

UDC 378:004.8**МРИНТИ 14.35.07; 28.23.15****DOI 10.56525/RBTV5572****ARTIFICIAL INTELLIGENCE-AIDED INSTRUCTION AND RESEARCH
GENERATION: TERTIARY EDUCATION POLICY CONSIDERATIONS
AND AI OPTIMIZATION PLAN*****¹Edsel R. Umali, *¹Alain J. Anuevo, ¹Andy L. Soberano**¹Muntinlupa State University, Philippines

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Abstract. The use of Artificial Intelligence (AI) in many aspects of human lives, particularly in tertiary education i.e. teaching and research, has been prevalent in the 21st century. This research utilized mixed method that explored the level of AI integration in the teaching and learning as well as its usage in research generation using 64 tertiary education faculty members. Data revealed that teachers' AI integration in instruction is partially integrated, with higher use of AI as a means to prepare students in the future AI application, however, there is a minimal AI integration in the areas of curriculum planning, assessment, and learning enhancement.

Contrary to the results in using AI in teaching, respondents have manifested a high level of dependence in AI in research output generation particularly in synthesizing ideas, review of literature, and statistical treatment of data but they have shown moderate to partial reliance in the areas of data analytics, prediction, and hypothesizing in research.

The result of correlational analysis using Spearman's rho ($\rho = 0.30$) shows low positive relationship between AI Research Dependence and Instructional Integration. This proves that the higher utilization of AI in research is associated to slightly higher integration of AI in instructions but limitations, such as systemic, pedagogical, and policy-related challenges must be taken into considerations.

Further, the results of qualitative analysis from seven (7) participants have provided multidimensional insights on AI Integration. Identified key themes include: the need to have a holistic capacity building, ethics in the use of AI, comprehensive institutional policy and frameworks, teachers' mindset, measurable AI initiatives, and interdisciplinary collaboration have surfaced.

Results of this study recognized the strong potential and limitations of AI adoption in tertiary education. Although AI competence in research can support instruction integration, it is not enough to guarantee significant and inclusive application in instructions. Data provided strong evidence for: developing inclusive professional enhancement programs in the use of AI, policy framework, and comprehensive approaches that will resolve identified challenges.

Keywords: Artificial Intelligence, instructional integration, research dependence, higher education, professional development.

Introduction

Technology and Artificial intelligence (AI) are transforming the world and education is no exemption. Artificial Intelligence is becoming a defining factor of the Education Revolution 4.0. It is expected that the use of AI in the academe can offer remarkable educational experiences for both teachers and learners alike.

Artificial Intelligence is defined as the replication of human brainpower processes by technologies, particularly computer systems. Its specific and practical applications comprising but not limited to expert systems, natural language processing, speech recognition and machine vision among others (Burn, n.d.). It is interesting to note that AI as a process where humans teach computers how to do things which normally require human intelligence - things like recognizing images, understanding speech, responding to instructions or making decisions. They do this by training

machines to identify and reproduce structural patterns (Hardman, 2023). In other words, technologies replace human's capability to think and process complex ideas.

The recent proliferations of AI Applications in the internet has resulted mixed reactions and anticipation as well as anxieties e.g. teachers will be replaced by AI while the student will not develop critical and analytical thinking skills since they will be dependent on the AI technology while others remain skeptical. The release for example of Chat Generative Pre-Trained Transformer (ChatGPT) and was developed by an AI research company, Open AI, an artificial intelligence (AI) chatbot technology that can process our natural human language and generate a response, immediately sparked a frenzied discussion about the ethical use of artificial intelligence, especially in education. Trained on years of data obtained from the internet, ChatGPT garnered attention for its ability to potentially generate peculiar sonnets and multi-paragraph essays, write code, and even compose music (Narayanan, et,al, 2023).

In one hand, the academic community has cited some of the benefits and drawbacks of the use of AI in the classroom. Among its benefits include: automation of numerous tasks and how it supports the users to quickly generate the necessary data. Neophyte teachers can generate and improve the content of their lessons and presentations. AI is beneficial for both students and teachers since it finds contextual and grammatical inaccuracies thereby improving the overall language content of their presentations. If carefully utilized, AI offers substantial opportunities to assist teachers to further recognize and provide sufficient scaffold in order to meet the varying needs of their students.

Educational experts agree that AI in education can help personalized learning such as in analyzing data on how students perform in the classroom. This provides that teacher a platform to look at his students' strengths and weaknesses this way, he can design his lessons adaptive to meet the individual needs of his learners. Of course, teachers need to consider learner's individual differences in creating differentiated instruction as he incorporates technology and AI, hands-on activities and other pedagogical strategies that will engage students resulting to an enhanced learning and performance.

