

Artificial Intelligence Technology Management of Teachers, Learners Motivation and Challenges Encountered

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ABSTRACT: This study explores the integration and management of Artificial Intelligence (AI) technology in private schools located in Calamba City, Laguna, with a specific focus on its influence on teacher practices and learner motivation. The research investigates the current landscape of AI technology implementation, its management strategies, and its effects on both educators and students within the context of private educational institutions. Using a mixed-methods approach, data is collected through surveys, interviews, and classroom observations to capture comprehensive insights into the utilization of AI tools, the management approaches adopted by schools, and the resulting dynamics in teacher engagement and student motivation. The study examines how AI technologies are deployed in various educational activities, such as personalized learning, assessment, and administrative tasks, and assesses their effectiveness in enhancing teaching practices and fostering learner motivation. Furthermore, the research delves into the perspectives of teachers and students regarding the integration of AI technology, including their experiences, perceptions, challenges, and expectations. It explores how teachers perceive AI as a tool for instructional support and professional development, as well as how students respond to AI-driven learning environments in terms of engagement, interest, and motivation. The findings of this study contribute to a deeper understanding of the role of AI in education management and its implications for teacher empowerment and student motivation. The insights derived from this research can inform policymakers, school administrators, and educators on effective strategies for harnessing AI technology to optimize teaching and learning experiences in private schools in Calamba City, Laguna, and beyond.

KEYWORDS: Artificial Intelligence (AI), Private schools, Teacher Practices and Learners Motivation

I. INTRODUCTION

AI was first presented as a subject of study in academia in the 1950s, and until the 2000s, it was a comparatively small area of study. Depending on the type of intelligence (cognitive, emotional, and social) involved, artificial intelligence (AI) can be divided into three main categories: analytical, human-inspired, and humanized AI. Three main groups have been introduced by another classification that takes into account its developmental stage: artificial narrow, general, and super intelligence. Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, perception, and language understanding. The field of AI encompasses various sub-disciplines, including machine learning, natural language processing, computer vision, and robotics. (Cantanaro, Mario 2022). Alan Turing created the Turing machine in the middle of the 20th century, which laid the theoretical groundwork for computation. This was one of his most significant contributions to AI technology. John McCarthy created the Lisp programming language, which is essential for AI research, and coined the phrase "artificial intelligence" in 1956. The MIT Artificial Intelligence Project was co-founded in 1959 by Marvin Minsky and John McCarthy, furthering the fields of neural networks and machine perception research. In 1957, Herbert Simon and Allen Newell unveiled the General Problem Solver, a seminal early artificial intelligence program for solving problems. Their combined efforts during the 1950s and 1960s shaped the field of artificial intelligence and shaped its future course for many years to come. AI is a collaborative and evolving field, and many researchers and scientists from various backgrounds have contributed to its development. As of January 2022, there may have been additional advancements and contributors in the field of AI.

Artificial intelligence (AI) technology has been used in classrooms more and more in recent years. The idea of utilizing and adopting this technology during the COVID-19 pandemic started, because of the pandemic, distance learning has been invented using different modalities: synchronous and asynchronous and as the new normal started in person classes has been added on the modality. AI technology has been utilized to support teachers in monitoring and evaluating student learning as well as in offering pupils individualized learning opportunities. AI technology has also been utilized to give teachers instructional help and to provide feedback on students' performance. It is crucial for educators to comprehend how to properly manage technology in the classroom as AI technology develops and changes. In recent years, the use of AI technology in the classroom has become increasingly popular. AI technology is being utilized to assess the performance of learners in educational activities, and this technology can also be used to motivate learners to perform better (Aggarwal, 2020). Furthermore, AI technology has been found to be an effective tool in providing personalized feedback to learners, which can improve the motivation of learners (Chandra & Kaur, 2019). AI technology can also provide teachers with real-time feedback on the performance of learners, which can help teachers to adjust their teaching strategies to better meet the needs of learners (Kumar et al., 2019).

Administrative tasks like assignment grading and feedback provision are also being automated with the use of artificial intelligence (AI) market research technologies. Massive data sets are being analyzed by AI to look for patterns and insights that could help shape future plans and strategies for education. "ChatGPT is a computer program that is designed to understand and respond to human language in a natural and human-like way. Think of it like a virtual assistant or a chatbot that can understand and respond to written or spoken language. It's been trained on a large dataset of text from the internet and it can be used for a variety of tasks such as answering questions, translating languages, and even writing creative text. For example, it could be used in education to create an intelligent tutoring system that can understand and respond to student inquiries, or in customer service to help people with their questions." (Perez J., 2023) Artificial Intelligence has already permeated many industries, including education. AI is unquestionably beneficial to the education sector, particularly when combined with excellent teaching resources that include instructions and materials (Lee & Koh, 2020). The National AI Roadmap and the National Centre for AI Research (N-CAIR), spearheaded by the Philippine government, show the nation's resolve to adopt AI technology as a strategic direction that calls for curriculum customization in the educational system. However, the term artificial intelligence (AI) refers to a broad range of technologies. For instance, in the Philippines, colleges and universities are beginning to embrace the idea of smart campuses, utilizing next-generation digital infrastructure technologies like big data, cloud access control, machine learning, artificial intelligence, and the Internet of Things (IoT) to enhance operational efficiency and provide convenient experiences for staff and students.

