European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available online at: www.oapub.org/edu

DOI: 10.46827/ejes.v12i2.5811 Volume 12 | Issue 2 | 2025

ARTIFICIAL INTELLIGENCE (AI) IN THE HIGHER EDUCATION INSTITUTIONS (HEIS) PRACTICES: A TRANSFORMATION TRENDS IN TEACHING AND LEARNING

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Abstract:
The study aims to identify the Artificial Intelligence (AI) of higher education institutions (HEIs) practices as a basis for transformation trends in teaching and learning. Mixed methods are utilized through triangulation of Focus Group Discussion (FGD) in the process of the study. Likewise, convenience sampling is employed in gathering the population size of the study. The study comprised one hundred twenty-five (125) respondents only. Results show that transformation trends of artificial intelligence in teaching and learning in higher education institutions advance the soft skills, knowledge, and remote learning platform in the educational system, show that digital learning platforms define learning destination sites and learning management systems, show that powered learning environment personalized learning experience of AI contribution in education to meet the needs of students' learning styles show that adaptive learning integrates technique platforms such as progress of teaching and learning, assessment result, and interaction for the transformation trend in the educational system, show that automated assessment identifies and designs the best performance criteria for transformation trends in teaching and learning impact decision of AI, and show that wearable technology improves and provides increased productivity and punctuality for educational spheres and benefits of technology. Findings show that there is a significant

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agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions as observed among the respondents.

Keywords: artificial intelligence in higher education institutions and transformation trends of teaching and learning

1. Introduction

The trend of artificial intelligence at present in teaching and learning is alarming especially in the various educational institutions (Labib, 2024). It has a transformation in the increase focused on personalized learning of students in the higher education institutions based on the concept, theory and educational system framework (Mallillin, 2023, pp. 1-17). It is the biggest trend in analyzing the performance of students. It develops rapid technology and impacts in revolutionary artificial intelligence in all walks of teaching and learning. It provides deep integration directions and ideas of artificial intelligence transformation of teaching patterns adapted to advanced technology development (Mallillin, Canda, & Caday, 2024). It spawns with teaching and learning classroom settings relevant to the trends and development of artificial intelligence in the educational system and practice (Mallillin & Caday, n.d.). It explores the utilization of artificial intelligence that penetrates teaching and learning. This includes the utilization of artificial intelligence and development method analysis in the academic performance of students (Zhu, Li, & Bao, 2024). On the other hand, the transformation and trends of artificial intelligence in teaching and learning increase and suggest ability for the learners' academic performance (Mallillin, 2022, pp. 99-121). It is one of the programs of higher education institutions to examine the aided learning of artificial intelligence in the educational system application in a wide range of processes and systems (Ratten, 2024, pp. 286-293). Artificial intelligence is beneficial in the quality and effect of quality instructions. It enhances the offers of artificial intelligence in the educational system and instruction process based on professional development quality of education (Mallillin & Laurel, 2022). It features the condition and impact of artificial intelligence transformation and trends in teaching and learning (Fountis & Lemonakis, 2023, pp. 191-201).

On the other hand, the transformation of artificial intelligence in higher education institutions in teaching and learning integrates the value and change among students as centers of learning (Oyekunle & Boohene, 2024). It adopts the artificial intelligence structure and tradition of the educational system embodied with the trends of technology for effective teaching and instruction (Mallillin, 2024, pp. 120-132). The transformation analyzes the implementation, solution, difficulties, and adoption rate of artificial intelligence in the educational system. It is demonstrated in the impact and tangible facet of digital technology through AI, which is supported by educational institutions (Kumar *et al.* 2024). The transformation of artificial intelligence indicates the integration of teaching and learning, which plays a crucial role in the digital technology potentials of students as centers of learning in higher education institutions based on the domains of

learning (Mallillin, 2020, pp. 1-11). It collaborates artificial intelligence tailored to the student learner's efficiency and interests (Lakshmi *et al.* 2023). On the other hand, the transformation of artificial intelligence and trends in teaching and learning reveal the competency of lecturers in dealing with the new technology approach and structure of teaching strategy (Mallillin *et al.,* 2021). It provides opportunities and challenges for the lecturers in the traditional learning of students (Katsamakas *et al.,* 2024). It replaces the role of lecturers in guiding the routine tasks of students and develops students' motivation due to artificial intelligence function learning process competency skills and performance from the lecturers (Mallillin & Mallillin, 2019). It builds an atmosphere for better teaching and learning based on the needs of students as centers of learning. It includes the psychological behavior of students, autonomy involvement, and the need for competency transformation trends in teaching and learning. It introduces the significant contribution of artificial intelligence in the learning outcome and educational paradigm system process in higher education institutions (Nuruddaroini *et al.,* 2024, pp. 725-733).

