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Using Generative AI by Students of the Faculty of Education, Nakhon Phanom University

Sumalee Sriputtarin[1], Kanlayanee Muangthai[2]
[1]Assistant Prof.Dr.,Faculty of Education, Nakhon Phanom University
[2]Lecturer, Faculty of Education, Nakhon Phanom University
Corresponding Author: Email: sumaleesriput@hotmail.com
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Abstract

This article aimed 1) to study the current situations and the desired situations, and 2) to assess the needs of using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University. The sample group consisted of 226 undergraduate and graduate students, selected using stratified random sampling based on percentage criteria. The research instruments were two questionnaires. The first questionnaire inquired about the current situations of using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University. The content validity index ranged from .80 to 1.00, with item discrimination values ranging from .63 to .91, and the overall reliability was .98. The second questionnaire inquired about the desired situations of using AI in the learning process. The content validity index ranged from .80 to 1.00, with item discrimination values ranging from .62 to .89, and the overall reliability was .99. The statistics used were percentage, mean, standard deviation, and Modified Priority Needs Index ($PNI_{Modified}$).

The research findings revealed that 1) the current situations of using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University were at a moderate level, while the desired situations were at a high level. 2) The overall need assessment had a value of .47. When examining in individual aspect, the needs were ranked from highest to lowest as follows: (1) using AI in research, (2) using AI in image creation, (3) using AI in presentation, (4) using AI in learning, and (5) using AI in document creation.

Keywords: Generative AI; Artificial Intelligence; Students, Nakhon Phanom University

1. Introduction

In the era of rapidly advancing digital technology, artificial intelligence (AI) has become a crucial component across various sectors. The application of AI not only enhances efficiency and speeds up operations but also promotes sustainable development. In the field of transportation, AI plays a key role in developing more efficient transport systems. Autonomous driving technology is a clear example, where AI can analyze the surrounding environment and make accurate driving decisions, reducing accidents and increasing convenience in travel. Furthermore, AI is used to analyze traffic data, improving route management and reducing congestion (Hossain et al., 2020). In the communication sector, AI has

transformed the way people interact, especially through Natural Language Processing (NLP) technologies that allow users to communicate more effectively (Jurafsky & Martin, 2020). For example, chatbots in customer service enable faster and more efficient responses to queries and problem-solving. AI can also analyze communication data to understand consumer trends and behaviors.

In agriculture, AI assists farmers in making informed decisions. For instance, drones and sensors equipped with AI gather data on soil conditions and crops, allowing farmers to analyze the data to increase yields and reduce chemical usage (Liakos et al., 2018). AI also aids in predicting crop yields and managing risks related to weather conditions (Zhang et al., 2020).

In the industrial sector, AI has widespread applications, such as robotics and machine learning in production to reduce costs and increase efficiency. AI systems can analyze machine data to predict potential problems and support predictive maintenance, reducing machine downtime. AI can also analyze consumer behavior to improve marketing and customer service (Choudhury et al., 2020).

In education, AI has a significant role in enhancing teaching and learning. It not only improves teaching efficiency but also promotes personalized learning that meets the needs of individual students. AI can improve students' learning experiences by analyzing learning data to create personalized learning environments that cater to each student's needs and abilities (Wang et al., 2020). AI also enables teachers to quickly access data about student learning behaviors, helping them adjust teaching methods and content to suit each student (Zawacki-Richter et al., 2019). AI can assess learning outcomes by analyzing and providing accurate information about students' progress and weaknesses, allowing teachers to offer timely advice and support (Deng et al., 2020). Additionally, AI supports collaborative learning by creating platforms that enhance group work efficiency. It can analyze student participation in group activities and suggest improvements to the collaborative process (Chen et al., 2019), fostering interaction and teamwork among students.

The benefits and importance mentioned above, the researcher, as a university lecturer, is interested in studying the application of AI in the learning process of students at the Faculty of Education, Nakhon Phanom University. The integration of AI into university teaching and learning processes offers numerous advantages, ranging from improving the learning experience to more effective assessment and supporting collaborative learning. However, it is essential to consider the challenges and risks associated with AI to ensure its ethical and sustainable application in the future.

2. Research Objectives

The objectives of this research are as follows:

1. To study the current situations and the desired situations of using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University.

