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MINDFULNESS IN THE USE OF ARTIFICIAL INTELLIGENCE FOR LEARNING AMONG GRADUATE STUDENTS IN PRIVATE UNIVERSITIES IN BANGKOK, THAILAND

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Abstract

This research aims to (1) develop a measurement scale for mindfulness in the use of artificial intelligence (AI) for learning and (2) compare mindfulness in the use of AI for learning among graduate students in private universities. The study analyzes differences in knowledge and awareness of using AI for learning among graduate students in various private universities in Bangkok. This quantitative research collected data using a 20-item, four-point Likert scale questionnaire targeting a sample of 188 graduate students. The sample size was calculated using G*Power software, with a medium effect size of 0.5. Data analysis was conducted using descriptive statistics, including means and standard deviations, and inferential statistics, employing one-way ANOVA. The findings reveal that (1) each dimension of mindfulness demonstrates a very high level of understanding, and (2) no statistically significant differences in mindfulness when using AI for learning among graduate students from different private universities in the Bangkok area.

Keywords: Mindfulness, Artificial Intelligence, Measurement Scale, Learning for Graduate Studies, Private Universities

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Introduction

Artificial Intelligence (AI) has become a crucial tool in supporting learning in the current era, particularly at the graduate level. AI is utilized for data processing, decision support, and developing essential skills in the digital age. However, using AI in education and learning requires awareness and mindfulness from users to maximize benefits and minimize risks associated with inappropriate usage. Previous research has indicated that many learners still lack accurate knowledge and understanding of using AI, which can negatively impact the quality of education and skill development (Breckler, 1986).

Researchers highlighted the importance of knowledge and understanding of AI usage in education, finding an increasing demand for training learners in ethical and responsible AI usage. They pointed out that graduate students still lack awareness of the potential impacts of using AI, such as copyright infringement and misinformation. According to the Electronic Transactions Development Agency, 65% of university students in Bangkok have used AI for learning, but only 30% possess accurate knowledge and understanding of these technologies (Good, 1973).

Researching awareness and mindfulness in using AI for learning among graduate students in private universities in Bangkok is necessary. Most studies have not focused on assessing awareness from the students' perspective or the use of AI in diverse contexts. This presents an opportunity to develop education that is accessible and aligns with students' genuine needs, enabling effective and responsible use of AI in their learning processes (Yun & Worapongpat, 2023).

Having a basic understanding of technology and the desire to use digital technology and AI to enhance their learning and research skills are essential for this target group. Furthermore, these students face challenges in using AI ethically and responsibly, a critical issue still lacking in-depth research. The researcher has experience in teaching and developing courses related to educational technology and the use of AI in teaching, as well as participating in research projects focused on integrating digital technology into educational contexts. Previous research has emphasized the importance of understanding how to use AI mindfully and with awareness, yet specific studies on graduate students in private universities in Bangkok remain scarce (Baashar et al., 2022).

Thus, this research will fill the knowledge gap and provide insights into students' experiences and attitudes toward using AI for learning in a specific context. Awareness is the mental state related to feelings, thoughts, and desires, which involves personal experiences and evaluations of various events. Key factors contributing to awareness include experience, environment, and various stimuli. The educational dictionary defines awareness as actions demonstrating memory, perception, or consciousness. The process of developing awareness begins when individuals are stimulated by stimuli to achieve perception. Upon awareness, general thoughts emerge, leading to the learning process. When knowledge about the subject is acquired, awareness arises, and individual behaviors toward the stimuli are demonstrated. Three essential components of awareness are identified: (1) Cognitive Component, (2) Affective Component, and (3) Behavioral Component. Based on literature and related research, the researcher synthesizes awareness components as perception, knowledge, understanding, and consciousness. In summary, awareness of using AI for learning reflects cognitive and emotional behaviors, including perception, understanding, knowledge, and consciousness regarding AI usage for learning (Cantú-Ortiz et al., 2020).