A number of Philippine universities have already started implementing smart campus initiatives. Mariano Marcos State University, for example, received a PHP24.9 million grant from the Commission on Higher Education (CHED) to improve its IT infrastructure. The University of Northern Philippines, on the other hand, has started implementing smart classroom initiatives to improve student access to and quality of learning resources (PNA, 2021; PIA, 2021). AI-infused smart campus technologies provide a number of advantages, including increased campus security, better user interfaces, and the ability to customize living and learning spaces for students. The AI world is vast. A comprehensive compilation of widely used digital tools and resources for educators and learners in higher education, encompassing e-learning platforms, digital pinboards, collaborative tools, and lesson planning applications. Additionally, a significant portion of the student and teacher population now uses Google and other search engines for research; according to 94 percent of teachers, students now associate using Google with "research" (SciJournal, 2022). Flashcard makers are among the additional digital resources and tools available. Educational quiz apps such as Quizlet, citation generators, plagiarism detectors, copywriting tools, and even virtual assistants are examples of digital tools and resources that offer a wealth of information and let teachers and students work together in creative and novel ways, revolutionizing conventional teaching and learning approaches. Surprisingly, the development of AI can help the Philippine education system by improving classroom instruction, faculty training and development, ensuring that teachers have the tools they need to incorporate AI into their instruction approaches necessitate continual support and professional development. AI is now a reality that requires multifaceted solutions rather than just a science fiction endeavor. It is also recognized that educators do not want to be replaced by computer programs. Still, there is a lot of promise in creating virtual human guides and facilitators for use in therapeutic and educational contexts. The goal of this field of study is to produce virtual characters with human-like traits, enabling them to behave, think, react, and interact naturally. The aim of these

virtual humans is to create characters that are hard to tell apart from actual humans. They are made to respond to both verbal and nonverbal communication. Although this technology is still in the early stages of development and may not be available anytime soon, it is an exciting field of study with great potential. The relationship between AI technology management and the motivation of learners is a complex and evolving area within education. Therefore, the following are some of the key aspects of the relationship: personalized learning paths, adaptive learning systems, real time feedback, gamification and rewards, predictive analytic for early intervention, natural language processing, task automation efficiency and innovative learning experiences (Fels, Sydney, 2021). This research study aims to understand the level of management of the teachers using AI technology and the motivation of the learners using AI technology that can develop primer AI technology for instruction. The results of the research will be analyzed to determine the level of management of teachers in using AI technology, the level of motivation of learners, and the correlation between the two. The findings will then be used to develop a primer that can be used to maximize AI technology in instruction. This research is important as it can provide important information on how AI technology is being used in instruction and how it can be used to improve student learning. It can also provide insights into how to better motivate learners and optimize the use of AI technology in instruction. The utilization of AI technology education in the Philippines suggests an opportunity for future investigation to explore and advance this area, potentially contributing to the country's technological landscape and development.

Background of the Study : Artificial Intelligence (AI) is a compelling and transformational force that is permeating every aspect of our modern world amidst the rapidly changing environment of technology. The history of artificial intelligence is one of creativity, advancement, and limitless possibilities. (Moorhouse, B.L, 2023) The researcher selected this study due to the increasing integration of AI in educational settings, coupled with the unique characteristics of private schools in the mentioned city. Private schools, often at the forefront of educational innovations, play a pivotal role in shaping the learning experiences of students. Understanding how AI is managed in assessment practices by teachers and its influence on learner motivation is crucial for both educators and policymakers.

The study intends to add to the body of knowledge by illuminating the unique potential and difficulties related to using AI in evaluation procedures in the context of private schools. By concentrating on Calamba City, the researcher hopes to offer insights that are transferable to other educational systems dealing with comparable dynamics of technological integration and varied student populations, in addition to being culturally relevant. The researcher is currently a senior high school faculty member who uses artificial intelligence (AI) in his teaching. Our university encourages faculty members and students to use AI in their research and assignments. Everyone is encouraged to use technology since our university welcomes innovation in this field. According to the researcher's observations, the majority of students in senior high school use artificial intelligence (AI) technology, which is a very helpful tool for both teachers and students. In fact, the technology can be used in daily academic settings. However, AI technology has its own advantage and disadvantages based on the observation of the researcher and it was listed below:

Advantages

Individualized Learning. In order to provide a more successful and individualized educational experience, individualized learning refers to a customized educational method made to fit the unique needs, pace, and preferences of each learner.

Routine task automated. AI can be used to automate tasks like developing lesson plans and grading papers. This can take up teachers' time so they can concentrate on more vital assignments and provide kids character attention.

New learning experience. AI may be utilized to provide new getting-to-know- you reports that were previously impractical. AI might be utilized, for instance, to develop virtual fact simulations that let university students experience first-hand scientific phenomena or historical occurrences.

24/7 Accessibility. Ai technology can be access anytime of any day.

Disadvantages

Lack of interpersonal skills. While studying, students require some directed aid, particularly the younger ones who need to grow holistically. Teachers are necessary to guarantee that learners have a comprehensive learning

experience because AI is unable to address the needs of young learners on its own.

Bias. Biased AI systems have the potential to treat learners unfairly. To make sure AI structures are impartial once more, it is imperative to compare them thoroughly.