Apparently, the role and contribution of artificial intelligence in teaching and learning encompasses an adaptive learning platform and tutoring system to support individualized learners. It caters to professional lecturers or educators in the planning program and feedback for teaching and learning (Dhyani *et al.* 2024, pp. 1-9). It provides understanding in teaching and learning on the advanced technology and artificial intelligence process among students. It develops to understand the role of artificial intelligence in the global trend of teaching and learning approaches (Mallillin, n.d.). It is necessary to implement and design an artificial intelligence-related curriculum and resources for the school. Artificial intelligence adopts the curriculum system context process of the educational system literacy program of education and artificial intelligence (Arini & Nursa'ban, 2024, pp. 39-45). It examines the competency of utilizing artificial intelligence transformation and trends in the educational system in teaching and learning. It engages proper teaching and learning support and the concept of AI (Sanusi *et al.* 2022). In addition, the role of artificial intelligence in teaching and learning explores the application of modern challenges to the academic performance of students in higher education institutions (Mustafa *et al.* 2024, pp. 12-22). It creates access to teaching and learning trends and the transformation of artificial intelligence, such as tutoring systems and smart learning integration literacy strategy (Mallillin, n.d.). It embraces the teaching and learning method in the modern trend and necessary technology. It organizes AI and adopts technologies in the teaching and learning process. It is the most trending in the higher education institutions that has a substantial impact on teaching and learning. It is an indispensable cliche in the educational system and a hurdle in teaching and learning transformation trends. It implements the ever-changing artificial intelligence in the educational system coupled with advanced technology (Ahmad *et al.* 2021).

Finally, the emerging trends of AI advancement in teaching and learning include federated learning, modality learning, knowledge distillation, and adversarial networks of learning. It is the most pressing teaching and learning in the educational system. It

helps in the improvement of the quality of education alternatives in resolving democratic and polarization of education among students. Artificial intelligence is a lifelong trend and transformation in the educational system, particularly in the program curriculum of higher education institutions. It transforms the educational process in teaching and learning development, that will result in a better learning process in the academic achievement of students. It fosters better teaching and learning in the school system, such as digital literacy on educational platforms. It collaborates with adaptive learning systems and experiences. It presents a lifelong classification of educational innovation systems (Lee & Choi, 2021, pp. 191-205). In contrast, the emerging trends of artificial intelligence in teaching and learning are progressively changing in the educational system. It advances the educational system for the possibility of bringing versatility in teaching and learning. It provides a phenomenon in the utilization of artificial intelligence and advancement in education. It recognizes the entity of teaching and learning in the academic environment and smart tools. It constructs and strives to provide solutions and best for the emerging trend of AI utilization. It develops solutions to the challenges of teaching and learning on the right track. It produces a better result in the teaching and learning stages of students' academic performance. It encompasses the application of AI in the effect of quality education. It provides methods for teaching. It supports students in the learning process to obtain academic excellence (Kaur, Tandon, & Matharou, 2020, pp. 89-103).

2. Statement of the problem

1) What are the transformation trends of artificial intelligence in teaching and learning in higher education institutions among the respondents?
2) How does artificial intelligence in higher education institutions provide transformation and trends in teaching and learning among the respondents?
3) As observed among the respondents, is there a significant agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions?

2.1 Hypothesis

As observed among the respondents, there is significant agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions.

3. Research design

A mixed methods research design is employed in the study with triangulation of Focus Group Discussion (FGD) in analyzing and identifying the artificial intelligence of higher education institutions (HEIs). The result of the FGD identifies both quantitative and qualitative research processes. Quantitative research designs cope with the transformation trends of artificial intelligence in teaching and learning in higher

education institutions among the respondents in the area of digital learning platforms, powered learning environments, adaptive learning, automated assessment, and wearable technology among the respondents while the result of qualitative research design resulted on the formation of how artificial intelligence in the higher education institutions provides transformation and trends in teaching and learning among the respondents.

Hence, mixed methods have been defined as the intuitive approach for FGD to provide results of both quantitative and qualitative investigation method applications. It is the approach to regulate both quantitative and qualitative research processes. It includes a collection of data in the present investigation. It determines the role of mixed methods and deliberation for triangulation purposes (Battista & Torre, 2023, pp. 585-587).

2.3 Sampling techniques

Convenience sampling is employed in the selection of the population size of the study based on the pre-defined criteria. It is a non-probability sampling method that collects data for easy access among a group of people. It represents the selected population size in the research accessibility. It is often used for both quantitative and qualitative research. It also involves selecting participants who are easy and available during the process of research (Simkus, 2022).

2.4 Participants of the study

The participants of the study are the selected lecturers, teachers, professors, deans, principles, heads, and coordinators of the various educational institutions such as the Commission on Higher Education (CHED), Technical Education Skills and Development Authority (TESDA), and Department of Education (DepEd). This is based on the pre-defined criteria set in the study. The study comprised one hundred twenty-five (125) respondents only.

3. Results

3.1 On the transformation trends of artificial intelligence in teaching and learning in higher education institutions among the respondents

Table 1 presents the weighted mean and the corresponding interpretation on the transformation trends of artificial intelligence in teaching and learning in higher education institutions as observed among the respondents.

Table 1: Transformation Trends of AI in Teaching and Learning in the HEIs Among the Respondents