The researcher is therefore interested in studying mindfulness using artificial intelligence (AI) to learn among graduate students at private universities in Bangkok. This research will employ quantitative and qualitative methods through surveys and in-depth interviews to understand students' knowledge, understanding, attitudes, and perceptions of using AI in education. Data will be collected from a suitable sample at an appropriate time, with analysis using descriptive

statistics and content analysis to provide a clear and comprehensive overview of the issues being studied (Tamanna & Sinha, 2024).

The increase in AI usage for learning has accelerated rapidly. However, there is a lack of focused research on awareness and mindfulness in using AI among students, which are critical for developing academic and professional potential. Mindfulness when using AI can help reduce risks, such as cheating or copyright infringement, while enhancing learning effectiveness and skill development. Suppose this research can address the awareness and usage of AI in learning. In that case, it will benefit universities and educational institutions in planning course development and policies related to AI technology use to support learning. Moreover, it can guide the development of appropriate teaching materials and training for students to use AI effectively and responsibly in educational contexts and for self-development in the future (Dongling & Worapongpat, 2023).

This research contributes to filling the knowledge gap by exploring students' experiences, attitudes, and perceptions of AI usage in education. Employing quantitative and qualitative methods seeks to provide a comprehensive understanding of students' mindfulness when using AI. Findings will benefit universities in planning curriculum development, creating policies, and designing teaching materials to promote practical and ethical AI usage.

Mindfulness in AI usage can mitigate risks such as academic dishonesty and intellectual property violations while enhancing students' learning efficiency and professional skills. Addressing this issue will also guide educators in fostering a culture of responsible AI use in academic settings, thus supporting long-term educational goals.

Literature Review

The literature reviews the research by examining previous studies on the application of artificial intelligence (AI) in educational environments, specifically its influence on graduate students' learning experiences—several important themes surface from the literature.

Min and Worapongpat (2023) indicate that students' familiarity with AI technologies significantly affects their acceptance of these tools. For instance, Pimentel (2024) shows that students well-versed in AI applications are more likely to engage with these technologies in educational contexts.

The effects of AI on educational outcomes have been thoroughly investigated. Xu (2024) found that AI tools foster creativity and problem-solving abilities in students. Furthermore, Raub et al. (2015) illustrated that AI-facilitated contextual learning results in enhanced student performance and engagement.

Despite the potential advantages, literature also identifies obstacles to adopting AI in educational contexts. Oliveira et al. (2024) identify challenges such as inadequate training, lack of proper infrastructure, and resistance from educators. Addressing these hurdles is crucial to optimizing AI's impact on learning environments.

The ethical dimensions of AI use in education have become increasingly important. George and Wooden (2023) highlight the necessity for guidelines to promote responsible AI practices, especially concerning data privacy and biases within algorithms.

Emerging patterns suggest a move toward personalized learning experiences through AI. Research indicates that adaptive learning technologies can be tailored to meet individual learning preferences and requirements, improving overall educational experiences (Ning et al., 2023).

The literature review provides a solid foundation for understanding the current landscape of AI in education. However, consider the following adjustments to enhance its depth and clarity further.

Clarity in Structure: Organize the review into more apparent thematic sections (e.g., Awareness of AI, Impact on Learning Outcomes, Challenges, Ethical Considerations, and Future

Directions). This will help readers navigate the content more easily and understand the connection between each area (TianShu & Worapongpat, 2023).

Integration of Mindfulness and AI: While the literature focuses on AI's impact on learning, incorporating more discussion on how AI could be integrated with mindfulness practices in educational settings would provide a unique angle. Explore the potential synergies between AI technologies and mindfulness in enhancing graduate students' learning and well-being, especially in self-regulation, focus, and cognitive load.

Theoretical Framework Expansion: Ensure the theoretical underpinnings of AI's impact on education are fully addressed. Consider expanding the discussion on key educational theories or models (e.g., the Technology Acceptance Model or Constructivist Learning Theory) and how they relate to AI adoption in higher education.