Privacy. AI systems gather a lot of data on university students. These documents can be used to track the private habits and preferences of students as well as to monitor their progress as musicians. When using AI structures, it is imperative to protect students' privacy. But there are drawbacks to using AI in the classroom as well. Concerns include the possibility of problems with data privacy, the possibility of biases in the algorithms being reinforced, and the requirement for continual professional development to guarantee instructors are prepared to use AI in the classroom. Optimizing the advantages of artificial intelligence (AI) while minimizing any potential downsides requires striking a balance between technical innovation and preserving the human element in education.

The researcher chooses three (3) well known universities in Calamba City Laguna namely: Lyceum of the Philippines University Laguna, STI College Calamba and National University Laguna. The said universities in Calamba City Laguna were using AI technology of their faculty members as their instructional material, it is a big help for them to using this as a means tool for education in able for the faculty provide a concrete information of their respective lessons. There are 33 (17 Grade 11 and 16 Grade 12) faculty members at Lyceum of the Philippines University working in the senior high school department. A total of 290 students enrolled in LPU for the school year 2023-2024. Since LPU strongly encourages all of its faculty and students to maximize the usage of AI technology as their learning materials, the majority of its faculty members use it in their innovative and lesson- planning efforts. They have been using AI technology for more than a year. There are 25 (15 Grade 11 and 10 Grade 12) faculty members in the senior high school department at the STI College Calamba Campus, and there are 615 senior high school students enrolled for the school year 2023-2024. Due to STI College's use of artificial intelligence as a teaching tool and promotion of cutting-edge technology in the classroom, both teachers and students are required to use AI technology.

National University Laguna has a total number of 34 (16 Grade 11 and 18 Grade 12) faculty members under the senior high school department, and there are 612 senior high school students enrolled for the school year 2023-2024. Majority of both faculty and students are maximizing their AI technology and mandatory for them to use it as it is their means on their lessons. Motivated by a multifaceted rationale, the researcher set out to conduct an extensive investigation of AI Technology Management and Learner Motivation. First and foremost, the study aims to advance the rapidly developing subject of AI technology management in the context of education. Furthermore, by elucidating the complex relationship between AI and student motivation, it hopes to spur innovation in teaching and learning methodologies. In order to improve learner motivation, the research goes beyond theoretical understanding in pursuit of workable solutions for the smooth integration of AI in the classroom. Entering the field of learning experience optimization, the research investigates how artificial intelligence (AI) might be used to improve educational procedures and enhance students' achievement in general and well-being in particular. Additionally, by utilizing AI-driven tailored techniques, the research hopes to solve common issues in education, notably various learning demands and styles. Since ethical issues are of the utmost importance, research into the appropriate and moral application of AI in education is necessary to navigate both the technology's potential benefits and drawbacks. Furthermore, the study hopes to be a major contribution to the creation of best practices, guidelines, and educational regulations pertaining to AI in learning environments. Lastly, by providing nuanced insights into the complex link between AI, teaching approaches, and learner motivation, the research aims to close current knowledge gaps in comprehending the evolving effects of AI on education.

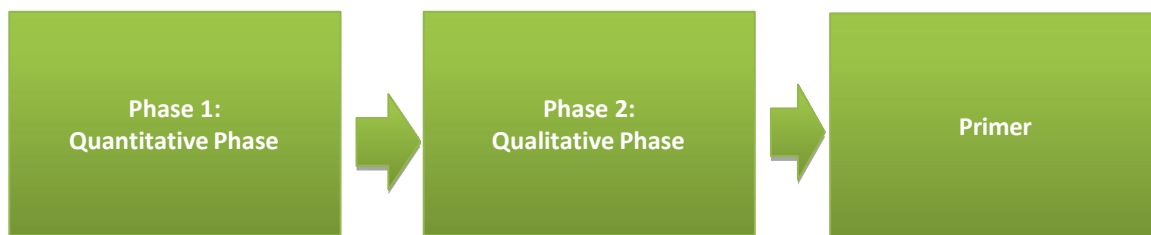
Theoretical/Conceptual Framework : This study intends to investigate how students' process of developing knowledge is impacted by the incorporation of artificial intelligence (AI) technology, drawing on constructivism, which emphasizes the active involvement of students in constructing their knowledge. This viewpoint, which emphasizes the value of students actively engaging with content and learning materials, is consistent with constructivism. The Self-Determination Theory (SDT), a motivational theory created by Deci, Edward L, and Ryan, Richard M. (1980) is used by the study to analyze student motivation. According to SDT, pupils who feel competent, linked, and autonomous are more likely to thrive academically. An extensive analysis of the effects of AI use on students' intrinsic motivation and general academic engagement is made possible by the application of SDT.

The study uses the Technology Acceptance Model (TAM), developed by Fred Davis in 1989, to evaluate instructors' acceptance of AI in assessment management. With a focus on perceived utility and ease of use, TAM investigates the elements that affect users' decisions to accept or reject a technology. The research uses TAM in order to investigate instructors' attitudes and actions regarding the use of AI tools in assessment procedures. Addressing the management component, the study references techniques from Organizational Change Management (OCM) to analyze how schools negotiate the integration of AI into their systems. This facet concentrates on the organizational tactics and modifications necessary for a successful rollout, taking into account the requirements of educators and learners in terms of adjusting to AI technologies.