2. To assess the needs of using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University.

3. Theoretical Concepts and Related Research

3.1 Concepts of Using AI in Learning

In the current digital age, artificial intelligence (AI) plays an increasingly important role in education, particularly in helping students learn more effectively. This section discusses the application of AI in five main aspects: (1) Document creation, (2) Image creation, (3) Presentation, (4) Research, and (5) Learning.

1. Using AI for Document Creation: AI enables students to create and manage documents more quickly and efficiently through tools that offer text generation, grammar checking, and error correction. For example, tools like ChatGPT, Grammarly, or QuillBot assist in writing and improving content quality, reducing the time spent on reports or essays. These tools also allow students to focus more on in-depth analysis or research (Brown, 2023).

2. Using AI for Image Creation: AI simplifies the design and development of artwork or presentations. Tools like DALL·E or MidJourney can generate highly detailed images from textual input. Students can use AI to create illustrations for research papers or to enhance academic presentations visually. Additionally, AI can efficiently edit and refine images, making design work easier (Smith & Johnson, 2022).

3. Using AI for Presentations: Presentation skills are vital for both academic and professional success. AI tools such as Prezi, Beautiful.ai, and Slidebean help students create visually appealing and well-structured presentations without requiring extensive design knowledge. AI can suggest the optimal layout and elements for slides, enhancing the quality of presentations. Furthermore, AI can generate voiceovers from text and suggest improvements to make presentations more effective (Anderson, 2023).

4. Using AI for Research: AI plays a crucial role in research, especially in data collection, analysis, and synthesis. Students can use AI to search for academic articles, conduct statistical analysis, build models, and explore connections between ideas. Tools like EndNote, Mendeley, and RAx Labs assist students in managing citations and summarizing research findings, streamlining the research process and making it more efficient (Miller & Davis, 2021).

5. Using AI in Learning: AI has significantly transformed the way students learn by creating adaptive platforms that adjust to learners' knowledge levels and needs. For instance, AI can generate personalized exercises, review lessons, or assess students' knowledge autonomously using tools like Coursera, Duolingo, or Khan Academy. AI can also analyze students' progress and recommend learning methods to help maximize their potential (Roberts, 2020).

Summary

Using AI in learning and academic tasks enhances efficiency and effectiveness across various domains, including document creation, image creation, presentations, research, and learning itself. By

integrating AI technology, students can enhance their academic skills and improve their chances of success in the fast-evolving digital world. In this study, the researcher applied a conceptual framework on the use of AI in the learning process of students at the Faculty of Education, Nakhon Phanom University, focusing on the following five key areas: (1) AI in document creation, (2) AI in image creation, (3) AI in presentation, (4) AI in research, and (5) AI in learning.

3.2 Related Research

Crawford, K., & Whittaker, M. (2020). conducted research on the ethical implications of AI in educational settings. Research Findings: This research examines the ethical concerns related to AI in education, such as student privacy and the risks of misusing sensitive data, urging careful data governance.

Dillenbourg, P., & Jermann, P. (2020). conducted research on AI and collaborative learning: Enhancing group interactions through technology. Research Findings: AI supports collaborative learning by organizing student groups and analyzing group interactions, resulting in more effective teamwork and learning outcomes.

Almeida, L., & Spector, J. M. (2019). conducted research on AI-based tutoring systems: Enhancing learning outcomes for struggling students. Research Findings: AI-based tutoring systems improve understanding and academic performance for students facing learning difficulties, offering personalized support to enhance learning outcomes.

Johnson, A., & Cui, Z. (2018). conducted research on the impact of AI on classroom management and teacher effectiveness. Research Findings: AI improves classroom management by reducing the workload of teachers, allowing them to monitor and assess students in real-time, leading to more efficient teaching.

Lu, J., & Jones, M. (2018). conducted research on the use of AI in language learning: Benefits and challenges. Research Findings: AI enhances language learning by improving skills in speaking, listening, and reading, though some learners may struggle to adapt to AI-based systems.

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). conducted research on Artificial intelligence in education: Promises and implications for teaching and learning. This research explored the role of AI in enhancing teaching and learning by creating personalized learning environments that adapted to individual students, improving the learning process.

Chen, C. M., & Duh, L. M. (2017). conducted research on the role of artificial intelligence in personalized learning systems. Research Findings: This study highlights AI's potential in personalized learning systems, increasing learning efficiency by 25%, especially in subjects requiring continuous practice.

Baker, R. S. J. d., & Siemens, G. (2014). conducted research on AI-assisted adaptive learning and its impact on student performance. Research Findings: AI-assisted adaptive learning systems adjust content to match student abilities, resulting in significantly improved academic performance and exam scores, particularly for diverse learners.