Artificial Intelligence is an excellent tool to maximize time and expenditures, improve the quality content of writing and advance skills sets. On the other hand, although it provides many advantages, experts believe that consistent reliance on it can lead to issues and concerns such as questions to someone's reputation, ethics, and logic. With any use of new technology, it's important to think about legal compliance and ethical considerations. In the words of Kelts (2022), AI technology makes errors of fact, errors of analysis, and errors of organization. At the least significant level, it cannot really discern fact from fiction. More importantly, it has no standards of logic to double-check its own analysis.

Despite AI's opportunities and obstacles, researchers consider it as a wide-ranging tool that enables people to rethink how we integrate information, analyze data, and use the resulting insights to improve decision making (West, 2018). In the conduct of research and studies, machine learning and deep learning, AI applications can learn from data and results in near real time, analyzing new information from many sources and adapting accordingly, with a level of accuracy that's invaluable to an organization.

Artificial intelligence is also used to optimize resources in research laboratories, automate the acquisition of data and facilitate the synthesis and analysis of complex datasets. For example, AI has recently been used to help manage the activities in large-scale, long-term studies by providing real-time guidance.

It plays significant part in the process of research. To improve the efficiency of research, AI-based algorithms are maximized thereby also providing fresher perspectives on the issues being examined. It is not only helpful in creating and drawing meaningful connections between scattered pieces of data but also in offering and testing new assumptions and hypotheses.

In the light of these circumstances, the authors embarked on assessing the teachers' capability to use AI in instruction through integration as well as in research generation.

This study aims to assess the teachers' AI level of instructional integration and their AI dependence teachers in research generation. Specifically, it seeks to answer the following research questions:

1. What is the level of Artificial Intelligence (AI) in instructional integration of the respondents in terms of:
 - 1.1. enhancing learning;
 - 1.2. deepening students' engagement;
 - 1.3. curriculum outlining, syllabus preparation, and assessment of student performance;
 - 1.4. helping the students develop the skills and capabilities to use AI effectively; and
 - 1.5. assisting the learners to be facile with AI in the future work and life of learning?
2. What is the level of AI dependence of the respondents in generating research output in terms of:
 - 2.1. data analytics and information;
 - 2.2. prediction, assumption, and hypothesizing;
 - 2.3. synthesizing ideas;
 - 2.4. review of related studies and literature; and
 - 2.5. statistical treatment of data?
3. Is there significant relationship between the respondents' level of AI instructional integration and their level of AI dependence in generating research output?
4. What are the key insights and experiences of educators and researchers in tertiary education regarding the integration of Artificial Intelligence-Aided Instruction and Research Generation, and how can these insights inform the development of effective AI optimization plans and policy considerations?
5. How can this research be a basis in crafting tertiary education policy on the use of AI in the classroom?
6. What AI Optimization Plan can be generated as an output of this study?

In the Input Section, the study will measure teacher-respondents' level of Artificial Intelligence integration and how they use AI applications and technology to create a more personalized, unique, and engaging learning experiences. Sub-variables such as: the use of AI to enhance the learning process, deepening students' engagement, how they consider AI in curriculum outlining, syllabi preparation, as well as in designing the assessments to measure student's performance, helping students to develop the 21st century skills and capabilities with the aid of AI and assist them in the acquisition of life-long learning skills.

In addition, another major variable that will be treated in the study is the level of teachers' dependence in AI as they write or generate research as part of their trifocal function on top of instruction and extension. Sub-variables to be treated include how teachers rely on the use of AI in the analysis of data and information, prediction, assumption, and hypothesis, synthesizing ideas, review of related literature and studies as well as treatment of the fathered data.

In the Process section, includes data analysis based on the results of the survey and interviews, as well as using the correlational analysis to determine if the level of AI instructional integration has direct relationship on the level of AI dependence when it comes to research generation. Finally, as part of its expected outcomes, suggested policy will be outlined that can be considered in creating guidelines in use AI in the classroom and research and a recommended AI optimization plan to enhance the respondents' skills and capabilities in using AI both in instruction and research.

Research materials and methods. This chapter discusses the significant components on its methodology including research design, approach and strategy; participants and samples of the study, instruments/assessment tools, validation, data gathering procedures, and the descriptive and inferential statistical treatment employed in analysis and interpretation of data.

Research Design. This study used descriptive-correlational mixed methods, quantitative and qualitative. Descriptive mixed methods research is an approach that combines both qualitative and quantitative research methods to provide a comprehensive understanding of a research problem or

question. In descriptive mixed methods research, researchers collect and analyze both numerical and non-numerical data to explore a phenomenon, identify patterns, and gain deeper insights into the subject of study. This approach is particularly useful when researchers aim to address research questions that cannot be fully understood using only one type of data or method.