The theoretical framework also takes into account the specific setting of Calamba City, Laguna, taking into account elements of the local way of life and educational system. Within the unique sociocultural setting of Calamba City, Laguna, this localized approach seeks to improve awareness of the implications of AI usage in assessment management and learner motivation in private schools. In conclusion, the theoretical framework aims to thoroughly investigate the relationship between AI in assessment management for teachers and its consequences for learner motivation in private schools in Calamba City, Laguna, by fusing these theories and concepts. The method offers a comprehensive view of the incorporation of AI in the educational setting by incorporating both organizational and pedagogical aspects.

Research Paradigm : The two variables are correlated to know if AI management affects learners' motivation determining the level of management of teachers in using AI technology. It also delves on the level on the motivation of learners. The study utilized mixed methods research specifically explanatory sequential mixed methods research design. Research paradigm was shown in figure below.

Figure 1. Research Paradigm



The phase 1 of the study is the quantitative phase, the researcher uses correlational research design. It focuses on meticulously measuring independent and dependent variables to scrutinize a specific phenomenon while minimizing external influences through control variables. Sampling procedures are meticulously chosen to ensure representation, with attention paid to sample size and methodology. Data collection relies on tools like surveys and questionnaires, emphasizing the importance of their validity and reliability. Analysis involves both descriptive and inferential statistics to glean insights. Ethical considerations guide the research process, while a well-defined schedule and acknowledgment of constraints bolster the study's integrity. Overall, the focus lies in establishing a robust foundation for subsequent investigations by systematically exploring variable relationships in a controlled setting. Moving into the qualitative phase of the study poses unique hurdles, particularly in grasping the subjective experiences and perspectives of teachers from private schools in Calamba City, Laguna, as they grapple with the integration of AI technology in assessment management. These obstacles include negotiating local educational mandates, bridging the digital divide, and ensuring ethical deployment of AI. Striking a harmonious blend between personalized, culturally responsive pedagogical approaches and AI-driven instructional tools is imperative for fostering inclusive and effective learning environments. However, this endeavor is further complicated by socioeconomic disparities and cultural intricacies, necessitating a thorough exploration of teachers' insights to inform nuanced and contextually appropriate interventions. Sampling entails carefully choosing participants and deciding on the sample size and methodology to guarantee a wide range of perspectives. Observations, document analysis, and interviews are some of the data gathering techniques that allow for a comprehensive investigation of the research issue. When analyzing data, thematic analysis is used to find recurrent themes and patterns in the qualitative data. In this stage,

The ideas of credibility and transferability are used to establish validity and dependability, highlighting the reliability and relevance of the results. An ethical and methodologically rigorous qualitative research attempt is enhanced by the inclusion of ethical issues, a well-defined timeframe, comprehensive reporting, and an acknowledgement of limits. A thorough summary of artificial intelligence (AI) integration in educational contexts may be found in the primer on integrating AI technology in instruction. The introduction sets the scene and discusses the applicability of AI to education. The main ideas around AI in education are discussed, and then different kinds of AI applications in educational settings are looked at. The paper discusses the advantages of using AI in education as well as the difficulties and factors to be taken into account when putting it into practice. An examination of AI platforms and technologies offers insights into the real-world applications of AI in education. Best practices for integrating AI into instruction are given, drawing from existing approaches. The primer explores upcoming developments in AI and education and uses case studies to show real-world

applications. A section on references and resources provides readers with further information as it wraps up.

Development of Primer : A primer specifically Ethics on Utilizing of AI Technology for teachers and learners will serve as introductory guide for educators seeking to integrate artificial intelligence into their teaching practices. This document provides a foundational understanding of key concepts, such as artificial intelligence and machine learning, establishing a common language for educators. It delves into specific applications of AI in education, illustrating how these technologies can enhance the teaching and learning experiences. Additionally, the primer addresses both the potential benefits, such as personalized learning and efficiency gains, and the challenges, including concerns about data privacy and ethical considerations. Moreover, the primer offers practical insights for educators, outlining guidelines and examples for the seamless integration of AI tools and platforms into lesson plans, assessments, and classroom activities. It emphasizes the importance of maintaining a balance between technology and human interaction, aligning AI with various pedagogical approaches and strategies. The document also highlights the necessity for ongoing professional development, identifying the skills and knowledge educators may need to effectively leverage AI in their instructional practices. Furthermore, a comprehensive primer addresses ethical considerations associated with the use of AI in education, discussing issues related to bias, privacy, and the responsible use of technology. By equipping educators with this foundational knowledge and practical guidance, the primer aims to empower them to make informed decisions, fostering a dynamic and adaptive educational environment that maximizes the benefits of AI while mitigating potential drawbacks. Ultimately, the primer serves as a valuable resource, supporting educators in enhancing the overall educational experience for both teachers and students.

Statement of the Problem : This research study looks into the level of management of the teachers using AI technology and the motivation of the learners using AI technology. The results will be considered in coming up with a primer specifically AI technology for instruction.

The study sought answers to the following questions:

1. What is the level of management of teachers in using AI technology?
2. What is the level of motivation of learner respondents?
3. Is there a significant correlation between AI management of teachers and motivation of learners?
4. What are the challenges experienced by teachers and learners in utilizing AI 14 technology in instruction?
5. What themes emerged from the responses of the participants?
6. What primer can be developed as an offshoot of the study?

Hypothesis

The hypothesis below will be tested in the study with 0.05 degree.