4. Methodology

4.1 Scope of Content

This research focused on using AI in the learning process of students at the Faculty of Education, Nakhon Phanom University. The study was framed around five aspects: (1) using AI in document creation, (2) using AI in image creation, (3) using AI in presentation, (4) using AI in research, and (5) using AI in learning.

4.2 Population and Sample

The population for this research consisted of 2,025 students from the Faculty of Education, Nakhon Phanom University, including 1,538 undergraduate students and 487 graduate students.

The sample consisted of 226 students from the Faculty of Education, including 153 undergraduate students and 73 graduate students. The sample size was determined using a percentage criterion, with 10% for undergraduate students and 15% for graduate students (Boonchom Srisa-ard, 2017), selected using stratified random sampling.

4.3 Data Collection Instruments

Two questionnaires were used as data collection instruments:

1. The first questionnaire assessed the current use of AI in learning among students at the Faculty of Education, Nakhon Phanom University. It consisted of two parts: Part 1 gathered general information about the respondents in a checklist format, and Part 2 explored the current status of AI use in learning. The questionnaire's consistency index ranged from .80 to 1.00, with item discrimination values between .63 and .91, and an overall reliability coefficient of .98.

2. The second questionnaire assessed the desired state of AI use in learning among the same group of students. It also had a consistency index ranging from .80 to 1.00, item discrimination values between .62 and .89, and an overall reliability coefficient of .99.

4.4 Data Collection and Analysis

Data were collected online using Google Forms, with questionnaires distributed to all 226 sample members, resulting in a 100% response rate. The data were analyzed using statistical software as follows:

1. General information about the respondents was analyzed using frequency and percentage.

2. Current and desired situations of AI use in learning were analyzed using mean and standard deviation.

3. The need assessment was conducted using a modified priority needs index ($PNI_{Modified}$).

4.5 Statistical Analysis

The statistical methods used to analyze the data included:

Content validity: The consistency index (IC) was used to assess the content validity.

Item discrimination: Pearson's correlation coefficient was used to analyze the discrimination of questionnaire items.

Reliability: The Cronbach's alpha coefficient was used to determine the overall reliability of the questionnaires.

Descriptive statistics: Percentage, mean, and standard deviation were used as basic statistics.

Need assessment: The Modified Priority Needs Index ($PNI_{Modified}$), as proposed by Suwimon Wongwanich (2015), was applied to rank and assess the needs.

5. Research Findings

The research on using AI in learning among students of the Faculty of Education at Nakhon Phanom University revealed the following results:

1. The overall current situations of using AI in learning among students was at the moderate level, with the mean score of 2.93 ($\overline{X}$ =2.93). When analyzed by specific aspects, all aspects were also at the moderate level, with mean scores ranging from 2.65 to 3.35 ($\overline{X}$ =2.65-3.35). The highest mean score was using AI in document creation ($\overline{X}$ =3.35). The lowest mean score was using AI in research ($\overline{X}$ =2.65).

The overall desired situations of using AI in learning among students was at the high level, with the mean score of 4.30 ($\overline{X}$ =4.30). When analyzed by specific aspects, all aspects were also at the high level, with mean scores ranging from 4.25 to 4.38 ($\overline{X}$ = 4.25-4.38). The highest mean score was using AI in learning ($\overline{X}$ =4.38). The lowest mean score was using AI in image creation ($\overline{X}$ = 4.25). The detailed results were presented in Table 1.

Table 1: Mean and Standard Deviation of Current and Desired AI Usage in Learning among Students of the Faculty of Education, Nakhon Phanom University, Overall and by Specific Aspects

Aspects	Current Situations			Desired Situations		
	$\overline{X}$	S.D.	Interpretation	$\overline{X}$	S.D.	Interpretation
1. Using AI in Document Creation	3.35	1.0	Moderate	4.29	.56	High
2. Using AI in Image Creation	2.69	.97	Moderate	4.25	.61	High
3. Using AI in Presentation	2.79	.84	Moderate	4.33	.57	High
4. Using AI in Research	2.65	.82	Moderate	4.26	.48	High
5. Using AI in Learning	3.17	.86	Moderate	4.38	.46	High
Overall	2.93	.56	Moderate	4.30	.46	High

The table summarized the mean scores and standard deviations for both the current and desired situations of using AI in learning among students. It showed that while the current situations of AI use were at the moderate level across all aspects, the desired situations were consistently rated as high, indicating the strong interest in enhancing AI integration in their learning process.