Descriptive mixed methods research allows researchers to gain a more complete and holistic understanding of a research problem. By integrating both quantitative and qualitative data, researchers can explore different facets of the phenomenon, capture both the numerical trends and the underlying context and meaning. Triangulation: One of the primary advantages of this approach is triangulation, which involves comparing and contrasting findings from different data sources or methods. Triangulation enhances the validity and reliability of the research results, as inconsistencies or convergences between the two data types can be explored. By using multiple methods, researchers can validate their findings through data convergence. This enhances the overall validity of the research outcomes.

Research Locale and Population

The study is conducted at the Pamantasan ng Lungsod ng Muntinlupa (PLMun) in the Philippines, a 32-year-old recognized higher educational institution locally chartered university under auspices of the City Government of Muntinlupa and existing under and by virtue of Philippine laws with principal office at NBP Reservation, Poblacion, City of Muntinlupa, Philippines. The population sample of the study is consisted of 62 faculty members: 26 casual and 36 regular employees from the different colleges of the university.

Sample and Sampling Technique

To ensure accuracy and comprehensiveness of data, all faculty members, casual and regular, were used in this study as the sample. Since it used entire population as sample in a research study, it is referred to as a "census" rather than a sampling technique. In a census, you collect data from every single member of the population rather than selecting a subset for analysis. The advantage of conducting a census is that it provides a complete and accurate representation of the entire population, eliminating any sampling error. However, it can be time-consuming, resource-intensive, and may not be feasible for very large populations.

Instrumentation

This researched utilized three (3) research instruments as tools in gathering data:

For Descriptive-Quantitative, a research-made that underwent process of validation: defining the research construct or concept that the tools intended to measure, content validity- to ensure that the content of the instrument is relevant and comprehensive in measuring the construct. Subject-matter experts reviewed and evaluated the instrument's items for content validity. Face validity and pilot testing-here, the researchers conducted a preliminary review to assess whether the instrument appears, on its face, to measure the intended construct. This is often done through expert judgment or pilot testing with a small group of participants. This is followed by a pilot testing through administering the instrument to a small group of participants (a pilot sample) to identify any ambiguities, confusing items, or problems with item wording. This helps refine the instrument before full-scale data collection. Afterwards, a revision was made based on the results of the validation process. Finally, conducting the survey which covered all the activities involved in making the survey available to participants, including distribution, data collection, and retrieval of completed surveys.

To measure the level of AI instructional integration of the respondents, this variable contains 5 sub-variables covering use of AI in: enhancing learning, deepening students' engagement, curriculum outlining, syllabus preparation, and assessment of student performance, helping the students develop the skills and capabilities to use effectively AI, and assisting the learners to be facile with AI in the future work and life of learning, A 4-point Likert scale is used to measure the level of AI integration, with response options typically ranging from a low level of integration to a high level of integration. 1-Not Integrated, 2-Partially Integrated, 3-Moderately Integrated, and 4-Fully Integrated. In this scale, respondents (such as teachers) would select the statement that best reflects the extent to which they have integrated AI into their instructional methods. This scale provides a

concise way to assess the level of AI integration, allowing for differentiation between varying degrees of integration while remaining straightforward for respondents to understand and use.

And to assess the respondents' level of AI dependence in generating research output and its corresponding five (5) sub-variables: data analytics and information, prediction, assumption, and hypothesizing, synthesizing ideas; review of related studies and literature, and the statistical treatment of data, a 4-point Likert scale is also used: 1-Not Dependent, 2-Slightly Dependent 3-Moderately Dependent, and 4-Highly Dependent. In this scale, the teacher respondents would select the statement that best describes the extent to which they depend on AI for the generation of their research outputs. This scale allows for assessing the degree of reliance on AI in research output generation, providing insights into the researchers' dependence on AI technologies.

Table 1.

Scale Interval (Scale Range)	AI Instructional Integration of the Respondents	Respondents' AI Dependence in Generating Research Output
4 (3.26–4.00)	Fully Integrated	Highly Dependent
3 (2.51–3.25)	Moderately Integrated	Moderately Dependent
2 (1.76–2.50)	Partially Integrated	Slightly Dependent
1 (1.00–1.75)	Not Integrated	Not Dependent

For Qualitative Gathering of Data, a Focus Group discussion is used which involved a small group of participants consisted of 7 faculty members who discussed the specified topic or issue in a guided discussion led by a facilitator. Focus groups are useful for capturing diverse perspectives and group dynamics.

