teachers can design materials that reflect the students' cultural backgrounds, making instruction more engaging and contextually meaningful.

3. Technological Fluency: The ability to select and navigate appropriate AI tools emerged as a key competency in effectively integrating technology in language instruction. Teachers noted the need to be familiar with a range of AI applications—from language learning platforms to machine learning-based assessment tools—and must integrated them effectively into classroom practice.

4. Collaborative Learning Environments: The interviews also underscored the importance of fostering collaborative learning spaces where teachers and students explore AI tools together. Participants expressed a strong interest in peer collaboration and ongoing professional development to remain current with emerging AI innovations in education.

Insights from both the document analysis and in-depth interviews indicate that integrating these competencies into the professional development of Thai teachers could substantially strengthen their capacity to navigate the challenges and leverage the opportunities presented by AI-driven bilingual education. Based on these findings, the following language competencies are proposed as essential for Thai teachers in the AI era:

Figure 1 Language Competencies for Thai Teachers in the AI Era

In Thailand's evolving educational landscape—where bilingual instruction in Thai and English is increasingly valued—teachers face the dual challenge of integrating AI into pedagogical practices while simultaneously cultivating linguistic competencies in both languages. The shift necessitates a distinct set of proficiencies and knowledge domains:

Linguistic Proficiency

Bilingual Fluency: Educators are expected to demonstrate advanced proficiency in both Thai and English. This includes not only fluent communication skills but also a nuanced understanding of linguistic subtleties and the cultural contexts relevant to both languages.

Pedagogical Expertise in Language Instruction: Mastery in language teaching methodologies is essential. This encompasses grammar, vocabulary, pronunciation, and contextual language usage. Educators should be well-versed in effective strategies for language acquisition and grounded in the principles of bilingual education.

Cultural Competency

Cross-Cultural Awareness: A comprehensive understanding of both Thai and Western cultural nuances is essential for effectively contextualizing English-language content for Thai learners. This includes the ability to embed cultural sensitivity into AI-related discussions, ensuring that instructional materials remain relevant, inclusive, and respectful to diverse student backgrounds.

Integration of Cultural Content: The capacity to

incorporate cultural elements from both Thai and English-speaking contexts into the curriculum is vital. This practice not only enriches language instruction but also promotes intercultural understanding and fosters a global perspective among students.

Integration of AI in Language Instruction

Utilization of AI Tools for Language Learning: Proficiency in using AI-powered tools and platforms that support bilingual education is imperative. These include language learning applications, translation technologies, and AI-based tools for grammar, vocabulary, and pronunciation support.

Content Customization Using AI: The ability to adapt AI-generated content to suit the educational needs of Thai students learning English is critical. This involves adjusting content for appropriate difficulty levels, aligning with cultural contexts and ensuring accurate and context-sensitive language use.

Technological and Digital Literacy

Digital Literacy Across Languages: Competence in navigating digital tools and resources in both Thai and English is essential. This includes the ability to access and utilize online platforms, digital libraries, and educational content available in both languages to support bilingual instruction.

Promotion of Safe and Ethical Online Practices: Educators must guide students in the responsible and ethical use of the internet and AI technologies. This involves teaching digital citizenship, protecting personal privacy, and critically evaluating online information—all within both Thai and English language contexts.

Pedagogical Adaptations

Language-Specific Instructional Strategies: The development and application of instructional strategies that address the specific challenges Thai students face when learning English—and vice versa—are essential. This includes targeting common pronunciation issues, grammatical differences, and vocabulary acquisition, with the strategic use of AI tools to support these areas.

Expertise in Bilingual Education Techniques: Proficiency in bilingual instructional methods, such as translanguaging, is necessary to facilitate learning in both Thai and English. Educators should be skilled in strategically switching between languages to enhance comprehension and support deeper learning.

Assessment and Feedback Mechanisms

Bilingual Assessment Design and Implementation: The ability to design and implement assessments in both Thai and English is crucial for accurately measuring students' language proficiency and progress. This includes the effective use of AI tools to support personalized feedback and assessment and generate data-informed insights.