Emerging Trends: The section on Future Directions could benefit from a more detailed discussion of specific emerging technologies and trends, such as AI-driven personalized learning, the use of AI in formative assessment, and AI's role in fostering collaboration. These areas are highly relevant in graduate education and could enrich the literature review further.

Research Conceptual Framework

Worapongpat (2024) described awareness as a mental condition encompassing feelings, thoughts, and desires shaped by personal experiences and external influences. In educational literature, awareness is further detailed as actions that reflect memory, perception, or consciousness, where three key components of awareness are identified: the Cognitive Component, which involves understanding and knowledge of the subject; the Affective Component, which pertains to emotional connections and attitudes toward the subject; and the Behavioral Component, which relates to actions taken as a result of awareness (Worapongpat et al., 2024c). By integrating these viewpoints, this study defines awareness in AI usage as having four dimensions: perception, knowledge, understanding, and consciousness. Furthermore, awareness and mindfulness in applying AI for learning include cognitive and emotional behaviors, emphasizing the significance of ethical and responsible use.

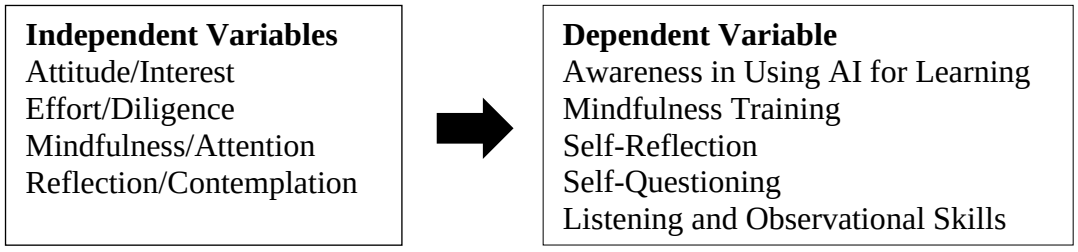

Figure 1 Conceptual framework of the research.

Research Methodology

This research adopts a quantitative approach. The population, sample, research instruments, data collection methods, and statistical analysis procedures are outlined below.

Population and Sample

The population comprises graduate students from Shinawatra University, Rangsit University, Sripatum University, Bangkok University, and Mahanakorn University during the second semester of the 2023 academic year, totaling 201 individuals.

The study's sample consists of 188 graduate students from the universities. The sample size was determined using G*Power software, with a two-group t-test, assuming a medium effect size (Cohen's d = 0.5), a significance level of 0.05, and a power of 0.80. The calculation indicated a required sample size of 128 participants. Additional samples were collected to mitigate potential data loss, resulting in a final sample of 188 participants.

Research Instrument

The primary research instrument is a questionnaire designed to assess awareness of using Artificial Intelligence (AI) for learning. It consists of two sections and was developed based on relevant concepts and literature concerning AI awareness in education.

Section 1: Basic demographic information, including gender, age range, and the university attended, presented in a checklist format.

Section 2: This questionnaire assesses awareness of AI in learning using a 4-point Likert scale. It is divided into four areas: mindfulness training, self-reflection, self-questioning, and listening and observation practice. Each area contains four items, for a total of 20 items.

The quality of the questionnaire was verified through:

Content Validity: Evaluated using the Index of Item Objective Congruence (IOC), assessed by three experts. The IOC value for each item ranged from 0.67 to 1.00, meeting the minimum threshold of 0.50

Reliability: Cronbach's Alpha coefficient was calculated to determine internal consistency, yielding a reliability coefficient of 0.902, which exceeds the established threshold for reliability.

Data Collection

Primary Data: Collected through in-depth interviews with the target group and the administration of questionnaires.

Secondary Data: Sourced from relevant documents, including books, academic papers, and research studies, as well as electronic media.