Data Gathering Procedure researcher secured a permit from the Office of the Human Resource Development Section through the Office of the University President, upon gaining the approval, the researchers personally distributed the survey instrument and conducted the Focus Group Discussions to gather the required data.

Ethical Considerations

When conducting this research, the authors prioritized ethical considerations to ensure the well-being, rights, and privacy of all participants and stakeholders involved. The authors took the informed consent of the participants and made them aware of the research's purpose, procedures, potential risks, and benefits before agreeing to participate. They obtain consent from individuals who may be indirectly affected by the study's outcomes within organizations.

Confidentiality is another crucial ethical aspect, as researchers must protect the privacy of participants by ensuring that their personal information and responses remain confidential. De-identifying data and using secure storage methods are common practices to maintain confidentiality.

Lastly, researchers sought the approval from relevant ethics review boards or committees during the conduct of these studies as it involved human participants and or sensitive data. Adhering to ethical guidelines and principles not only ensures the integrity of the research but also contributes to the overall advancement of knowledge in an ethical and responsible manner.

Statistical Treatment of Data

To find the level of AI instructional integration and the AI dependence in research generation among respondents, this study used descriptive statistics. Descriptive statistics are used to summarize and describe the main features of a dataset. In this case, the researchers calculated the measures of central tendency (e.g., weighted mean, median, mode), frequency, and percentage were also used. For inferential statistics, the following mathematical tools were used:

The Pearson correlation coefficient (often denoted as "r") or Pearson r is used to measure the strength and direction of a linear relationship between two continuous variables. It is also used to assess the direction of a relationship. It quantifies how well the variations in one variable can be predicted by the variations in another variable.

T-Test is an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related. T-tests are used when the data sets follow a normal distribution and have unknown variances.

Research results.

Table 2. Summary of Weighted Mean of Responses on Teachers' Level of Artificial Intelligence-Instructional Integration

INDICATORS	WEIGHTED MEAN	DESCRIPTIVE RATING	RANK
1. Enhancing Learning	1.64	Not Integrated	4
2. Deepening Students' Engagement	1.80	Partially Integrated	3
3. Curriculum Outlining, Syllabus Preparation, and Assessment of Students' Performance	1.36	Not Integrated	5
4. Helping Students Develop the Skills and Capabilities to Effectively Use AI	2.06	Partially Integrated	2
5. Assisting the Learners to be Facile with AI in the Future Work and Life of Learning	2.19	Partially Integrated	1
Overall Mean	1.81	Partially Integrated	-

Table 2 provides a clear overview of teachers' levels of Artificial Intelligence (AI) integration across various instructional domains. The overall weighted mean of 1.81, categorized as Partially Integrated, indicates that while AI use is emerging in education, it is not yet fully embedded across all areas. Notably, the highest integration is seen in Assisting Learners to be Facile with AI in Future Work and Life (2.19), emphasizing teachers' focus on preparing students for an AI-driven workforce and lifelong learning.

Following this, Helping Students Develop the Skills and Capabilities to Effectively Use AI (2.06) and Deepening Students' Engagement (1.80) also show moderate adoption, reflecting growing efforts to enhance student interaction with AI tools and develop relevant competencies. However, Enhancing Learning (1.64) and Curriculum Outlining, Syllabus Preparation, and Assessment (1.36) remain less integrated, highlighting gaps in the use of AI for lesson customization, curriculum planning, and assessment automation. These findings suggest that while teachers are beginning to leverage AI to engage students and build future-ready skills, systemic support and professional development are needed to deepen AI's instructional impact and streamline its use in curriculum design and evaluation. The relatively low integration in curriculum development and personalized learning indicates that many educators may lack the necessary training or resources to effectively utilize AI in these complex areas, potentially limiting AI's transformative potential in education. Schools and policymakers must prioritize professional development programs focused on AI literacy for teachers, alongside investments in accessible AI tools tailored for curriculum and assessment tasks. Additionally, fostering collaboration between educators, AI experts, and curriculum designers could accelerate more meaningful integration. Addressing these gaps will be critical to harness AI's full benefits—ensuring that educational systems not only engage students but also personalize learning experiences and streamline instructional workflows in ways that prepare learners for a rapidly evolving, AI-influenced world.

