The Teaching and Learning Competency of Educators in Thailand's Higher Education During the Era of Artificial Intelligence

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Abstract

From the AI disruption, a broad issue is currently affecting Thailand's education. The role of teaching and learning will be adapted by educators according to various research, books, and news. Many suggestions for new roles in schools and other countries are offered. This research aimed to determine the educators' teaching competency in higher education. The 15 respondents for this study comprise higher education employers/board members, higher education instructors, or experts in AI education. The research instrument utilized was a semi-structured interview to explore the past, current, and future roles and competencies of higher education faculty, focused on changes from previous practices and anticipated developments regarding the future roles and tasks of higher education instructors. Data was subjected to typological analysis and analytic induction by the triangulation method. This method entails transcribing recorded speech, identifying key terminology, and synthesizing the information to produce a comprehensive summary of the findings in essential competencies. The findings indicate that the teaching competency of educators must encompass the utilization of data to enhance teaching practices aimed at supporting learner learning. It is essential for educators to possess a thorough understanding of technology prior to its implementation, ensuring that its use is aligned with learning outcomes or specific goals.
Keywords: Educator, Teaching competency, Artificial Intelligence era,

Background and Statement of the problem

Education is crucial in society, affecting various areas and requiring attention from all groups. Higher educators continue to address the challenges posed by the emergence of artificial intelligence through their individual judgments, which are informed by personal experiences that may vary in accuracy (Institute of Public Policy and Development, 2019; Kaosa-ard, 2024). Currently, there are no established guidelines or regulations to navigate these complexities. The sector faced significant challenges during COVID-19, such as limited access and financial issues. This study examines technology-driven solutions, particularly artificial intelligence (AI), which has gained traction due to the pandemic. AI enhances access, communication, and personalization in education by tailoring learning to individual needs and providing tutoring support. It allows for education anytime and anywhere while automating administrative tasks. However, reliance on AI may reduce valuable face-to-face interactions between learners and teachers (Fayaz Ahmad et al., 2021; Webber, 2020).

The pandemic has catalyzed a significant shift to online/blended teaching and learning, where teachers apply emerging technologies to enhance their learners' learning outcomes. Artificial intelligence (AI) technology has gained popularity in online learning environments during the pandemic to assist learners' learning. However, many of these AI tools are new to teachers. They may not have the rich technical knowledge to use AI educational applications to facilitate their teaching, not to mention developing learners' AI digital capabilities. As such, there is a growing need for teachers to equip themselves with adequate digital competencies so as to use and teach AI in their teaching environments. There are few existing frameworks informing teachers of the necessary AI competencies. This study first explores the opportunities and challenges of employing AI systems and how they can enhance teaching, learning, and assessment (Ng et al., 2023; Pinto et al., 2023; Rak-Młynarska, 2022).

The Institute of Public Policy and Development (IPPD) indicated that integrating AI with competencies development in Thailand could boost GDP by 35% and enhance employment competencies by 18% by 2035. AI is prevalent in sectors like finance, with Singapore leading the way by allowing civil servants to use ChatGPT, which has encouraged universities to cautiously adopt AI in education. AI can assist teachers with program development, lesson planning, grading, and fostering learner interests through educational games. In fields such as engineering and medicine, it improves learning via AR/VR technology. Thailand's workforce requires reskilling, especially in social sciences, pointing to the need for educational reform. Ultimately, Thailand must effectively integrate AI into its education system to enhance learning and efficiency. There are many ways to use and impact AI in education (Rak-Młynarska, 2022; Institute of Public Policy and Development, 2019).

The emergence of disruptive technologies presents both benefits and challenges. This context prompts the research question regarding the competencies required of higher education instructors in the era of artificial intelligence (AI). The interests of research encompass a broad vision of AI for teaching and learning competencies that help to explore the current state, expectations, policy trends, and then scope down to essential competencies. The aim of this research is to elucidate the pathways through which educators can refine their pedagogical practices in accordance with the advancements brought about by AI, thereby cultivating a future-oriented educational environment.

Objective

Identify the essential competencies required for educators and a broad vision of AI in the higher education sector to effectively teach and facilitate learning in the Thailand context.

Expected benefits

The essential teaching and learning competencies required for higher education professionals in the era of artificial intelligence will inform the development of future professional development programs.