There is no significant relationship between the level of management of teachers in using AI technology and the level of motivation of learner respondents.

Scope and Delimitations : The study's focus is on private schools located in the boundaries of Calamba City, Laguna. It looks into the connections between teachers' usage of AI technology, learners' motivation, and

challenges experienced by teachers in utilizing AI technology in instruction. With a specific focus in private schools, the study shed light to the experiences of teachers in managing AI technology and the learner's motivation in the use of AI technology.

In Phase 1, quantitative methods were used to analyze structured survey data, aiming to uncover statistical relationships between AI management and learner motivation. A total of 92 teachers and 92 learners participated as respondents for this approach.

In Phase 2, a qualitative approach was employed to investigate the challenges instructors encountered through interviews. The study acknowledged limitations that might have restricted the generalizability of findings to other educational environments, such as the exclusive focus on private schools and the specific geographic location. Furthermore, the research prioritized the practical applications of AI in education rather than delving into the technical nuances of its creation. Notwithstanding these drawbacks, the study aimed to provide insightful information about the dynamics of AI technology within the designated educational context. A total of 5 teachers and 5 learners participated in this approach. Private schools in this study were limited to institutions located within the geographic boundaries of Calamba City, Laguna, ensuring a focused examination of the Assessment Management of Artificial Intelligence Technology among Teachers and Motivation of Learners in this specific educational context.

Significance of the Study : The study aimed to investigate the Assessment Management of Artificial Intelligence Technology by Teachers and the Motivation of Learners in Private Schools of Calamba City, Laguna.

The following groups of individuals benefited from the study in the following ways:

Learners: The research had the potential to greatly benefit students as it sought to improve their educational experience by assessing the usefulness, efficacy, and influence of AI-driven assessment tools on their motivation, engagement, and learning outcomes.

Teachers: Teachers played a key role in the study, offering important perspectives on the pedagogical impact, professional development, and practical application of incorporating AI-driven assessment tools into teaching practices.

School Administrators: School administrators gained valuable insights from the study, as it provided crucial information for decision-making regarding the adoption, implementation, and optimization of AI-driven assessment systems.

Parents: The study on the Assessment Management of Artificial Intelligence Technology in Private Schools of Calamba City, Laguna, provided parents with information about the role, efficacy, and potential influence of AI-driven assessment tools on their children's learning outcomes and motivation.

Department of Education: The study provided valuable information for policy-making, curriculum development, and strategic planning, offering insights into the integration and impact of AI-driven assessment tools in private school settings, thereby contributing to informed decisions at the national educational level.

Future Researchers: The study on the Assessment Management of Artificial Intelligence Technology in Private Schools of Calamba City, Laguna provided a thorough examination of the difficulties, advantages, and dynamics related to incorporating AI-driven assessment tools in learning environments, making it a valuable resource for future researchers. It offered a foundation for more research and analysis into the changing nature of technology in education, directing future studies in the areas of artificial intelligence and educational evaluation. This research delves into optimal ways for students to leverage AI, aiming to enhance their educational experiences, boost motivation, and foster innovation in assignments. It seeks to uncover effective approaches for students to utilize AI tools, shedding light on nuanced strategies for maximizing learning outcomes. Additionally, the study provides educators with insightful guidance on integrating AI into teaching methods, aiming to equip them with the skills and knowledge to enhance instruction

and create dynamic learning environments. Ultimately, the research strives to establish a foundation for success in educational settings that embrace AI, benefiting both students and educators alike.

Definition of Terms : To guarantee precision and clarity, a rigorous process of operational and conceptual definition was applied to important ideas. With this dual strategy, the goal was to create a strong framework that would improve the accuracy and reproducibility of the research while also ensuring that interpretations were in line with theoretical foundations. Together, the operational and conceptual definitions provided a methodological pillar that clarified the meanings associated with key study terms.

Artificial Intelligence. The study and creation of computer systems that are capable of carrying out operations that often call for human intelligence, like speech recognition, visual perception, decision-making, and language translation.

Challenges. The challenge lies in effectively assessing the management of AI technology within classroom settings to ensure its optimal integration and utilization for educational purposes.

Educational Theory. Field of study that aims to comprehend how people acquire knowledge, how they apply that knowledge, and how to make educational programs more effective.

Educational Technology. It refers to the tools, media, and equipment that can make it easier for knowledge or skills to be transmitted and received. It also refers to all devices and machinery utilized to support the processes of teaching and learning.

Integration of technology. utilizing technology to improve the educational process for students. Students that use various forms of technology in the classroom including virtual classrooms—become actively involved in the learning objectives.

Learner. Someone who is continually picking up new skills demonstrates a proactive commitment to ongoing personal and professional development, fostering adaptability and resilience in an ever-changing world.

Level of management. This endeavor seeks to assess the proficiency of teachers in effectively utilizing AI technology as a teaching tool within their instructional practices.

Level of Motivation. This assessment aims to evaluate learners' proficiency and effectiveness in utilizing AI technology as part of their learning process.

Management Aspect. The method incorporating the combining and integrating material resources with people (human resources). fulfill the aims and purposes of education.

Management of AI. To effectively manage artificial intelligence (AI), one must plan, direct, communicate, and keep oversight over a quickly developing field of computational innovations that utilize human intelligence to solve increasingly complex decision-making problems.

Motivating Learning Environment. Students will be more motivated to learn if their academic environment provides autonomy, competence perception, and a sense of belonging.