Table 3. Summary of Weighted Mean of Responses Teachers' Level of Artificial Intelligence

Indicators	Weighted mean	Descriptive rating	Rank
1. Data Analytics and Information	3.05	Moderately Dependent	4
2. Prediction, Assumption, and Hypothesizing	2.32	Partially Dependent	5
3. Synthesizing Ideas	3.79	Highly Dependent	1
4. Review of Related Literature and Studies	3.71	Highly Dependent	2
5. Statistical Treatment of Data	3.43	Highly Dependent	3
Overall Mean	3.26	Highly Dependent	-

Table 3 reveals that teachers demonstrate a high level of dependence on AI, particularly in synthesizing ideas, reviewing related literature, and conducting statistical data treatment. This heavy reliance on AI for organizing complex information and managing data analysis has significant implications for research, instruction, teaching, and student performance. From a research perspective, AI's ability to synthesize large volumes of data and streamline literature reviews enables teachers to produce more thorough, evidence-based studies efficiently, potentially leading to improved educational strategies and innovations (Wang & Lee, 2024). The automation of statistical analysis also reduces errors and frees up time, allowing educators to focus on interpreting results and applying findings meaningfully.

In terms of instruction and teaching, moderate to high AI dependence supports personalized learning by informing educators about student needs through data insights, although prediction and hypothesizing still rely partly on human judgment. This suggests that while AI enhances data-driven decision-making, teachers must remain actively engaged in interpreting AI outputs to tailor instruction effectively (Smith et al., 2023). Consequently, integrating AI tools in teaching can improve student performance by enabling targeted interventions and adaptive learning approaches based on analyzed data. However, as teachers show only partial dependence on AI for hypothesis formulation, professional development focusing on enhancing AI skills in research creativity could further advance instructional quality and student outcomes. In summary, the findings underscore the growing synergy between AI and human expertise in education, emphasizing the need to balance AI use with critical thinking to maximize benefits for research and learning (Johnson & Martinez, 2024).

Table 4. Correlation Between Teachers' Level of Artificial Intelligence–Instructional Integration and AI Dependence in Research Generation

Variable	N	Spearman's ρ (rho)	Strength of Relationship	Interpretation
Teachers' Level of AI–Instructional Integration and Teachers' AI Dependence in Research Generation	5	0.30	Low Positive Correlation	Significant But Weak Association

The table above shows the correlation between two variables: Level of Artificial Intelligence–Instructional Integration and the level of the respondents' dependence on AI in terms of generating research. The Spearman's rho ($\rho = 0.30$) computation has indicated a low positive correlation. Data suggest that respondents who demonstrate higher dependence on AI tools in doing research activities have the tendencies to show slightly higher levels of integrating AI in instructions. It is worth noting that this association is weak which implies that an increase in AI utilization in research

does not necessarily translate into a comparable level of AI Integration in teaching and learning. This supports the results of Wang & Fan (2025) study that claims that while educators have reported familiarity and usage of AI, this does not always converted into consistent and in-depth usage in instruction.

This is further supported by the mixed-methods study of elementary teachers in Malaysia, nearly all respondents stated that they are using AI tools and recognized their potential benefits, yet significant challenges—particularly insufficient professional training and lack of instructional support—hindered significant integration into instruction practices (Saravanan & Kamrozzaman, 2025). It simply means that teachers who depend on AI for research and professional purposes may be more inclined to integrate AI into instruction, structural and pedagogical factors limit the extent to which this reliance translates into comprehensive classroom integration.

It further reveals a disconnect between research utilization and pedagogical application in AI. Although Table 2 indicates that respondents are highly dependent on AI for synthesizing ideas, literature review, and statistical treatment of data, table 1 shows that AI remains partially integrated in instructions, especially in the areas of designing curriculum and assessment. This identified disassociation may be connected to different factors including limited pedagogical training in AI, institutional constraints, ethical concerns, or lack of clear instructional policy guidelines in using AI in the classrooms.

The identified correlation suggests that despite AI competence in research may support instructional integration, which in itself is inadequate to ensure effectiveness of AI-driven teaching practices. A more strategic professional development program and strong institutional support are indispensable to connect that gap between the two treated variables: AI use in Research and AI Integration in teaching and learning.

For the SOP “What are the key insights and experiences of educators and researchers in tertiary education regarding the integration of Artificial Intelligence-Aided Instruction and Research Generation, and how can these insights inform the development of effective AI optimization plans and policy considerations?”