Data Analysis

Descriptive Statistics: The fundamental demographic data of respondents were analyzed using frequency, percentages, means, and standard deviations (S.D.). Inferential Statistics: A one-way ANOVA was utilized with statistical software to evaluate the awareness of AI usage for learning purposes. The questionnaire responses' mean score was interpreted using a 5-point Likert scale. The reliability of the questionnaire was evaluated using Cronbach's Alpha coefficient, with a minimum acceptable threshold set at 0.70 (Cronbach, 1990). Item-total correlation was examined on a scale from -1.00 to +1.00, with established criteria for assessment.

Research Results

Development of the AI Mindfulness Measurement

In a sample of 188 participants, 20 items were developed, yielding a reliability coefficient of 0.902. The analysis identified four dimensions of the variable: Mindfulness Training, which includes 6 items with a reliability of 0.926; Self-Reflection comprising 5 items with a reliability of 0.917; Self-Questioning featuring 5 items with a reliability of 0.915; and Listening and Observation Practice, which also contains 5 items, achieving a reliability of 0.913.

The overall reliability coefficient for the 20 items was 0.910, indicating a high level of awareness across all dimensions.

Table 1 Analysis of Mindfulness in AI Usage for Learning

Mindfulness Aspect	Number of Items	Reliability	Interpretation
Mindfulness Training	6	0.926	Very High
Self-Reflection	5	0.917	Very High
Self-Questioning	5	0.915	Very High
Listening and Observation	5	0.913	Very High
Total	**20**	**0.910**	**Very High**

The results indicate that all dimensions demonstrate very high levels of mindfulness, especially mindfulness training, which is the most reliable.

Table 2 Correlation Between Survey Items and Total Scores

Survey Item	Item Index Value	Interpretation
I am aware that I have heard of or know about the use of AI.	0.555	Very Good
I am mindful of studying and filtering information about AI.	0.676	Very Good
I am aware of using AI to assist in writing reports.	0.642	Very Good
I know that AI is becoming popular and is used in learning.	0.473	Very Good

Comparison of Mindfulness in AI Usage

The study compared mindfulness and AI use among students from different private universities in Bangkok, analyzing data from 188 questionnaires.

Table 3 Levels of Mindfulness in AI Usage for Learning

Mindfulness Aspect	M	SD	Interpretation
Mindfulness Training	3.69	0.421	High
Self-Reflection	3.65	0.454	High
Self-Questioning	3.63	0.427	High
Listening and Observation	3.66	0.477	High
Total	**3.66**	**0.444**	**High**

Analysis of variance using Levene's Statistic showed no significant differences at the .05 significance level (Sig = .695), and one-way ANOVA indicated no significant differences in means at the .05 level (Sig = .275).

Table 4 Comparison of Mindfulness Levels

Graduate Program	Sample Size	Mindfulness Level	Levene Statistic	F-test	Sig
Shinawatra University	24	3.49	0.546	1.281	0.265
Rangsit University	85	3.48			
Sripatum University	33	3.72			
Bangkok University	40	3.48			
Mahanakorn University	6	3.64			
Total	**188**	**3.56**			

The analysis indicates no significant statistical differences in both variance and mean levels of mindfulness in AI usage for learning among graduate students from different private universities in Bangkok.

Conclusion and Discussion

The findings from the first objective reveal that the development of a measurement tool to assess mindfulness in the use of artificial intelligence (AI) for learning demonstrates exceptionally high levels of awareness across various dimensions. The reliability coefficients indicate strong consistency within the dimensions, particularly in Mindfulness Training. This

aligns with Worapongpat et al.'s (2024a) insights, which emphasize that developing practical measurement tools for assessing knowledge and applying modern technology in learning processes is crucial for enhancing practical learning and analytical thinking. The high reliability of this study underscores the tool's capability to reflect students' mindfulness when utilizing AI accurately. Additionally, Ali (2023) highlights the importance of measuring understanding and application of AI within educational contexts, suggesting that it can lead to more accurate assessments of learning outcomes. This supports the notion that well-designed measurement instruments evaluate technical skills and provide deeper insights into students' competencies in navigating AI for educational purposes.