Feedback Mechanisms in Language Learning: Providing timely, constructive feedback in both languages is critical to support student growth. Educators should be able to integrate AI tools where to deliver personalized feedback that enhances language development and encourages learner autonomy.

Survey Results

The extensive survey conducted with 1,350 Thai teachers across four regions provided a comprehensive perspective on their alignment with the research findings. Key results include:

High Agreement on Linguistic Proficiency Needs: Over 90% of respondents agreed that advanced proficiency in both Thai and English—along with an understanding of linguistic subtleties—is essential for effective bilingual instruction.

Recognition of Cultural Competency: Approximately 88% of participants emphasized the importance of cultural competency in effectively delivering and contextualizing bilingual content.

Technological and Digital Literacy as a Priority: 85% of teachers identified technological and digital literacy as critical for the effective use of AI tools in language education.

Strong Demand for Professional Development: An overwhelming majority (92%) expressed a need for more professional development opportunities focused on integrating AI into language teaching.

Table 2 Descriptive Statistics of Perceived Language Competencies in the AI Era

Competency Domain	Mean	SD	Agreement (%)
Bilingual Linguistic Proficiency (Thai–English)	4.42	0.58	90.80
Cultural Competency	4.36	0.61	88.40
Technological & Digital Literacy	4.21	0.66	85.00
AI Integration in Language Teaching	4.33	0.62	89.20
Assessment & Feedback Using AI	4.18	0.69	84.10
Need for Professional Development	4.57	0.54	92.00

Table 2 summarizes teachers' perceptions of key language competencies required in the AI era using mean scores, standard deviations, and agreement percentages. Overall, the findings indicate a high level of consensus among teachers regarding the importance of all competency domains. The highest mean score was observed for the need for professional development

(M = 4.57), highlighting an urgent demand for structured training related to AI integration. High agreement was also found for bilingual linguistic proficiency (90.80%) and cultural competency (88.40%), underscoring teachers' recognition that effective bilingual instruction requires both linguistic depth and cultural awareness. The relatively low standard deviations across domains suggest consistency in responses, reinforcing the reliability of these perceptions across the national sample.

Implications

These findings indicate that while Thai teachers acknowledge the importance of integrating AI into language education, there is a clear and urgent need for targeted professional development programs. Such initiatives should aim to strengthen linguistic proficiency, cultural competency, and technological literacy—equipping educators with the skills necessary to thrive in an AI-enhance educational environment. Additionally, the results highlight a demand for more accessible, pedagogically sound, and culturally relevant AI tools that can be seamlessly integrated into bilingual instruction.

Discussion

The findings from this comprehensive investigation into the language competencies required of Thai teachers in the AI era illuminate pivotal themes with far-reaching implications for the future of bilingual education in Thailand. This discussion examines the complexities of integrating AI into language instruction, exploring both the challenges and opportunities it presents. It also outlines potential pathways forward for educators, policymakers, and stakeholders committed to fostering effective, equitable, and future-ready bilingual education.

Integration of AI in Language Instruction

The unanimous recognition among Thai teachers of AI's potential to personalize learning and enhance student engagement underscores its transformative role in reshaping educational methodologies. AI's capacity to support adaptive pedagogy, facilitate cultural integration, and promote technological fluency signals a paradigm shift in language instruction—one that is increasingly responsive to individual learner needs and culturally contextualized. These findings align with prior research by Al-khresheh (2024) and Baskara (2023), who contend that AI can significantly enhance student engagement and learning outcomes through customized, contextually relevant instruction. Similarly, Jafarnia et al. (2023) highlight the promise of AI-driven tools—such as natural language processing systems and personalized learning applications—in making bilingual education more dynamic, accessible, and learner-centered.

The integration of AI into language instruction reflects a broader global trend toward more personalized and inclusive education. Yu and Lu (2021) emphasize that AI facilitates differentiated instruction, particularly in language learning, by enabling educators to tailor lessons to students' individual learning paces, interests, and linguistic backgrounds. In this way, AI serves not only as a tool for instructional efficiency but also as a catalyst for cultivating culturally responsive and learner-centered environments.