Table 5. Qualitative Data Table: Teachers' Insights on AI-Aided Instruction and Research

Code Number	Raw Responses	Theme
T1	Integrating AI in instruction has allowed me to personalize learning better for my students, but I need more training on how to use it effectively for research.	Need for Capacity Building in AI Integration
T2	AI tools like Grammarly and ChatGPT are useful in academic writing and peer-review simulations. However, concerns about plagiarism and originality must be addressed.	Ethical Considerations in AI Use
T3	The use of AI in research generation accelerates data analysis and review, but institutional guidelines are lacking.	Lack of Institutional Policy and Support
T4	AI can reduce workload and help in assessment tasks, but some colleagues are hesitant due to fear of being replaced.	Mixed Attitudes Toward AI Adoption
T5	We've started using AI tools to track student learning, and they give us real-time insights, but we need a clear plan to expand and use them effectively.	Importance of Frameworks for Scalability
T6	AI has great potential for curriculum design, especially in identifying content gaps, but there's a lack of interdisciplinary collaboration to optimize its use.	Need for Collaboration Across Disciplines
T7	Some faculty still perceive AI as a threat. Clear policies, success stories, and training could help change that mindset.	Faculty Mindset and Policy Communication

The qualitative responses of seven (7) tertiary-level educators revealed a multi-dimensional understanding of the current landscape of AI integration in higher education. The themes that emerged from the raw data revolve around capacity building, ethical considerations, institutional policies, faculty attitudes, scalability, interdisciplinary collaboration, and the need for strategic communication.

The following major themes were identified:

1. Capacity Building in AI Integration Educators recognize the potential of AI to enhance learning, particularly through personalized instruction (T1). However, there is a shared concern about the lack of adequate training to effectively implement AI in research practices.

This finding aligns with Bautista and Salcedo (2024) who emphasize that while AI tools are increasingly available, educators often lack the digital pedagogy and research-related competencies to leverage them meaningfully. Professional development programs tailored to AI use in both instruction and research are essential to address this gap.

“AI-enhanced instruction demands not just technological proficiency but also pedagogical adaptation, which many higher education institutions have yet to fully support” (Bautista & Salcedo, 2024, *Philippine Journal of Higher Education*).

2. Ethical Considerations in AI Use

Teacher T2’s insights reflect ethical concerns such as academic dishonesty and over-reliance on generative AI tools, a sentiment echoed by multiple recent studies. The ease of using AI tools like ChatGPT and Grammarly introduces questions around originality, academic integrity, and responsible authorship.

Lopez and Kim (2024) argue that institutions must redefine academic ethics to include AI-related use policies, especially as students and faculty increasingly rely on AI in writing and analysis.

“Institutions must develop AI-use charters to ensure that AI remains a tool for empowerment, not a shortcut to bypass academic rigor” (Lopez & Kim, 2024, *Journal of Academic Ethics*).

3. Institutional Policy and Support

Teacher T3 highlights the lack of institutional guidelines for AI in research, pointing to a broader need for policy frameworks. The absence of standardized protocols leads to inconsistent practices and uncertainty among faculty. This concern is reinforced by Anderson and Reyes (2025), who state that policy voids hinder AI’s potential in academia. Without institutional policies, AI implementation becomes fragmented and lacks accountability.

“An AI policy vacuum creates institutional inertia—leaders must prioritize strategic AI governance in education” (Anderson & Reyes, 2025, *International Review of Educational Technology*).

4. Mixed Attitudes and Faculty Mindset

Teachers T4 and T7 represent the psychological and cultural barriers to AI adoption. Resistance stems from fear of redundancy, uncertainty, and a lack of success stories.

Such findings are supported by Garcia et al. (2024), who found that faculty acceptance of AI is closely linked to their belief in its positive impact on student learning and their own professional development. Transparency and engagement are crucial in shifting mindsets.

“AI resistance is more psychological than technical. Narratives of success and guided experiences are essential to foster acceptance” (Garcia et al., 2024, *AI in Higher Education Quarterly*).

5. Scalability and the Need for Frameworks

Teacher T5’s experience using AI-powered analytics signals growing experimentation in outcome-based education. However, this innovation is constrained by the absence of a scalable framework.

This reflects UNESCO’s 2024 Report on “AI and Future Learning,” which stresses that pilot projects must evolve into institutional strategies, complete with training, infrastructure, and monitoring systems.

6. Interdisciplinary Collaboration

T6 emphasizes the underutilized potential of AI in curriculum design and the need for collaborative optimization. Siloed implementation restricts the innovation AI can offer.

Nguyen and de Vera (2025) advocate for cross-disciplinary AI labs in universities, where educators from varied fields co-develop AI-enhanced tools and practices for mutual benefit.

“Breaking disciplinary boundaries is key to unlocking AI’s full promise in education” (Nguyen & de Vera, 2025, Asian Journal of AI-Enhanced Learning).

The collective responses show that while AI integration in tertiary education offers numerous benefits—such as enhanced personalization, faster research processes, and advanced analytics—it is hampered by challenges including lack of training, policy gaps, ethical dilemmas, and resistance to change.