Conceptual Framework

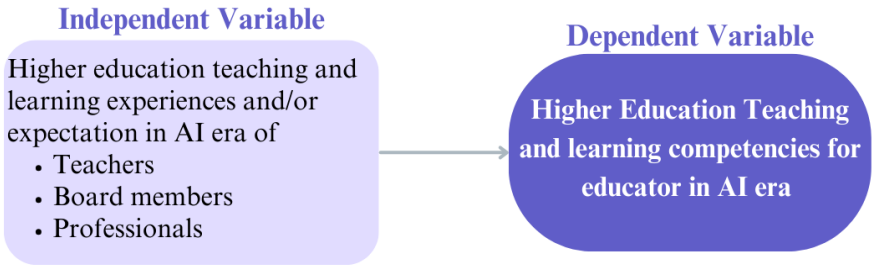

Figure 1 Conceptual Framework

The independent variable is higher education teaching and learning experiences and expectations in the era of AI. This variable investigates how educators, board members, and professionals within the realm of higher education are encountering and adapting to the integration of AI in their pedagogical and learning practices. This examination may encompass various dimensions, including:

- Teaching Experiences: An overview of how educators are presently teaching practices or integrating alongside AI tools and methodologies in their instructional approaches.
- Learning Experiences: An analysis of the ways in which educators, board members, and industry professionals are interacting with AI in learning.
- Expectations: Identifying the specific requirements and support needed by educators and professionals to effectively utilize AI in their roles.

The dependent variable aspect of competencies assesses the skills and abilities that educators, board members, and professionals acquire as a consequence of their experiences and requirements in the era of artificial intelligence. Competencies may encompass technical, pedagogical, analytical, and/or ethical dimensions.

Methodology

This research endeavors to delineate the competencies requisite for higher education instructors within the context of AI. The participant pool was established through a chain-sampling technique (Sutheewasinnon & Pasunon, 2015), which involved selecting educational personnel whose expertise and insights were relevant to the study's focus. Initial respondents were identified based on their published works, available through various media. The sampling process began with one or two individuals whose contributions informed the selection of subsequent respondents. The iterative nature of this methodology continued until 15 individuals were engaged, ensuring data saturation was achieved. The sample group was then classified into:

1. Teachers in higher education institutions with experience in using or preventing disruptions from artificial intelligence, as learners or certification applicants, to understand the current situation, identify gaps, and determine the competencies that can be enhanced and the development approaches to achieve those competencies.
2. Professionals in the use of artificial intelligence in education with empirical works, such as trainers for instructors or researchers studying teaching and learning competencies in the AI era, to obtain necessary competency information that addresses current and future educational needs and to understand future trends and methods for preparing and developing personnel to be ready for changes.
3. Board members or employers of universities under the Ministry of Higher Education, Science, Research, and Innovation who oversee, develop, or have the authority to set educational policies, to obtain necessary competency information for teaching and learning in the AI era, and to understand the trends and methods for developing teaching personnel.

The gathering was based on semi-structured interviews. Each interview was conducted either face-to-face or online. The core interview question is, “What are the competencies of higher education teachers in the AI era? Please be specific and range.” This question was guided for seeking the context and cause in terms of current and future through questions including: Based on your education experience in the AI era…

1. How about the current state of education (for experts and boards) /your teaching (for teachers)?
2. What should the current state of education (for experts and boards) /your teaching (for teachers) look like?
3. What are the trends or policies/your teaching enhancement in higher education will be in the next 0-5 years?
4. What are the competencies of higher education teachers in the AI era? Please be specific and array.

The research questions received evaluation and approval from the Institutional Review Board of KMUTT through the Index of Item Objective Congruence Analysis. These inquiries are designed to gather comprehensive insights into the current and future landscape of higher education, particularly in the context of the evolving role of artificial intelligence (AI). Below is a detailed explanation of the purpose behind each question:

- Current State of Education/Teaching: This inquiry seeks to gain an understanding of the present conditions and practices in higher education from the perspectives of experts, board members, and educators. The objective is to identify existing strengths, challenges, and areas in need of improvement.
- Ideal State of Education/Teaching: This question aims to conceptualize what an optimal educational system or teaching practice should encompass. The insights gathered will assist in establishing goals and benchmarks for future enhancements, aligning them with the needs and expectations of stakeholders.
- Future Trends or Policies/Teaching Enhancement: This inquiry endeavors to forecast emerging trends, policies, and advancements in higher education over the next 0-5 years. The goal is to prepare educators and institutions for anticipated changes and innovations, ensuring their ongoing relevance and effectiveness.
- Competencies of Higher Education Teachers in the AI Era: The purpose of this question is to identify the specific skills and competencies required by educators to succeed in an AI-driven educational environment. This includes technical, pedagogical, analytical, and ethical competencies essential for the effective integration of AI into teaching and learning processes.

Together, these questions aim to provide a holistic understanding of the current and future state of higher education, informing strategic planning and professional development initiatives aimed at enhancing the quality and effectiveness of education in the AI era.

The interview data will be analyzed using typological analysis and analytic induction (Linchaream, 2018) using the triangulation research method. This process involves transcribing recorded interviews, identifying key terms, and synthesizing the information to categorize it into essential competencies, context, and other relevant topics. In the subsequent section, this information will be further developed and applied to enhance understanding and promote advancements in higher education and policy formulation.

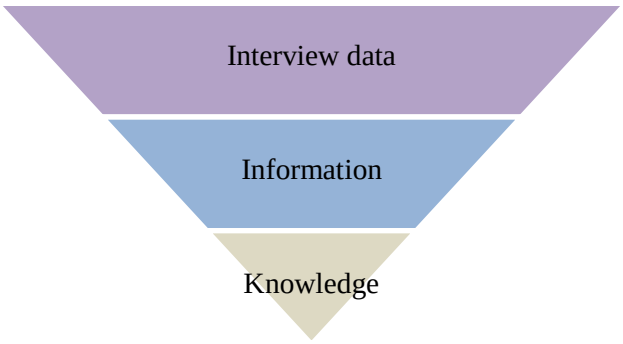

Figure 2 Representation of the data evolved in the synthesis method

Result

The research collected responses from a diverse sample comprising board members, professionals, and educators in higher education. This sample included five individuals who hold dual roles as both employers and educators, four individuals who serve as both employers and experts, one expert, and four educators. The collected data were analyzed utilizing the triangulation method. The results of this analysis were presented in conjunction with the interview questions, organized in a table format.

Table 1 shows the answer key alongside the corresponding list of questions.

Question list (Based on your education experience in the AI era…)	Answer Key
1. How about the current state of education/your teaching?	University Level: Universities are contending with financial constraints, decreased school-age learners, and the disruption of technologies like AI. Many board members prioritize ministry standards and requirements, and one focus is technology disruption. Universities support up-to-date digital technology, for example, the license for the LinkedIn platform, which facilitates flexible and accelerated learning through online platforms. Another example is augmented reality (AR) simulations, enhancing the array of learning options. Furthermore, the utilization of AI in documentary and administrative tasks has demonstrated a significant reduction in time requirements while simultaneously enhancing overall effectiveness. Classroom Level: The teaching method primarily follows lectures and projects, offering learners the opportunity to use AI. Considering the increasing influence of technology, they have incorporated AI tools and online resources, such as a free version or a university-supported one, such as ChatGPT, a medicine selection simulation (university-supported) to enrich the learning experience, and other multimedia elements to enhance learning interactivity and learner engagement. Educators' engagement with AI technologies can be categorized as follows: 1) Concerned user: Some educators hesitate to adopt AI due to concerns about reliability, academic integrity, and its impact on their roles and the educational environment.