Indicators	WM	I	R
1. It improves and provides increased productivity and punctuality for educational spheres and the benefits of technology.	4.15	A	3.5
2. It integrates adaptive learning technique platforms such as the progress 3. of teaching and learning, assessment results, and interaction for the transformation trend in the educational system.	3.93	A	8
4. It revolutionizes the AI assessment process transformation trends for instant improvement and continuous learning	3.69	A	11
5. It advances the soft skills, knowledge, and remote learning platform in the educational system.	4.21	SA	1.5
6. It reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, and learning transformation.	3.38	MA	14.5
7. It manages the function of AI technology, tracking various forms of educational transformation trends in teaching and learning.	4.09	A	5.5
8. It provides a system for adaptive learning context support and provides intelligent feedback on teaching and learning transformation trends.	3.60	A	12
9. It delivers a wide range of automated assessments in the educational setting and method transformation trends in teaching and learning engagement.	4.21	SA	1.5
10. It defines digital learning platforms such as learning destination sites and learning management systems.	3.87	A	9
11. It creates an immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation.	3.38	MA	14.5
12. It identifies and designs the best performance criteria for transformation trends in teaching and learning impact decisions of AI.	4.09	A	5.5
13. It provides devices on electronic technology for AI to implement transformation trends in the educational system device in a real-time process.	3.57	A	13
14. It personalized the learning experience of AI contribution in education to meet the needs of students' learning styles.	4.00	A	7
15. It changes the action of adaptive learning in AI to fit the needs of transformation and trends in teaching and learning conditions.	3.79	A	10
16. It offers a students portal of educational resources, content, and opportunities in learning, such as self-paced learning, critical thinking, communication, and improved technical skills.	4.15	A	3.5
Average Weighted Mean	**3.874**	**A**	
Standard Deviation	**0.291**		

It shows in the table that rank 1 is shared by the two indicators, which are "It advances the soft skills, knowledge, and remote learning platform in the educational system", and "It delivers a wide range automated assessment in the educational setting method transformation trends in teaching and learning engagement", with a weighted mean of 4.21 or Strongly Agree which means that the transformation trends of AI in HEIs among the respondents is highly observed. Rank 2 is shared by the two indicators, which are "It improves and provides increased productivity and punctuality for educational spheres and benefits of technology", and "It offers a students' portal of educational resources, content, and opportunity in learning such as self-paced learning, critical thinking, communication, and improved technical skills", with a weighted mean of 4.15 or Agree which means that the transformation trends of AI in HEIs among the respondents is observed. Rank 3 is also shared by the two indicators, which are "It manages the function

of AI technology tracking in various forms of educational transformation trends in teaching and learning", and "It identifies and designs the best performance criteria for transformation trends in teaching and learning impact decision of AI", with a weighted mean of 4.09 or Agree which means that the transformation trends of AI in HEIs among the respondents is observed. The lowest in rank is also shared by the indicators which are "It reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, and learning transformation", and "It creates immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation", with a weighted mean of 3.38 or Moderately Agree which means that the transformation trends of AI in HEIs among the respondents is limited. The overall average weighted mean is 3.874 (SD=0.291), or Agree on the transformation trends of artificial intelligence in teaching and learning in higher education institutions as observed among the respondents.

3.2 On how artificial intelligence in higher education institutions provides transformation and trends in teaching and learning among the respondents

Presented here is the result of the theme analysis and core ideas on artificial intelligence in higher education institutions' transformation and trends in teaching and learning among the respondents. The response of the respondents is categorized as follows: 5.00-4.20 = Strongly Agree (SA), 4.19-3.40 = Agree (A), 3.30-2.60 = Moderately Agree (MA), 2.59-1.80 = Disagree (D), 1.79-1.00 = Strongly Disagree (SD). Text verbatim is also included in the thematic analysis and core ideas for concrete analysis of data.

Table 2: Thematic Analysis and Core Ideas on the AI in HEIs Transformation and Trends in Teaching and Learning Among the Respondents

Themes		Response of the Respondents	Core Ideas
1.	Digital learning platforms	Agree	● Improved technical skills ● Learning management system ● Advances the soft skills
2.	Powered learning environment	Agree	● Personalized learning experience ● Revolutionizes the AI assessment ● Immersive interactive learning
3.	Adaptive learning	Agree	● Integrates adaptive learning technique platforms ● Changes the action of adaptive learning ● Provides a system for adaptive learning
4.	Automated assessment	Agree	● Design the best performance criteria ● Reduces the predictable technology automation ● Delivers a wide range of automated assessment
5.	Wearable technology	Agree	● Improves increased productivity ● Manages the function of AI ● Provides devices on electronic technology

3.3 Digital learning platforms

The digital learning platforms in the transformation and trends of artificial intelligence in teaching and learning open the paradigm in the educational system impact. It ensures the capability of the lecturers in teaching and learning. It identifies the proper challenges of digital learning platforms to engage the tool of AI among students' learning as centers in the education system. AI provides the demands of digital platforms according to the needs of students. It involved globalized-driven technology teaching and learning. It empowers artificial intelligence and augmented reality to the trends and transformation of teaching and learning. This considers the benefit of digital platforms in the transformation of knowledge and learning skills (Bujang *et al*., 2020, p. 13). The participants claim that:

> *"It offers a students' portal of educational resources, content, and opportunity in learning such as self-paced learning, critical thinking, communication, and improved technical skills."* (T1, P103 & P14)

> *"It defines digital learning platforms such as learning destination sites and learning management systems."* (T1, 99 & P18)

> *"It advances the soft skills, knowledge, and remote learning platform in the educational system."* (T1, P95 & P19)

3.4 Powered learning environment

Powered learning environment for AI in the transformation trend of teaching engages in innovative learning practice in the educational system. It designs and progresses the favor discourse and collaboration of the lecturers in the different concepts of the powered learning environment. It produces and illustrates the pedagogical learning environment to deploy and respond to AI-powered learning environments which leads to transformation and trends in teaching. It provides a commitment to a collaborative teaching arrangement and practices in higher education institutions. It examines the power learning process and mechanism, especially the contribution of artificial intelligence in the transformation trends in teaching potentials (Nelson & Charteris, 2024, pp. 1-17). The participants claim that:

> *"It personalized the learning experience of AI contribution in education to meet the needs of students' learning styles."* (T2, P109 & P10)

> *"It revolutionizes the AI assessment process transformation trends for instant improvement and continuous learning."* (T2, P101 & P11)

> *"It creates an immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation."* (T2, 91 & P17)

3.5 Adaptive learning

Adaptive learning in the transformation trends of teaching and learning as perceived by artificial intelligence advances the content and practice of learning among students as centers of learning. It finds the path for the challenges, trends and transformation of teaching and learning content. It streamlines the learning path of students systematically in the achievement of academic performance goals. It proposes an adaptive learning strength and approach to building the focused knowledge learning performance of students as centers of learning. It analyzes the dynamic and static parameters of teaching and learning transformation trends for artificial intelligence contribution to the teaching process. It provides resources on the level of difficulty of learning analysis and the performance of students (Raj & Renumol, 2024, pp. 121-148). The participants claim that:

> *"It integrates adaptive learning technique platforms such as the progress of teaching and learning, assessment result, and interaction for the transformation trend in the educational system."* (T3, P112 & P7)

> *"It changes the action of adaptive learning in AI to fit the needs of transformation and trends in teaching and learning conditions."* (T3, P109 & P13)

> *"It provides a system for adaptive learning context support and provides intelligent feedback in teaching and learning transformation trends."* (T3, P103 & P14)

3.6 Automated assessment

The contribution of AI in the automated assessment for transformation trends in teaching and learning assists students in preparing the concept of academic performance. It processes the continued model and rapid development of artificial intelligence automated assessment for the summative and formative learning process. This is to measure the capability of students in the learning process. Assessment can help the educational system to improve the curriculum based on the needs of students as centers of learning. It is a natural process based on the goals set by the higher education institutions' curriculum and development. It automates the immense potential rapid assessment of text-based feedback in the educational system, such as the processing framework, input, output, and throughput (Gao *et al.* 2024). The participants claim that:

> *"It identifies and designs the best performance criteria for transformation trends in teaching and learning impact decision of AI."* (T4, P112 & P10)

> *"It reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, and learning transformation."* (T4, P109 & P113)

> *"It delivers a wide range automated assessment in the educational setting method transformation trends in teaching and learning engagement."* (T4, P105 & P18)

3.7 Wearable technology

Wearable technology in the artificial intelligence utilized for the transformation in teaching and learning trends in higher education institutions offers immense potential for digital technology to enhance collaborative, interactive, and immersive learning. It provides devices for ready teaching and learning to improve academic performance of students to the fullest. It is associated with the advanced technology to equip students as centers of learning. It provides innovation in the educational system through advanced technology, such as teacher attitudes and study habits of students. It signifies the challenges of education related to wearable technology. It determines the contribution of wearable technology in the educational system and personal innovation and influences teaching and learning transformation trends (Almusawi & Durugbo, 2024). The participants claim that:

> *"It improves and provides increased productivity and punctuality for educational spheres and benefits of technology."* (T5, P112 & 8)

> *"It manages the function of AI technology tracking in various forms of educational transformation trends in teaching and learning."* (T5, P107 & P12)

> *"It provides devices on electronic technology for AI to implement transformation trends in the educational system device on the real-time process."* (T5, P103 & P17)

3.8 On the significant agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions as observed among the respondents

Table 3: Test of Significant Agreement on the Transformation Trend of AI in Teaching and Learning for HEIs among the Respondents

Test of Variables	Computed z value	Interpretation	Decision
Significant agreement on the transformation trends of Al intelligence in teaching and learning in the HEIs as observed among the respondents	80.29123321	Significant	Non-acceptance of HO

Note: One-tailed test at 0.05 level of significance with a critical z value of ± 1.96.

Table 3 presents the test of significant agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions as observed among the respondents.

It shows in the table that when the variables are tested on the significant agreement transformation trends of artificial intelligence in teaching and learning in the higher education institutions as observed among the respondents, it reveals that the computed z value is higher than the critical z value of ± 1.96 which resulted to significant in each relationship and non-acceptance of the null hypothesis. Therefore, as observed among

the respondents, there is a significant agreement on the transformation trends of artificial intelligence in teaching and learning in higher education institutions.

4. Discussion

It shows that transformation trends of artificial intelligence in teaching and learning in higher education institutions, as observed among the respondents, advance the soft skills, knowledge, and remote learning platform in the educational system. It delivers a wide range of automated assessments in the educational setting and method transformation trends in teaching and learning engagement. It also shows to improve and provide increased productivity and punctuality for educational spheres and benefits of technology.

It offers a students' portal of educational resources, content, and opportunities in learning, such as self-paced learning, critical thinking, communication, and improved technical skills. It increases the exciting technology and importance of artificial intelligence in the teaching process. It helps the lecturers to innovate the AI with new insights and content learning (Svoboda, 2024, pp. 1-4). In addition, it also manages the function of AI technology, tracking various forms of educational transformation trends in teaching and learning. It identifies and designs the best performance criteria for transformation trends in teaching and learning impact decisions of AI. It reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, and learning transformation. It creates an immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation. AI delves into reshaping the critical role of educational paradigm-driven technology integration. It highlights the integration and reasons for educational institutions to prepare students in a rapid digital world, such as enhancement of career prospects, promoting critical thinking, improves learning outcomes, personalized learning experiences, and fosters creativity and innovation (Zootzky & Pfeiffer, 2024, pp. 1202-1207).