Conclusion. This research provides valuable insights into the real experiences, concerns, and needs of educators regarding AI integration in tertiary education. By highlighting themes such as the need for capacity building, ethical guidelines, policy support, and faculty mindset, it offers a grounded understanding of what is necessary for successful AI adoption. These findings can inform policymakers about the critical gaps in training, infrastructure, and institutional direction that must be addressed to ensure that AI tools are used effectively and responsibly in the classroom.

Furthermore, the research underscores the importance of inclusive and evidence-based policy development. By reflecting the voices of faculty members directly involved in teaching and research, it emphasizes the need for collaborative planning that considers both technological possibilities and human factors. Policies developed from this research can promote safe, equitable, and scalable AI practices in education, ensuring that technological innovation supports, rather than disrupts, the teaching and learning process.

The above data provides the following insights:

1) It reveals respondents’ level of AI Integration in Instruction is Partially Integrated, they use AI on the premise that it will prepare their students for future use of AI. However, there is a minimal AI integration in the areas of curriculum planning, assessment, and learning enhancement;

2) The results of the study found out that the teachers have demonstrated a high level of AI dependence in generating research output, especially in the following research processes: synthesizing ideas, reviewing related literature, and performing statistical treatment of data but they manifested moderate to partial dependence in terms of data analytics and in prediction, assumption, and hypothesizing;

3) The correlational treatment of data reveals a weak but positive relationship between the two treated variables which indicates that the higher use of AI in research is associated with slightly higher AI Integration in teaching and learning but this identified relationship is too limited.

4) The qualitative data has found out that while teachers and researchers in college recognize the strong AI potential to further improve instruction and research capabilities, the effective and measurable integration of AI is constrained by the following challenges: capacity building, ethics, policy framework, mindset of faculty, and interdisciplinary collaboration. This emphasizes the need for a more holistic, human-centered AI optimization plan and data-driven policies and frameworks.

In the light of these findings, this research recommends:

1. To bridge the identified gaps in AI utilization, colleges and universities must develop and implement targeted professional development and interventions concentrating on AI integration in the areas of curriculum planning e.g. syllabi making, assessment (quizzes and major examinations and authentic assessment tools), and learning enhancement instead of limiting the discussions on AI use for future skills preparation;

2. Colleges and Universities administrators must provide technical leadership to guide teachers in using AI so that they will not become too reliant in doing research tasks through strengthening their skills and competencies in data analytics, critical prediction, and theory-building through more well-thought-out research development training;

3. School leaders should design intentional strategies that explicitly bridge AI use in research with classroom pedagogy to strengthen the currently weak link between research dependence and instructional integration.

4. Policymakers and academic administrators should establish a holistic, human-centered AI framework that addresses capacity building, ethical use, institutional policy support, faculty mindset, and interdisciplinary collaboration.

ЖАСАНДЫ ИНТЕЛЛЕКТКЕ НЕГІЗДЕЛГЕН ОҚЫТУ ЖӘНЕ ЗЕРТТЕУ ЖАСАҚТАУ: ЖОҒАРЫ БІЛІМ БЕРУ САЯСАТЫНА ҚАТЫСТЫ МӘСЕЛЕЛЕР ЖӘНЕ АІ-ДЫ ОҢТАЙЛАНДЫРУ ЖОСПАРЫ

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Аңдатпа. Жасанды интеллектіні (АІ) адам өмірінің көптеген салаларында, әсіресе жоғары білім беруде — оқыту мен ғылыми зерттеуде қолдану ХХІ ғасырда кеңінен таралған. Бұл зерттеуде 64 жоғары оқу орны оқытушысының қатысуымен аралас әдіс (mixed method) пайдаланылып, оқыту мен оқу үдерісіндегі АІ интеграциясының деңгейі, сондай-ақ ғылыми зерттеу нәтижелерін қалыптастыруда АІ қолдану дәрежесі зерттелді.

Деректер оқытушылардың оқыту процесіне АІ-ды ішінара енгізгенін көрсетті. АІ көбінесе студенттерді болашақтағы АІ қолдануға даярлау құралы ретінде пайдаланылатыны анықталды. Алайда оқу бағдарламасын жоспарлау, бағалау және оқу жетістіктерін жетілдіру салаларында АІ интеграциясы төмен деңгейде екені байқалды.

Оқытудағы нәтижелерден айырмашылығы, респонденттер ғылыми жұмыстарды дайындауда АІ-ға жоғары деңгейде тәуелділік танытқан. Әсіресе идеяларды синтездеу, әдебиеттерге шолу жасау және деректерді статистикалық өңдеу барысында АІ белсенді қолданылған. Ал деректерді талдау, болжау және гипотеза ұсыну салаларында АІ-ға тәуелділік орташа және ішінара деңгейде болған.