Motivation Theory. The study of what motivates someone to work toward a specific objective or result.

Motivation of Learners. Learner's level of motivation in terms of using AI technology.

Primer. An AI ethical standard is essential for guiding the responsible and conscientious utilization of AI technology across various domains, ensuring that its deployment aligns with ethical principles and safeguards against potential harms or biases.

Professional Development. A broad range of formal education, advanced professional learning, or specialized training designed to assist educators' administrators, teachers, and others in enhancing their professional efficacy, competence, and expertise.

Teacher. A person who helps other people learn. a person who assists students in acquiring virtue, talent, or knowledge.

II. REVIEW OF RELATED LITERATURE

The integration of Artificial Intelligence (AI) technology in educational settings has ushered in a paradigm shift, reshaping the dynamics of teaching and learning processes. As private schools in Calamba City, Laguna navigate the ever-evolving landscape of technology, it becomes imperative to explore the implications of AI adoption among educators and its subsequent influence on learner motivation. This section delves into the related literature that encapsulates the current state of AI integration among teachers and its potential impact on learner motivation, particularly within the unique context of private schools in Calamba City, Laguna.

The Beginning of AI Technology : In line with SDT, if chatbots can be utilized as part of an inquiry instructional approach that allows students to choose their own questions and responses (Schreiberova 2020; Autonomy in SDT), receive immediate feedback (Smutny & Schreiberova, 2020; Yin et al., 2021; competency), and feel like they are talking to a human-like machine (Relatedness), they could have a positive impact on learners' autonomous motivation. SDT enables researchers to more accurately describe how needs support from chatbots might lead to autonomous motivation, which is key to learning with AI technologies. Employing SDT, and undertaking a careful and deep analysis of needs satisfaction that students with different expertise experience on interacting with chatbots, might help researchers understand the role of AI technologies in K-12 classroom settings.

Chatbots and Student Expertise : Chatbots are AI-based applications developed to mimic human interactions and engage in real-time spontaneous conversations with humans. Their role within classroom learning, particularly in language education, is tangential (Fryer et al., 2019; Shah et al., 2016; Yin et a., 2021). Previous relevant studies focus on how they comprehend human conversations and motivate students learning. Research on chatbot competency (i.e., comprehension) suggested that their ability to engage in 'authentic- like' conversation can be limited. First generation chatbots developed in the 2000s as language learning tools, could be frustrating for learners to interact with. For example, students needed to spell input correctly (Coniam, 2008). Furthermore, chatbots were not always able to respond to the student questions accurately on track the flow of a conversation (Fryer et al., 2019; Yin et a., 2021). Often their responses were vague and sometimes mislead students (Fryer et al., 2019). These early developed chatbots had very little educational values. However, over the last decade, chatbots have improved (Coniam, 2014; Fryer et al., 2019; Shah et al., 2016; Yin et a., 2021). For example, Shah and colleagues (2016) found modern chatbots have significant higher scores from users than first-generation chatbots that were built using early natural language processing. A chatbot evaluation study conducted by Coniam (2014) revealed that most modern chatbots are able to present grammatically acceptable responses. These improvements increase the potential for chatbots to be used for learning, but more evidence is needed to relate chatbots to learning success (Fryer et al., 2019). For example, Smutny and Schreiberova (2020) reported that their evaluation of 47 educational chatbots on Facebook messenger platform for higher education indicated that chatbots were in the early stage of becoming teaching assistant, and needed improvements. Notwithstanding the lack of major breakthroughs in chatbot language communication skills, students still find them comfortable, interesting and fun to play with (Fryer et al., 2019; Hill et al., 2015; Yin et a., 2021). For example, a study conducted by Hill and colleagues (2015) revealed that university students held significantly longer conversations with chatbots than with other humans, however, the users used shorter sentences with simple vocabularies for communications. Yin and colleagues (2021) found that university

Students who engaged with chatbot-based learning environments significantly had greater intrinsic motivation than those who did not. These findings imply that students felt at ease and had greater conversational engagement when learning with chatbots. Most of these studies were conducted in higher education. In K-12 education, students can have less sophisticated self-regulated learning skills and a wider diversity of learning needs. Therefore, chatbot competency is crucial to school-age students, particularly low achieving or proficient student (Fryer et al., 2019; Kolchenko, 2018). These students need more accurate responses from chatbots, and are more likely to give up easier when feeling confused or facing failure during learning. Past and recent research related to the effects of

learning technology on student expertise indicated a trend that instructional design with technology could have differentiated benefits low or high achieving students (Kalyuga, 2007; Kalyuga, Rikers, & Paas, 2012; Chiu et al., 2020; Chiu & Mok, 2017). The main recommendation of the research is that more effort should be made to cater for learner diversity. For chatbots, it is also likely that high achieving students will benefit more from interacting with them than low achieving students. For example, if responses from chatbots are confusing or vague, high achieving students are more able to ask additional follow-up questions to clarify the responses or ask more specific questions. However, low achieving students may not know how to interpret the response or take actions to clarify understandings, while their questions may be inaccurate, increasing the likelihood of a confusing responses from the chatbot. Hence, how school students with different learner expertise interact with chatbots deserves further examination.