The second objective of the research is to investigate the comparative levels of mindfulness in AI usage among graduate students from various private universities. The average level of awareness was "very high," indicating a general competence in understanding and applying AI in learning contexts. The analysis showed that the variance in mindfulness levels was not statistically significant, suggesting that despite differences among the universities, the students' mindfulness in using AI for learning remained consistently high. This aligns with Worapongpat et al.'s (2024b) findings, which explored technology usage in different educational institutions and identified variances in technology utilization and access influenced by institutional policies and organizational culture. Worapongpat et al. (2023) further reinforce the significance of comparative research in educational technology studies, positing that such research provides valuable insights into diverse experiences and practices. This diversity is critical for understanding the factors that shape students' abilities to use AI in their learning processes effectively.

In conclusion, the research underscores the importance of developing robust measurement tools and conducting comparative studies to evaluate mindfulness in AI usage among graduate students. The findings suggest that while students from various private universities exhibit high levels of awareness regarding AI's application in learning, the lack of statistically significant differences indicates a common trend across institutions. This highlights the potential for further exploration of the contextual factors that may enhance or inhibit the development of AI skills among students in different educational settings. The results of this study can inform future strategies for integrating AI into educational practices, ensuring that students are well-equipped to leverage technology in their academic journeys.

Originality and Body of Knowledge

The study on mindfulness in using artificial intelligence (AI) for learning among graduate students at private universities in Bangkok has yielded significant new knowledge. This knowledge can be summarized and illustrated in a conceptual diagram highlighting the key findings and relationships identified throughout the research.

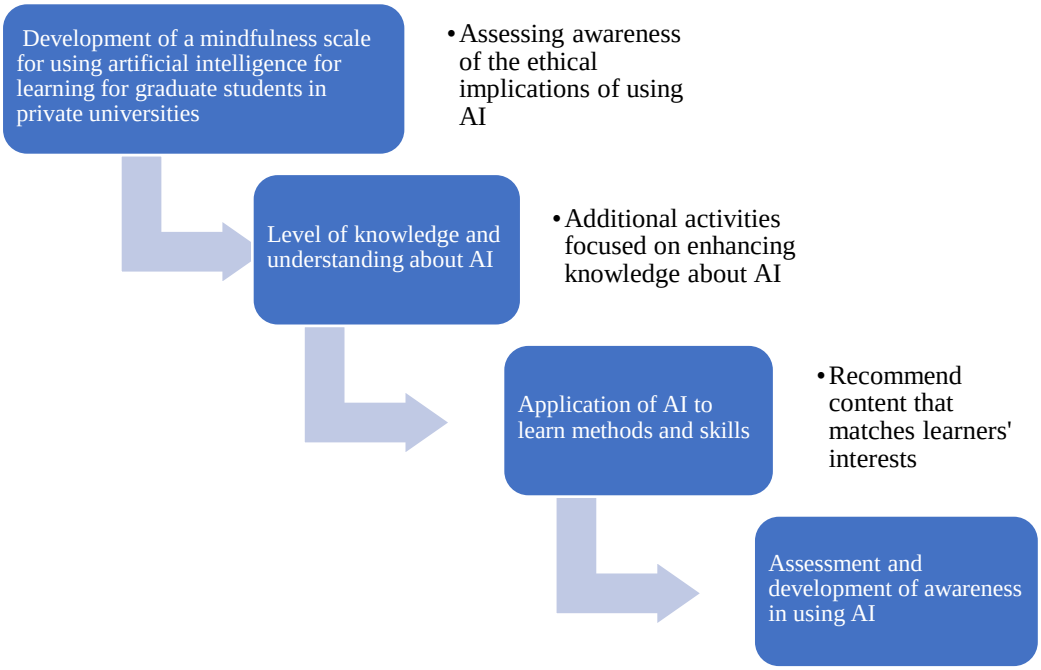

Figure 2 Impact of Mindfulness in the Use of Artificial Intelligence for Learning Among Graduate Students at Private Universities in the Bangkok Area

The diagram below presents the insights derived from the research titled "Development of a Measurement Tool for Mindfulness in the Use of Artificial Intelligence for Learning Among Graduate Students at Private Universities." The results can be summarized through the following elements.