On the other hand, artificial intelligence in higher education institutions in the area of digital learning platform trends and transformation for teaching and learning offers a students' portal of educational resources, content, and opportunities in learning such as self-paced learning, critical thinking, communication, and improved technical skills. It responds to the design of digital learning platforms and support roles. It interacts with and guides the network technology of teaching and learning. It serves as a digital platform for learning quality and access to equitable teaching and learning in the educational system to motivate and inspire students to enjoy study habits (Mallillin *et al.*, 2020, pp. 1-10). It pursues to take ownership and interest in teaching and learning for the educational system. It provides the full potential for a holistic approach to building the knowledge and platform learning needed in the transition and transformation trends in the system of quality education (Meier, 2021, pp. 217-220). In addition, it defines digital learning platforms such as learning destination sites and learning management systems

and advances the soft skills, knowledge, and remote learning platform in the educational system. It develops the skills in response to the educational process demand in promoting lifelong learning quality of education. It analyzes the framework of teaching and learning identity impact and system. It highlights the framework of digital platform teaching-based strategy and components of learning. The digital platform learning of AI in teaching and learning develops competency and orientation through active learning and teaching strategies. It innovates the practice of core educational system competency development (González-Pérez, & Ramírez-Montoya, 2022).

Moreover, the AI-powered learning environment processes trends and transformation in teaching and learning in higher education institutions, personalized learning experiences and contributions in education to meet the needs of students' learning styles. It delves into the landscape trend and transformation of the educational quality system. It is intricate on the unravelling dynamic AI-powered learning environment shaped with the advanced technology, adaptive management strategies, and pedagogical shifts in teaching and learning (Mallillin & Caranguian, 2023, pp. 131-141). It provides a proper catalyst in the platform of AI-empowered learning access to teaching strategies, challenges in the educational system and solutions. It observes the pedagogical paradigm approach among students as centers of learning. It responds to the learning precedence and interaction to empower the active participation of students in their educational journey. It navigates the evolution of AI-powered learning resources, quality assurance, accessibility and coherence in the educational management system (Andrin *et al.* 2024, pp. 43-49). Nonetheless, the AI powered learning in the educational system trends and transformation in teaching and learning revolutionizes the assessment for instant improvement and continuous learning. It creates an immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation. It accesses the information and distractions of teaching and learning. It competes with the application of AI in teaching and learning trends and transformation. It develops advantages of the goals in AI-powered learning influences and trends. It produces proper teaching strategies and advantages in the changing and progressing environment. It participates in the digital literacy of AI essentiality. It involves the framework of teaching and learning in the educational system equipped with advanced technology (Almufarreh & Arshad, 2023).

Nevertheless, AI adaptive learning in higher education institutions trends and transformation in teaching and learning integrates technique platforms such as the progress of teaching and learning, assessment results, and interaction for the transformation trend in the educational system. It is an educational approach to adaptive learning that provides personalized learning and utilizes the individual students' needs, progress, and preferences. It adjusts and leverages the AI-driven data content, pace of instructions and delivery engagement and performance of students as centers of learning. It adapts learning requirements based on the curriculum of the HEIs to promote efficient and effective learning. It enhances adaptive learning benefits. It becomes a powerful approach for AI adaptive learning to meet the unique preference of the dynamic content

of teaching to the fullest. It analyzes and interprets adaptive learning systems, information experiences, and decision-making in teaching and learning transformation trends in quality education (Gligorea, *et al.,* 2023). In addition, AI adaptive learning changes the action learning fit needs of transformation and trends in teaching and learning conditions. It provides a system for adaptive learning context support and provides intelligent feedback on teaching and learning transformation trends. It revolutionizes AI adaptive learning in the HEIs application and spectrum advancement learning process. It evaluates the strengths and weaknesses of AI adaptive learning preference style to facilitate a personalized creation of learning experiences. It involves adjustment of adaptive learning platforms content based on the individual performance in the learning process. It provides a framework and assistance to guide the concept and comprehension retention of students as centers of learning (Demartini *et al.,* 2024).

Finally, AI automated assessment in the higher education institutions trend and transformation in teaching and learning identifies and designs the best performance criteria of the process in the quality system. It is essential in the achievement of transformation change in teaching and learning to ensure equitable quality of education inclusively. It promotes the learning opportunity framework and concept in education. It attains AI in understanding and gaining students' behavior in the learning process and academic performance assessment. The AI automated assessment improves and holds teaching innovation and development approaches in the educational system for better teaching and learning. It provides a critical learning approach with high-accuracy performance and information. It sustains and interprets the AI automated assessment in accordance with the trends and transformation of the HEIs (Jokhan *et al.,* 2022). In addition, AI automated assessment for the higher education institutions trends and transformation in teaching reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, and learning transformation. It delivers a wide range of automated assessments in the educational setting and method transformation trends in teaching and learning engagement. It utilizes the AI automated assessment to transform the novel offer of the educational system from good, better, and best. It provides the best understanding of students' learning process. It benefits the students' transformation in learning, such as feedback and focus on teaching methods and tasks. It provides concrete assessment in the educational context. It explores the extent of AI automated assessment requirements in the higher education institutions' transformation trends in the quality of teaching and learning (Colonna, 2024, pp. 3-18).