Spearman's rho корреляциялық талдауы ($\rho = 0.30$) АІ-ға ғылыми тәуелділік пен оқытудағы интеграция арасында төмен оң байланыс бар екенін көрсетті. Бұл АІ-ды зерттеуде көбірек қолдану оқыту үдерісінде оны аздап көбірек енгізумен байланысты екенін дәлелдейді. Дегенмен жүйелік, педагогикалық және саясатқа қатысты шектеулер ескерілуі тиіс.

Сапалық талдау нәтижелері (7 қатысушы) АІ интеграциясына қатысты көпқырлы көзқарастарды көрсетті. Негізгі тақырыптар: кешенді әлеуетті арттыру қажеттілігі, АІ қолданудағы этика, институционалдық саясат пен нормативтік негіздерді әзірлеу, мұғалімдердің кәсіби ұстанымы, өлшенетін АІ бастамалары және пәнаралық ынтымақтастық.

Зерттеу нәтижелері жоғары білім беру жүйесінде АІ енгізудің әлеуеті мен шектеулерін айқындады. Зерттеудегі АІ құзыреттілігі оқыту интеграциясын қолдауы мүмкін, бірақ ол кең әрі тиімді қолдануды толық қамтамасыз ете алмайды. Нәтижелер АІ қолдану бойынша инклюзивті кәсіби даму бағдарламаларын, нақты саясаттық негіздерді және анықталған мәселелерді шешуге бағытталған кешенді тәсілдерді әзірлеудің маңыздылығын дәлелдейді.

Түйін сөздер: жасанды интеллект, оқытуға интеграциялау, зерттеуге тәуелділік, жоғары білім, кәсіби даму.

ОБУЧЕНИЕ И ГЕНЕРАЦИЯ ИССЛЕДОВАНИЙ С ИСПОЛЬЗОВАНИЕМ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА: ПОЛИТИЧЕСКИЕ АСПЕКТЫ ВЫСШЕГО ОБРАЗОВАНИЯ И ПЛАН ОПТИМИЗАЦИИ ИИ

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Аннотация. Использование искусственного интеллекта (ИИ) во многих сферах жизни человека, особенно в высшем образовании — в преподавании и научных исследованиях —

стало широко распространённым в XXI веке. В данном исследовании применялся смешанный метод (mixed method) с участием 64 преподавателей высшего образования для изучения уровня интеграции ИИ в процесс преподавания и обучения, а также его использования при подготовке научных работ.

Полученные данные показали, что интеграция ИИ в преподавание осуществляется частично. Чаще всего ИИ используется как средство подготовки студентов к будущему применению технологий ИИ. В то же время в таких областях, как планирование учебных программ, оценивание и улучшение учебного процесса, интеграция ИИ остаётся минимальной.

В отличие от результатов в сфере преподавания, респонденты продемонстрировали высокий уровень зависимости от ИИ при подготовке научных публикаций, особенно в синтезе идей, обзоре литературы и статистической обработке данных. Однако в областях анализа данных, прогнозирования и выдвижения гипотез наблюдалась умеренная или частичная зависимость от ИИ.

Корреляционный анализ Спирмена ($\rho = 0,30$) выявил низкую положительную связь между зависимостью от ИИ в исследованиях и его интеграцией в преподавание. Это означает, что более активное использование ИИ в научной работе связано с несколько более высокой интеграцией ИИ в образовательный процесс. Тем не менее системные, педагогические и нормативные ограничения требуют учёта.

Результаты качественного анализа (7 участников) позволили выявить многомерные аспекты интеграции ИИ. Ключевые темы включают необходимость комплексного развития потенциала, соблюдение этики при использовании ИИ, разработку институциональной политики и нормативных рамок, формирование профессионального мышления преподавателей, реализацию измеримых инициатив в области ИИ и развитие междисциплинарного сотрудничества.

Исследование подтверждает как высокий потенциал, так и существующие ограничения внедрения ИИ в высшем образовании. Хотя компетентность в использовании ИИ для научной работы может способствовать интеграции ИИ в преподавание, этого недостаточно для обеспечения значимого и инклюзивного применения. Полученные данные подчёркивают необходимость разработки инклюзивных программ профессионального развития, чёткой нормативной базы и комплексных подходов для преодоления выявленных проблем.

Ключевые слова: искусственный интеллект, интеграция в преподавание, зависимость в исследованиях, высшее образование, профессиональное развитие.

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