Levels of Knowledge and Understanding of AI for Learning: Evaluation of knowledge and comprehension in using AI for educational purposes. Capability to recognize suitable AI technologies for specific learning or research tasks. Creation of curricula or additional activities aimed at improving understanding of AI.

Application of AI in Learning: Techniques and competencies for employing AI across various educational environments. Implementation of AI tools for analyzing data or developing new teaching resources. Support for learning through AI, including content recommendation systems that align with student interests.

Evaluation and Development of Mindfulness in AI Usage: Utilization of assessment tools to measure mindfulness in the application of AI for educational purposes. Appraisal of awareness regarding the ethical considerations surrounding AI utilization. Development of Ethical Skills and Responsibilities in AI Usage: Focus on fostering ethical awareness and accountability in AI applications.

Factors Influencing AI Usage for Learning: Students' attitudes, prior experiences, and the level of institutional support influence their ability to utilize AI for educational purposes—comparative analyses among institutions to understand variations in AI usage for learning in different contexts.

Conceptual Diagram The conceptual diagram reflecting these components can be organized as follows: Central Theme: Mindfulness in AI for Learning. Knowledge & Understanding of AI: A flowchart depicting knowledge evaluation and curriculum creation. Application of AI: Boxes illustrating various methods and competencies for AI utilization, including examples of AI tools. Evaluation of Mindfulness: Arrows demonstrating the feedback loop between evaluation and ethical considerations. Ethical Skills Development: A segment emphasizing the significance of ethics and responsibility in AI utilization. Influencing Factors: A network

diagram portraying the interconnections between attitudes, experiences, institutional support, and comparative studies.

Suggestions

Promote Mindfulness Training: Schools and educational institutions should emphasize the importance of mindfulness training to help students engage with AI tools thoughtfully and self-regulated. This training could be integrated into AI-related courses or workshops to enhance students' cognitive and emotional awareness while interacting with AI technologies.

Create Supportive Environments: Educational institutions should cultivate supportive settings where students can freely experiment with AI tools without experiencing feelings of overwhelm or anxiety. This includes providing faculty guidance, establishing mentorship initiatives, and offering resources to alleviate the challenges associated with using AI.

Ensure Ethical AI Use: Policymakers ought to develop clear policies regarding the ethical utilization of AI in educational contexts, emphasizing transparency, fairness, and data privacy. This will promote the responsible use of AI tools and safeguard students' data while ensuring equitable access and outcomes.

Recommendations for Future Research

Comparison Across University Types: Future studies should aim to compare mindfulness practices in AI usage between private and public universities, potentially exploring how cultural and institutional factors contribute to differences. This would help highlight specific challenges and opportunities for fostering mindful AI engagement in various educational environments.

Investigating Support Factors: Additional research could analyze the connection between faculty support, previous exposure to AI, and training in cultivating mindfulness in AI usage. Understanding these elements would aid in refining training programs and enhance students' abilities to utilize AI in their learning processes effectively.

Exploring AI's Impact on Emotional and Cognitive Development: Future investigations should examine how AI affects students' academic performance and emotional and cognitive growth. This research could shed light on the broader implications of AI for students' well-being and learning experiences.

Longitudinal Studies: Implementing longitudinal research could provide insights into how mindfulness in AI usage evolves and its long-lasting effects on students' academic achievement and personal development. This would deepen our understanding of how consistent and mindful engagement with AI tools shapes the educational journeys of graduate students.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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