Question list (Based on your education experience in the AI era…)	Answer Key
	2) Trial user: This group likely has the largest population, using AI tools intermittently as they experiment with integration but often struggle to understand AI's capabilities and limitations. 3) Practiced user: These educators have a strong understanding of AI, using it to personalize learning, provide immediate feedback, and streamline tasks. They see AI as a valuable resource and often share their experiences with peers.
2. What should the current state of education/teaching look like?	University Level: Higher education necessitates a transition towards inclusivity, accessibility, and relevance in order to address the needs of contemporary learners. This transformation should encompass the provision of flexible learning formats, including online and hybrid options. Universities must leverage artificial intelligence as a tool to emphasize the cultivation of practical skills among learners by integrating real-world experiences into their programs, thereby effectively preparing them for their future careers. Moreover, it is essential to foster a supportive and engaging educational environment that promotes learner learning. Additionally, there is a pressing need to educate educators on how to guide in the ethical utilization of AI. Classroom Level: Universities ought to embrace a more personalized approach to effectively address the diverse needs of each learner within the framework of their programs. This approach involves the strategic utilization of technology, including AI, to tailor educational experiences that align with the specific needs and learning styles of individual learners. It is imperative to cultivate a supportive and interactive learning environment while also offering flexible assistance that encompasses a combination of in-person, online, and hybrid formats to accommodate varying schedules and preferences. Universities should facilitate the acquisition of individual technological tools that correspond to the delineated needs and learning outcomes. Furthermore, it is crucial to address ethical considerations inherent in this endeavor.
3. What are the trends or policies/your teaching enhancement in higher education will be in the next 0-5 years?	University teachers must be prepared to handle the issue: 1. Ethical AI Use: It is key to recognize AI's ethical implications and make informed decisions. Safeguarding learner data privacy when using AI tools is vital. 2. AI Integration: Artificial intelligence will significantly contribute to personalizing educational experiences and optimizing administrative functions. 3. Flexible Learning: These approaches will become standard, allowing learners to select either in-person, AI assistant, or online learning options. 4. Data-Driven Decision-Making: The utilization of data analytics to enhance teaching practices and learner achievements will become increasingly common. 5. Continuous Professional Development: Participate in ongoing training sessions and workshops to keep up with the latest teaching techniques and technologies.
4. What are the competencies of higher education teachers in the AI era? Please be specific and array	1. Ethical AI Use: This means using AI technologies responsibly and fairly. It involves ensuring transparency, protecting user privacy, and reducing biases in AI systems while adhering to guidelines and considering the moral implications of AI decisions. 2. AI Literacy: AI literacy is understanding AI concepts and applications. It includes knowing how AI works, its benefits and limitations, and its effects on daily life. This knowledge helps people make informed decisions and participate in discussions about AI. 3. Adaptability and Collaboration Digital: Following AI literacy, educators will utilize AI in ways that are aligned with the learning outcomes of remaining adaptable and receptive to transformation within the digital. This means being able to quickly learn new technologies, adapt to changes, and work well with others. Using digital tools helps solve problems and encourages innovation.

Educators in higher education acknowledge the significant role of AI in their teaching methodologies. To adequately prepare learners for a future characterized by AI, it is imperative that educators focus on developing essential competencies, including an understanding of AI, proficiency in digital tools, and the ability to make ethical decisions, which are crucial for maintaining trust and integrity in educational environments. It is crucial for educators to grasp fundamental AI concepts and to familiarize themselves with various AI tools to enhance the learning experience. Furthermore, the ability to interpret data and analyze information will empower educators to make informed decisions, while a commitment to ethical AI usage will safeguard the interests of learners.

Educators should prioritize ethics in use, then the development of adaptability, and engage in effective collaboration with AI through data-driven decision-making. The integration of data analytics to refine pedagogical techniques and improve learner outcomes is expected to become increasingly common, as these competencies are of equal importance. Such competencies enable educators to collaborate effectively with learners and colleagues in a technology-oriented environment. This approach fosters personalized learning and innovative teaching methods, leveraging AI to create lessons that are more engaging and aligned with learners' learning preferences and learning outcomes.

Continued professional development and engagement with AI experts and proficient educators will equip educators with the necessary knowledge to remain current with the latest advancements in AI to navigate the challenges and opportunities presented by AI, ultimately enriching the educational experience for all stakeholders. The spectrum of educators' engagement with AI technologies varies from apprehension to confident utilization. Recognizing and addressing these diverse perspectives is essential for cultivating an educational atmosphere that encourages the responsible and effective use of AI. By addressing the concerns of hesitant educators and providing support for those who are exploring AI applications, educational institutions can facilitate a broader and more informed, especially ethical, integration of AI technologies into teaching and learning environments.