Student Needs Satisfaction and Technology : In SDT, Ryan and Deci (2017, 2020) categorize various intrinsic and extrinsic sources of motivation, and differentiate between autonomous (high-quality) and controlled motivation (low-quality). They also propose that all individuals have three basic psychological needs autonomy (feeling they have choices and ownership), competence (feeling capable and proficient), and relatedness (feeling connected and loved). Satisfying these basic needs can foster a high-quality form of motivation that leads to better engagement and persistence in activities. While, thwarting any of these three needs may be detrimental to engagement and performance in activities. The theory has been widely and effectively applied in in-person and online classrooms with positive outcomes (See Ryan & Deci, 2020 for various examples). Understanding needs satisfaction has the potential to transform how teachers teach and prepare lessons using technology. To support autonomy, teachers can give and endorse students' choices, offer students flexibilities to complete their assignments in various formats, and provide explanatory rationales or explain the relevance of tasks to students learning goals, when choice is forced (Chiu et al., 2022; rensshaw et al., 2016). These actions will increase students' performance because they will perceive greater ownership over the learning tasks. To cultivate competence, teachers can standardize the learning materials, design cognitive-effective resources (Chiu et al., 2017, 2021), organize peer moderation to encourage students to share ideas in classes (Xie & Ke, 2011), and give feedback related to competence (Chiu, 2021a, 2022). In such social environments, students feel competent and confident to take on challenges. To encourage relatedness, teachers can develop warm, caring, and positive learning environments by providing personal praises and comments to students, eliciting and valuing their feedback, and facilitating collaborative activities (Xie & Ke, 2011) and small group discussions. In such welcoming, safe and comfortable environments, students will feel more connected to peers and teachers and, therefore, more engaged in learning. In sum, research has shown that satisfying the three psychological needs could better engage students in learning. In other words, AI-based tools such as chatbots and their use in the classroom should support the three needs for high-quality form of motivations.

AIED Research : AIED research aims to support and critique the development of AI and AI-based tools and systems, and investigate how to use them to improve learning and teaching (Holmes et al., 2019; Williamson & Eynon, 2020). Much of the research to-date, has focused on inventing and developing learning algorithms or training new learning models to develop new educational tools and systems. These tools and systems are often based on learning sciences and cognitive sciences (Perrotta & Selwyn, 2020; Luckin & Cukurova, 2019). For example, using knowledge of learning process, AI tool and system developers can train a predictive machine learning model in development of adaptive learning systems (Perrotta & Selwyn, 2020). The result of which might be an AI- based tool for training specific skills in which learners engage in small units of learning with embedded formative assessment, which help the system learn the learners' needs, and recommend student learning paths (Cepeda et al., 2020). Relevant studies have revealed that well-designed AI systems such as, OLI learning course, developed by the Carnefie Mellon University (Lovett et al., 2019) and Cognitive Tutor (Pane et al., 2019) can have positive impacts on student learning. AI systems can significantly improve the effectiveness and quality of student learning, at least in higher educational contexts (Luckin & Cukurova, 2019; Mc Arthyr et al., 1995 p. 42). These positive results have been interpreted by some as indicators of the potentially profound transformational effect of AIED and suggest that AI technologies can help automate traditional methods of teaching and learning (Williamson & Eynon, 2020). However, doubts about the value of AI educational technologies remain due to the limited evidence of their effectiveness at scale or in other levels of education, i.e., K-12 (Bake, 2016; Kolchenko, 2018). Overall, empirical studies on AIED in schools are scarce. How teachers use AI technologies pedagogically and their roles in learning in classrooms remain unclear.

Exploring the Potential of AI Integration : The literature review explores the potential of integrating Artificial Intelligence (AI) into mathematics education, focusing on Generation Alpha students. AI has already made a significant impact in various aspects of daily life, and its integration in mathematics education brings advantages such as improved critical thinking skills, deeper understanding of concepts, and enhanced collaboration among students. While AI has demonstrated positive effects, higher institutions face challenges in infrastructure, quality assurance, social interaction, and data privacy when integrating AI tools. These challenges include the need for robust technical support, testing AI tools for accuracy, balancing personalized learning with peer interaction, and ensuring data privacy and security.

The readiness of Philippine tertiary mathematics classrooms for AI integration is discussed, highlighting the country's commitment to incorporating AI into education through initiatives like the National AI Roadmap and the National Centre for AI Research. Universities in the Philippines are adopting smart campus technologies, but challenges such as budget allocation, digital literacy, and the impact of the COVID-19 pandemic persist. Despite progress, further improvements are recommended. It is suggested that higher institutions conduct studies to address concerns and challenges in AI integration, along with understanding the perspectives of Generation Alpha students regarding exemplary teaching. The successful integration of AI in mathematics education can empower Generation Alpha students for a future driven by AI, provided challenges are effectively addressed.