2. The results of need assessment for AI integration in learning among students of the Faculty of Education, Nakhon Phanom University revealed that the overall Modified Priority Needs Index ($PNI_{Modified}$) was 0.47. When analyzed by specific aspects, the ranking of the needs from highest to lowest was as follows: (1) using AI in research, (2) using AI in image creation, (3) using AI in presentation, (4) using AI in learning, and (5) using AI in document creation. The detailed results were presented in Table 2.

Table 2: Mean Scores of Current and Desired AI Usage in Learning and the Modified Priority Needs Index ($PNI_{Modified}$) among Students of the Faculty of Education, Nakhon Phanom University

Aspects	Mean Score Current Situations (D)	Mean Score Desired Situations (I)	($PNI_{Modified}$)	Need Ranks
1. Using AI in Document Creation	3.35	4.29	.28	5
2. Using AI in Image Creation	2.69	4.25	.58	2
3. Using AI in Presentation	2.79	4.33	.56	3
4. Using AI in Research	2.65	4.26	.61	1
5. Using AI in Learning	3.17	4.38	.38	4
Overall	2.93	4.30	.47	

The table illustrated the mean scores for the current and desired situations of using AI in learning, as well as the Modified Priority Needs Index ($PNI_{Modified}$). The highest need was found to be using AI in research, followed by AI in image creation, presentation, learning, and document creation, respectively.

6. Discussion

Based on the research findings regarding using AI in learning among students of the Faculty of Education, Nakhon Phanom University, the discussion could be summarized as follows:

1. The overall current situations of using AI in learning were at the moderate level. When analyzed by specific aspects, each aspect was also rated at the moderate level. This could be attributed to the fact that AI was a relatively new digital technology that has been transforming various fields, including education. As a result, some students might still lack the skills to utilize AI effectively, and

teachers might not yet be fully integrating AI into their teaching practices. For AI to be utilized more effectively in education, educators need to develop their capabilities in using AI technologies (Office of the Education Council, 2020). This finding was consistent with the research by Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016), who studied Artificial intelligence in education: Promises and implications for teaching and learning. This research explored the role of AI in enhancing teaching and learning by creating personalized learning environments that adapted to individual students, improving the learning process. Similarly, Baker, R. S. J. d., & Siemens, G. (2014), who studied AI-assisted adaptive learning and its impact on student performance. The findings revealed that AI-assisted adaptive learning systems adjusted content to match students' abilities, resulting in significantly improved academic performance and exam scores, particularly for diverse learners.

The overall desired situations of using AI learning were at the high level. Each aspect was also rated highly, reflecting the strong interest in utilizing AI to enhance learning efficiency. AI has the significant role in improving learning, especially in helping the student study more effectively. In the aspect of document creation, AI allowed students to create and manage documents quickly and efficiently, improving the quality of their writing and reducing the time needed for report or essay preparation (Brown, 2023). Regarding image creation, AI enhanced the ability to edit and modify images, making design tasks easier (Smith & Johnson, 2022). For presentation, AI helped students create well-structured and visually appealing presentations by suggesting content layout and slide organization. AI could also generate voice narration from text or suggest improvements to make the slides more engaging (Anderson, 2023). In research, AI played the crucial role in data collection, analysis, and synthesis, making the research process more efficient (Miller & Davis, 2021). In learning, AI was utilized to create customized exercises tailored to individual students, review lessons, and provide recommendations for optimal study methods to maximize students' potential (Roberts, 2020). This finding aligned with the research by Johnson, A., & Cui, Z. (2018), who studied the impact of AI on classroom management and teacher effectiveness which showed the findings that AI improved classroom management by reducing the workload of teachers, allowing them to monitor and assess students in real-time, leading to more efficient teaching. Additionally, Chen, C. M., & Duh, L. M. (2017), who studied the role of artificial intelligence in personalized learning systems. The study highlighted AI's potential in personalized learning systems, increasing learning efficiency by 25%, especially in subjects requiring continuous practice. Almeida, L., & Spector, J. M. (2019), who studied AI-based tutoring systems: Enhancing learning outcomes for struggling students, and further emphasized that AI-based tutoring systems improved understanding and academic performance for students facing learning difficulties, offering personalized support to enhance learning outcomes.