Discussions

The findings of this study highlight the multifaceted impact of AI on higher education in Thailand, underscoring the need for educators to adapt and acquire new competencies. The identified competencies – ethical AI use, AI literacy, adaptability, and collaboration – align with the decision-making in teaching. In the digital age, it is important to emphasize the role of AI technologies. This involves using AI reasonably responsibly and ethically for the benefit of society. It also stresses the need for individuals to develop cognitive skills to navigate the potential ethical challenges posed by new technologies (KaYukChan & Colloton, 2024; Liu et al., 2021; P. D. Kittisaro, 2024; World Economic Forum, 2024). For example, the design of personalized learning facilitated by AI: Students can use ChatGPT to gather project ideas, then apply literacy and synthesize their ideas to professionally oral present in person in the classroom under the consideration of the teacher, where learning is seen as an individualized process of knowledge construction.

Educator engagement with AI varies significantly. Some teachers confidently use AI to tailor learning experiences and make their work easier. However, others hesitate due to worries about trustworthiness and academic honesty. This situation shows the need for a targeted AI knowledge enhancement program to address these concerns and encourage more teachers to use AI (Ng et al., 2023).

The study also confirms the shift towards more flexible learning formats, driven by both technological advancements and external pressures such as financial constraints and declining enrollment. This aligns with the concept of "anytime, anywhere" learning (Fayaz Ahmad et al., 2021) and underscores the need for universities to invest in infrastructure and training to support online and hybrid learning models. The ethical considerations surrounding AI use, particularly data privacy and bias, are consistent with broader discussions on responsible AI development and deployment (Research, 2020; UNESCO, 2024).

Conclusion and Recommendations

Universities face numerous challenges, including financial limitations, a decreasing number of school-age learners, and the impact of emerging technologies like artificial intelligence (AI). Education is crucial for society, and the COVID-19 pandemic has worsened issues such as limited access and funding. This study explores technology-driven solutions, focusing on AI's growing role, which can enhance educational access, communication, and personalized learning while automating administrative tasks.

However, excessive reliance on AI may reduce essential face-to-face interactions. The shift to online and blended learning during the pandemic has highlighted the need for educators to develop digital competencies to effectively use AI tools. AI is also becoming vital in program development and learning enhancements through technologies like augmented and virtual reality, though challenges such as plagiarism and biased information remain.

This research seeks to identify the competencies necessary for higher education instructors in the AI era. Through semi-structured interviews, the study aims to elucidate these competencies among a diverse group of educational professionals. The central inquiry guiding this research is: "What are the competencies of higher education teachers in the AI era?" Boards are focusing on enhancing teaching quality and integrating modern digital technologies, such as online learning platforms and augmented reality (AR) simulations. AI is being utilized to streamline administrative tasks and enhance classroom experiences.
In the classroom, instructional methods mainly involve lectures and projects enhanced by AI tools. Educators interact with AI in three main ways: 1. Concerned Users—who have concerns regarding reliability and academic integrity. 2. Trial Users—who try out AI tools but find it challenging to grasp their advantages fully. 3. Practiced Users—who successfully leverage AI to tailor learning, offer feedback, and support their peers.

There is a tendency to utilize free or institution-backed AI resources to enhance content delivery and engage learners. All implementation in the classroom must be concerned with the ethical competencies needed for using AI in Education, including Data-Driven Decision Making: the capability to use data for making decisions and taking actions. Technological Awareness: understanding the technology prior to its application. Purposeful and Goal-Oriented Usage: employing AI with specific aims and objectives. Alignment with Goals and Benefits: ensuring that the implementation of AI is consistent with educational objectives and produces concrete benefits.

The subsequent phase involves selecting a specific competency to create a KMUTT micro-credential aimed at enhancing the professional development of educators. Following this, a pilot study will be conducted to assess the results of the development, and the findings will be applied to actual personnel development. Future studies on the use of AI for teaching and learning by educators can focus on smaller levels, such as policies, classroom teaching, assessment of learning, or other relevant aspects. Additionally, the data collection results can be expanded to a larger sample through quantitative data collection, such as questionnaires, which may reveal other essential competencies. New data should be collected regularly when there are changes in innovation and technology that affect teaching and learning.

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Research Ethics

The research project (ID number KMUTT-IRB-2024/0621/225) was evaluated and approved by the KMUTT's Institutional Review Board (KMUTT-IRB) committee and approved ID number KMUTT-IRB-COE-2024-157

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