Finally, the AI on wearable technology transformation trend of higher education institutions in teaching and learning improves and provides increased productivity and punctuality for educational spheres and benefits of technology based on implementation (Mallillin *et al.,* 2020). It is a tremendous wearable technology to improve the potential of the educational system and empower the learners and teaching experiences. It displays the present information for wearable technology to monitor students from teaching and learning development applications for AI to the fullest. It features the attitude and behavior of students in the advanced technology as reminders for the progress of

learning. It provides wearable technology in the educational setting for the application and integration of knowledge (Mallillin *et al.* 2020). It draws insights into the challenges and opportunities involved in teaching and learning in the application of wearable technology processes. The wearable technology identifies the actual learning and teaching even the actual concerns on the major designs and challenges of the device implication. The device's implication must be designed to the needs of students as centers of learning (Yanamandra, 2024, pp. 85-104). In addition, wearable technology manages the function of AI technology, tracking various forms of educational transformation trends in teaching and learning. It also provides devices on electronic technology for AI to implement transformation trends in the educational system in real-time process. It emerges on the technological wearable devices in the learning analysis of students from good, better, and best. It increases the wearable technology association and learning outcome. It provides guides for the learning process of students to equip them with quality education. It provides systematic teaching and learning content analysis for students' dimension objectives and procedures (Dong & Miao, 2022, pp. 270-281).

5. Conclusions

It shows that transformation trends of artificial intelligence in teaching and learning in higher education institutions, as observed among the respondents, advances the soft skills, knowledge, and remote learning platform in the educational system where it delivers a wide range of automated assessments in the educational setting method transformation trends in teaching and learning engagement. This includes the increased productivity and punctuality for educational spheres and the benefits of technology, which offers a students portal of educational resources, content, and opportunities in learning such as self-paced learning, critical thinking, communication, and improved technical skills.

On the other hand, it shows that digital learning platforms defines learning destination sites and learning management system where it advances the soft skills, knowledge, and remote learning platform in the educational system, shows that powered learning environment personalizes learning experience of AI contribution in education to meet the needs of students' learning styles where it revolutionizes the AI assessment process transformation trends for instant improvement and continuous learning through immersive interactive learning environment powered by AI for better interaction in the current trend of quality teaching and transformation, shows that adaptive learning integrates technique platforms such as progress of teaching and learning, assessment result, and interaction for the transformation trend in the educational system where it changes the action of adaptive learning in AI to fit the needs of transformation and trends in teaching and learning conditions, shows that automated assessment identifies and designs the best performance criteria for transformation trends in teaching and learning impact decision of AI where it reduces the predictable technology automation for AI simulation assessment to act independently, reasoning, learning transformation, and

shows that wearable technology improves and provides increased productivity and punctuality for educational spheres and benefits of technology where it manages the function of AI technology tracking in various forms of educational transformation trends in teaching and learning.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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References

Ahmad, S. F., Rahmat, M. K., Mubarik, M. S., Alam, M. M., & Hyder, S. I. (2021). Artificial intelligence and its role in education. *Sustainability*, *13*(22), http://dx.doi.org/10.3390/su132212902

Almufarreh, A., & Arshad, M. (2023). Promising emerging technologies for teaching and learning: Recent developments and future challenges. *Sustainability*, *15*(8), 6917. http://dx.doi.org/10.3390/su15086917

Almusawi, H. A., & Durugbo, C. M. (2024). Determinants of teacher attitudes and innovative use of wearable technology. *IEEE Transactions on Learning Technologies*. 17:1428-1439. Retrieved from http://dx.doi.org/10.1109/TLT.2024.3386464

Andrin, G., Kilag, O. K., Groenewald, E., Benitez, J., Dagala, F., & Ubay, R. (2024). Borderless Learning Environments: Impacts on Educational Management Strategies. *International Multidisciplinary Journal of Research for Innovation,*

Sustainability, and Excellence (IMJRISE), *1*(2), 43-49. Retrieved from https://risejournals.org/index.php/imjrise/article/view/41

Arini, D., & Nursa'ban, M. (2024). Contribution of Artificial Intelligence (AI) in Education to Support the Achievement of Sustainable Development Goals (SDGs) 2030. *Jurnal Penelitian Pendidikan IPA*, *10* (Special Issue), 39-45. Retrieved from http://dx.doi.org/10.29303/jppipa.v10iSpecialIssue.8321

Battista, A., & Torre, D. (2023). Mixed methods research designs. *Medical Teacher*, *45*(6), 585-587. https://doi.org/10.1080/0142159x.2023.2200118

Bujang, S. D. A., Selamat, A., Krejcar, O., Maresova, P., & Nguyen, N. T. (2020, April). Digital learning demand for future education 4.0—Case studies at Malaysia education institutions. In *Informatics* (Vol. 7, No. 2, p. 13). https://doi.org/10.3390/informatics7020013

Colonna, L. (2024). Teachers in the loop? An analysis of automatic assessment systems under Article 22 GDPR. *International Data Privacy Law*, *14*(1), 3-18. https://doi.org/10.1093/idpl/ipad024

Demartini, C. G., Sciascia, L., Bosso, A., & Manuri, F. (2024). Artificial Intelligence Bringing Improvements to Adaptive Learning in Education: A Case Study. *Sustainability*, *16*(3), 1347. https://doi.org/10.3390/su16031347

Dhyani, S., Ahmad, I., Gupta, A., Singh, S., Pathak, A. K., & Yamsani, N. (2024, January). Role of Artificial Intelligence in Education Sector. In *2024 IEEE 1st Karachi Section Humanitarian Technology Conference (KHI-HTC)* (pp. 1-9). IEEE.