2. The results of overall need assessment was 0.47. When examining each specific aspect, the needs could be ranked from highest to lowest as follows: (1) using AI in research, (2) using AI in image creation, (3) using AI in presentation, (4) using AI in learning, and (5) using AI in document creation,

respectively. The high demand for using AI in research might be due to the fact that graduate students, in particular, could leverage AI as a research assistant to improve the speed, accuracy, and efficiency of their research processes. AI tools could assist in data analysis, synthesis, literature searches, statistical analysis, model creation, and concept-link verification. Tools like EndNote, Mendeley, or RAx Labs support students in managing references and summarizing content from various research papers, thereby facilitating faster and more efficient research work (Miller & Davis, 2021). This finding aligned with the research by Crawford, K., & Whittaker, M. (2020), who studied the ethical implications of AI in educational settings. The study examined the ethical concerns related to AI in education, such as student privacy and the risks of misusing sensitive data, urging careful data governance, and also emphasized the importance of proper data management to prevent the misuse of sensitive information. It also corresponded with the work of Lu, J., & Jones, M. (2018), who researched the use of AI in language learning: benefits and challenges. The findings showed that AI enhanced language learning by improving skills in speaking, listening, and reading, though some learners might struggle to adapt to AI-based systems. Furthermore, the study by Dillenbourg, P., & Jermann, P. (2020) on AI and collaborative learning: enhancing group interactions through technology which research findings revealed that AI supported collaborative learning by organizing student groups and analyzing group interactions, resulting in more effective teamwork and learning outcomes.

7. Suggestions

7.1 Suggestions for applying based on research findings: (1) the current situations of using AI in learning among students were at the moderate level; (2) the desired situations indicated that the most significant aspect was using AI in learning; and (3) the need assessment results showed that the highest need was using AI in research. Therefore, the Faculty of Education, Nakhon Phanom University should consider organizing workshops on using AI in learning for students at all levels, with a particular focus on using AI for research for graduate students.

7.2 Suggestions for further research: (1) research should focus on action research regarding the application of AI in students' learning; (2) research should be conducted on the use of AI in teaching and learning management among teachers and instructors at all levels; and (3) research should also be carried out on using AI in educational administration.

8. References

Anderson, P. (2023). AI-enhanced presentations: Tools and techniques for success. **Journal of Digital Education,** 45(2); 67-80.

Brown, K. (2023). The role of AI in academic writing: A transformative approach. **Educational Innovations Quarterly**, 32(1); 24-35.

Chen, L., et al. (2019). Intelligent learning environments: A framework for leveraging AI in education. **Computers & Education**, 142; 103641.

Choudhury, P., et al. (2020). The impact of artificial intelligence on marketing**. Journal of Business Research**, 112; 185-196.

Deng, L., et al. (2020). AI in education: Applications and challenges. **Journal of Educational Technology & Society**, 23(2); 47-61.

Hossain, M. S., et al. (2020). **Smart transportation: A systematic review on the application of artificial intelligence**. IEEE Access, 8, 100890-100910.

Jurafsky, D., & Martin, J. H. (2020). **Speech and language processing** (3rd ed.). Pearson.

Liakos, K. G., et al. (2018). **Machine learning in agriculture: A review. Sensors**, 18(8); 2674.

Miller, S., & Davis, T. (2021). AI in research: Applications and implications for higher education. **Journal of Academic Research**, 54(4); 102-118.

Office of the Secretariat of the Education Council. (2020). **AI for learning development**. Bangkok: Prikhwan Graphic Co., Ltd.

Roberts, L. (2020). Personalized learning through AI: The future of education. **Educational Technology Today,** 61(3); 87-95.

Smith, J., & Johnson, R. (2022). AI in art and design: Bridging creativity and technology. **Visual Arts Journal**, 27(3); 45-60.

Srisa-ard, B. (2017). **Preliminary Research.** 10th. Suweeriyasan.

Wang, F., et al. (2020). AI-driven personalized learning: The future of education. **Educational Technology Research and Development**, 68(4); 1231-1252.

Wongwanich, S. (2015). **Assessing the needs for research**. Bangkok: Chulalongkorn University Press.

Zawacki-Richter, O., et al. (2019). Systematic review of research on artificial intelligence in higher education: A framework for future research. **Educational Technology Research and Development**, 67(4); 1005-1028.

Zhang, H., et al. (2020). Application of artificial intelligence in agriculture**:** A review. **Agricultural Systems**, 179; 102778.