Challenges in AI Integration

While the potential of AI in education is widely acknowledged, findings from the survey and interviews reveal a substantial gap in teachers' familiarity with and access to AI tools. This mirrors the observations from Kurt (2023) and Mundhe (2024), who identify inadequate infrastructure, insufficient training, and limited technological access as key barriers to effective AI integration in educational settings. These challenges were echoed by participants in this study, who emphasized the urgent need for professional development and targeted support to build AI-related competencies.

The strong demand for professional development highlights the importance of continuous learning among educators. Teachers expressed a clear interest in structured training programs that provide hands-on experience with AI tools. This aligns with the recommendations of Aung et al. (2022) and Sharma et al. (2024), who advocate for capacity-building initiatives that enhance teachers' technological fluency and confidence in using AI in the classroom. Furthermore, Kumar and Deák (2023) argue that successful AI integration in education requires not only access to tools but also institutional support and pedagogical frameworks that guide their effective implementation.

Opportunities for Enhancing Language Competencies

The widespread agreement among Thai teachers on the importance of linguistic proficiency, cultural competency, and technological literacy presents a clear opportunity to reconceptualize language education in the AI era. Markauskaite et al. (2022), emphasize the importance of balancing foundational language skills and emerging technological capabilities. In this context, teachers must be equipped to perform the dual role of language instructors and technological mediators—

utilizing AI tools to complement, rather than replace, core pedagogical practices.

This dual emphasis offers a pathway for advancing language competencies that align with the demands of the 21st-century education. Puri and Baskara (2023) underscore the increasing need for educators who possess both linguistic expertise and technological fluency, enabling them to harness AI to enrich the learning experience. Similarly, Markauskaite et al. (2022) propose that cultural competency remains central, as AI technologies can be leveraged to deliver content that is both inclusive and culturally resonant, particularly within diverse learning environments.

Implications for Policy and Curriculum Development

The findings of this study carry substantial implications for educational policy and curriculum reform in Thailand. The expressed demand for professional development and increased access to AI tools underscore the urgent need for policy initiatives that support teacher training and the creation of AI-enhanced instructional materials for bilingual education. Farrow (2021) emphasizes that the successful integration of AI in education requires proactive governmental support in equipping teachers with the necessary skills and resources. Likewise, Lepage-Richer and McKelvey (2022) argue that embedding AI into curricula must be strategically aligned with national educational priorities—promoting not only technological advancement but also cultural relevance and student-centered learning.

Furthermore, the emphasis on adaptive pedagogy and cultural competency within the study highlights the need for curriculum models that respond to Thailand's rich cultural and linguistic diversity. Balancing local cultural contexts with the global reach of AI technologies presents a unique opportunity for policymakers and educators to reimagine bilingual instruction—making it more inclusive, contextually meaningful, and technologically forward-looking.

Future Directions

This research opens several avenues for continued inquiry. Given the rapid evolution of AI technologies and their implications for education, sustained research efforts are essential to remain aligned with emerging tools and pedagogical models. Longitudinal studies could offer valuable perspectives on the enduring impacts of AI integration on language acquisition and teacher competency development. As Thailand advances its bilingual education agenda, ongoing dialogue among educators, policymakers, and researchers will be key to shaping frameworks that are both innovative and inclusive. This aligns with future research recommendations proposed by Markauskaite et al. (2022); Puri and Baskara (2023), who advocate for the iterative studies that adapt educational strategies to the evolving capabilities and contexts of AI technologies.

Suggestions

To advance research on AI integration in language education within the Thai context, future studies should prioritize the following areas:

1. Longitudinal Impact Studies: Examine the long-term effects of AI integration on student language learning outcomes, including both linguistic development and the cultivation of soft skills such as digital literacy, critical thinking, and cultural adaptability.

2. Comparative Evaluation of AI Tools: Conduct comparative analyses of various AI platforms and applications used in language education to assess their pedagogical effectiveness across different linguistic domains, such as grammar, pronunciation, and reading comprehension.

3. Cross-Cultural Studies on AI Integration: Investigate how diverse educational cultures and systems incorporate AI into language teaching practices, providing insights into globally transferrable strategies and locally responsive adaptations.

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