Dong, Q., & Miao, R. (2022, November). Wearable Devices for Smart Education Based on Sensing Data: Methods and Applications. In *International Conference on Web-Based Learning* (pp. 270-281). Cham: Springer International Publishing. Retrieved from https://link.springer.com/chapter/10.1007/978-3-031-33023-0_24

Fountis, A., & Lemonakis, C. (2023, September). Artificial Intelligence (AI) in Education—Current Trends. In *International Conference on Intelligence Science* (pp. 191-201). Singapore: Springer Nature Singapore. Retrieved from https://link.springer.com/chapter/10.1007/978-981-99-8976-8_18

Gao, R., Merzdorf, H. E., Anwar, S., Hipwell, M. C., & Srinivasa, A. (2024). Automatic assessment of text-based responses in post-secondary education: A systematic review. *Computers and Education: Artificial Intelligence*, https://doi.org/10.1016/j.caeai.2024.100206

Gligorea, I., Cioca, M., Oancea, R., Gorski, A. T., Gorski, H., & Tudorache, P. (2023). Adaptive Learning Using Artificial Intelligence in e-Learning: A Literature Review. *Education Sciences*, *13*(12), 1216. Retrieved from https://doi.org/10.3390/educsci13121216

González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st-century skills frameworks: systematic review. *Sustainability*, *14*(3), 1493. https://doi.org/10.3390/su14031493

Jokhan, A., Chand, A. A., Singh, V., & Mamun, K. A. (2022). Increased digital resource consumption in higher educational institutions and the artificial intelligence role

in informing decisions related to student performance. *Sustainability*, *14*(4), 2377. http://dx.doi.org/10.3390/su14042377

Katsamakas, E., Pavlov, O. V., & Saklad, R. (2024). Artificial intelligence and the transformation of higher education institutions: A systems approach. *Sustainability*, *16*(14), 6118. http://dx.doi.org/10.3390/su16146118

Kaur, S., Tandon, N., & Matharou, G. S. (2020). Contemporary trends in education transformation using artificial intelligence. In *Transforming Management Using Artificial Intelligence Techniques* (pp. 89-103). CRC Press. Retrieved from https://www.taylorfrancis.com/chapters/edit/10.1201/9781003032410-7/contemporary-trends-education-transformation-using-artificial-intelligence-simran-kaur-nidhi-tandon-gurpreet-singh-matharou

Kumar, S., Verma, A. K., & Mirza, A. (2024). *Digital Transformation, Artificial Intelligence and Society.* Spring. Retrieved from https://link.springer.com/book/10.1007/978-981-97-5656-8

Labib, E. (2024). Artificial intelligence in marketing: exploring current and future trends. *Cogent Business & Management*, *11*(1), 2348728. Retrieved from https://doi.org/10.1080/23311975.2024.2348728

Lakshmi, A. J., Kumar, A., Kumar, M. S., Patel, S. I., Naik, S. L., & Ramesh, J. V. N. (2023). Artificial intelligence in steering the digital transformation of collaborative technical education. *The Journal of High Technology Management Research*, *34*(2), https://doi.org/10.1016/j.hitech.2023.100467.

Lee, C. J., & Choi, S. W. (2021). A new normal of lifelong education according to the artificial intelligence and Edutech industry trends and the spread of the UNTACT trend. *Software Engineering in IoT, Big Data, Cloud and Mobile Computing*, 191-205. http://dx.doi.org/10.1007/978-3-030-64773-5_16

Mallillin, L. L. D. (2020). Different Domains in Learning and the Academic Performance of the Students. *Journal of Educational System*, *4*(1), 1-11. http://dx.doi.org/10.13140/RG.2.2.13320.16640

Mallillin, L. L. D. (2022). Teaching and learning intervention in the educational setting: adapting the teacher theory model. *International Journal of Educational Innovation and Research*, *1*(2), 99-121. http://dx.doi.org/10.31949/ijeir.v1i2.2493

Mallillin, L. L. D. (2023). Educational system theory, concept, and framework. *Asian J. Soc. Sci. Leg. Stud*, *5*(1), 1-17. http://dx.doi.org/10.34104/ajssls.023.01017

Mallillin, L. L. D. (2024). Instructional teaching theory: Basis for effective teaching device in learning. *Eureka: Journal of Educational Research*, *2*(2), 120-132. http://dx.doi.org/10.56773/ejer.v2i2.29

Mallillin, L. L. D. Global Approach in Teaching and Learning Theory. *The International Journal of Social Sciences and Humanities Invention 10*(02):7686-7700, http://dx.doi.org/10.18535/ijsshi/v10i02.01

Mallillin, L. L. D. Integrating Literacy Strategy in Uplifting Competency of Students: A Guide for Comprehensive Learning. *The International Journal of Social Sciences and Humanities Invention 10*(07). http://dx.doi.org/10.18535/ijsshi/v10i07.02

Mallillin, L. L. D., & Caday, M. A. T. Educational Leadership Practice Theory in the School System. *British Journal of Arts and Humanities* 6(2), 86-99, http://dx.doi.org/10.34104/bjah.024086099

Mallillin, L. L. D., & Caranguian, R. G. (2023). Management of educational system and practice: A guide to academic transformation. *British Journal Arts and Humanities*, *5*(3), 131-141. http://dx.doi.org/10.34104/bjah.02301310141

Mallillin, L. L. D., & Laurel, R. D. (2022). Professional development system theory for quality education. *European Journal of Education Studies*, *9*(8). Retrieved from http://dx.doi.org/10.46827/ejes.v9i8.4407

Mallillin, L. L. D., & Mallillin, J. B. (2019). Competency skills and performance level of faculties in the higher education institution (HEI). *European Journal of Education Studies*, *6*(9). https://doi.org/10.5281/zenodo.3566454

Mallillin, L. L. D., Cabaluna, J. C., Laurel, R. D., Arroyo, P. A. C., Señoron Jr, T. M., & Mallillin, J. B. (2021). Structural domain of learning and teaching strategies in the academic performance of students. *European Journal of Education Studies*, *8*(9). http://dx.doi.org/10.46827/ejes.v8i9.3902

Mallillin, L. L. D., Canda, E. G., & Caday, A. T. (2024). Adaptability Of Advanced Technology to School Development Program: An Approach to Educational System in Teaching. *European Journal of Education Studies*, *11*(4). http://dx.doi.org/10.46827/ejes.v11i4.5262

Mallillin, L. L. D., Carag, E. A., Mallillin, J. B., & Laurel, R. D. (2020). Integration of knowledge through online classes in the learning enhancement of students. *European Journal of Open Education and E-learning Studies*, *5*(1). http://dx.doi.org/10.5281/zenodo.3890568

Mallillin, L. L. D., Mendoza, L. C., Mallillin, J. B., Felix, R. C., & Lipayon, I. C. (2020). Implementation and readiness of online learning pedagogy: a transition to COVID-19 pandemic. *European Journal of Open Education and E-learning Studies*, *5*(2). http://dx.doi.org/10.46827/ejoe.v5i2.3321

Mallillin, L. T. D., Mallillin, J. B., & Laurel, R. D. (2020). Learning styles: A motivation to study habits of students. *Global Journal of Human-Social Science: Linguistics & Education*, *20*(1), 1-10. Retrieved from https://www.researchgate.net/publication/339644686_Learning_Styles_A_Motivation_to_Study_Habits_of_Students

Meier, E. B. (2021). Designing and using digital platforms for 21st-century learning. *Educational Technology Research and Development*, *69*(1), 217-220. http://dx.doi.org/10.1007/s11423-020-09880-4

Mustafa, G., Urooj, T., & Aslam, M. (2024). Role of artificial intelligence for adaptive learning environments in higher education by 2030. *Journal of Social Research Development*, *5*(3), 12-22. https://doi.org/10.53664/JSRD/05-03-2024-02-12-22

Nelson, E., & Charteris, J. (2024). Shifting power relations in innovative learning environments: implications for initial teacher education and practicum. *Oxford Review of Education*, 1-17. https://doi.org/10.1080/03054985.2024.2320369

Nuruddaroini, M. A. S., Abdullah, M., Abdurrohim, A., Muhammad, F., Fitriani, E., & Fadlillah, N. (2024, January). Learning Transformation: Teachers And the Dynamics of Artificial Intelligence (AI). In *Proceeding of International Conference on Education, Society and Humanity* (Vol. 2, No. 1, pp. 725-733). Retrieved from https://ejournal.unuja.ac.id/index.php/icesh/article/view/8025

Oyekunle, D., & Boohene, D. (2024). Digital transformation potential: The role of artificial intelligence in business. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, *9*(3), 1. Retrieved from http://dx.doi.org/10.26668/businessreview/2024.v9i3.4499

Raj, N. S., & Renumol, V. G. (2024). An improved adaptive learning path recommendation model driven by real-time learning analytics. *Journal of Computers in Education*, *11*(1), 121-148. https://link.springer.com/article/10.1007/s40692-022-00250-y

Ratten, V. (2024). Artificial intelligence, digital trends and globalization: future research trends. *FIIB Business Review*, *13*(3), 286-293. https://doi.org/10.1177/23197145231222774

Sanusi, I. T., Olaleye, S. A., Agbo, F. J., & Chiu, T. K. (2022). The role of learners' competencies in artificial intelligence education. *Computers and Education: Artificial Intelligence*, *3*, https://doi.org/10.1016/j.caeai.2022.100098

Simkus, J. (2022). Convenience sampling: Definition, method and examples. Retrieved from https://www.simplypsychology.org/convenience-sampling.html

Svoboda, P. (2024). Digital Competencies and Artificial Intelligence for Education: Transformation of the Education System. *International Advances in Economic Research*, 1-4. http://dx.doi.org/10.1007/s11294-024-09896-z

Yanamandra, R. (2024). Developing an integrated framework of the application of wearable devices in education. *International Journal of Business Excellence*, *32*(1), 85-104. https://doi.org/10.1504/IJBEX.2024.135923

Zhu, X., Li, C., & Bao, M. (2024). Research on the Application and Future Trends of Artificial Intelligence in Education and Teaching. In *SHS Web of Conferences* (Vol. 187, p. 04017). EDP Sciences. Retrieved from http://dx.doi.org/10.1051/shsconf/202418704017

Zootzky, G., & Pfeiffer, A. (2024). Educational Transformation Through AI: Preparing for A New Era of Learning. In *INTED2024 Proceedings* (pp. 1202-1207). IATED. Retrieved from https://doi.org/10.21125/inted.2024.0382