Artificial Intelligence in the Philippine Educational Context: Circumspection and Future Inquiries : In the realm of education in the Philippines, the integration of technology, particularly artificial intelligence (AI), has become pervasive. As outlined by Scijournal (2022), various digital tools and resources, including e-learning platforms and collaborative tools, are now commonplace in the academic landscape. Google and other search engines are extensively used for research, with 94 percent of teachers relying on them. The implementation of AI-driven systems, such as Grammarly and QuillBot, has enhanced teaching and learning by providing personalized feedback and combating plagiarism. However, the use of AI in education is a "double-edged sword," as exemplified by cases of misuse and academic dishonesty, as noted by Hagendorff (2020). Despite challenges, the potential benefits of AI in the Philippine education system are evident. The adjustment of curricula, personalized learning experiences, and administrative task automation are cited as areas where AI can contribute positively. Nevertheless, the World Economic Forum's report in 2020 underscores the need for improved digital literacy and skills in the Philippines to fully harness the benefits of the digital economy. The government's recognition of AI's potential is reflected in the National AI Roadmap launched by the Department of Trade and Industry in 2021, aiming to identify opportunities and challenges for various industries. Plans for a National Center for AI Research further signify the commitment to technological advancement. However, financial barriers, an AI skills gap, and concerns about privacy and data security pose significant challenges to widespread AI adoption. The need for ethical guidelines, as highlighted by UNESCO (2019) and various institutions, emphasizes the importance of responsible AI use in education. While AI integration in the Philippine industry holds promise, addressing ethical concerns and ensuring equitable access remains imperative for a sustainable and inclusive future.

Overview of technology integration in Philippine education, including policies and initiatives. : In the period spanning 2010 to 2022, the Philippine government has prioritized the integration of technology in education, as reflected in numerous policies and initiatives aimed at modernizing the education system. According to Ranosa (2020), the Enhanced Basic Education Act of 2013, launched by the Department of Education (DepEd), emphasized the incorporation of technology into the curriculum, specifically through the use of information and communication technology (ICT) to enhance learning outcomes. Initiatives like the DepEd Computerization Program (DCP) and the National Teachers' Academy for ICT Integration (NTA) have been implemented to provide schools with ICT equipment, software, and teacher training. A study by Abrigo, Ocdol, and Sadia (2019) found that the DCP has increased technology access, leading to enhanced student engagement and performance. Despite these positive outcomes, challenges such as resource limitations, inadequate teacher training, and varying levels of technological competency persist. While the integration of technology has positively impacted Philippine education, concerted efforts are necessary to address challenges and fully harness the potential of technology in the educational landscape.

Exploring the Potential of AI Integration in Mathematics : According to Melchor, P., et al, (2023) The integration of Artificial Intelligence (AI) in mathematics education holds immense potential to revolutionize the learning experience for Generation Alpha students despite challenges related to infrastructure, quality assurance, social interaction, and data privacy. AI offers personalized instruction, fosters critical thinking skills, and prepares students for the challenges of the digital age. Approaches such as robotics, gamification, AI-assisted teaching, and virtual reality provide innovative and engaging methods to enhance mathematics education.

Meanwhile, the readiness of Philippine tertiary mathematics classrooms for AI integration shows progress, with initiatives promoting AI in education, the adoption of smart campus technologies, and collaboration between government and universities. However, improvements in digital literacy, infrastructure, and budget allocation are needed. By effectively addressing these challenges, the Philippines can unlock the benefits of AI integration, empowering Generation Alpha students for a future driven by AI. To ensure the successful integration of AI in mathematics education for Generation Alpha students, it is recommended that higher institutions, such as those in the Philippines, undertake further studies to address the concerns and challenges of integrating AI tools in an educational setting. Additionally, conducting studies to understand the dimensions of an exemplary teacher according to Generation Alpha's perspective would serve as a good starting point in preparing tertiary institutions for the upcoming college students of Generation Alpha.

Impact of Artificial Intelligence as a Disruptive Technology on Accountancy : According to Bendal, A., et al., (2020) Based on interviews conducted by the researchers, the main themes formulated and analyzed are awareness and knowledge, applicability, and potential. All respondents were sensible of what artificial intelligence is. They had similar answers as to how AI can potentially affect their field of work and that is providing efficiency and accuracy of data provision. Under applicability, the respondents all agreed that the specialization and use of technology is a must and is a long-term partner in almost all financial organizations. Coming from the responses, the use of technology and computerization is a necessity as timeliness is a key issue. Fraud detection improvement, elimination of tedious repetitive tasks, error detection, and outputs produced in a more accurate and timely manner are the advantages of AI, according to the respondents. Artificial intelligence takes many forms and Enterprise Resource Planning is one of them which is being used by big companies nowadays

According to one of the respondents. Despite these positive effects of artificial intelligence on accountancy, its limitation is the human's ability to make decisions that includes analysis, intuition, and logical reasoning. Artificial intelligence cannot exercise professional judgment with its lack of required qualitative analysis of which decision is required aside from the quantitative elements. In terms of this technology's potential, any job or profession may be affected by the improvement of AI as it will need less people for routine tasks that will lessen clerical functions. Elaborated from one of the respondents, however, accountancy will be affected to some degree due to manpower reduction and automation. Coming from the perspective of a Chief Financial Officer and Senior Vice President of a reputable company in the Philippines, the innovation of artificial intelligence may be costly but those in the top position will always look at what costs are to be saved as a result of investing in computerization firmly saying that manpower reduction is always a source of savings. Having that said, an effect of this potential is the upgrade of work and skillset for accountants to further enhance and focus on developing decision-making skills, analysis, and logical thinking which are the main vital roles of the profession. The key term is to adapt and to develop. A lot of the respondents were in favor of the development of artificial intelligence technology. Human intervention, however, is irreplaceable by this innovative technology. The best strategy that can be implemented is the relation of artificial and human intelligence, wherein both sides work hand in hand in order to achieve best results. It is very essential to work with machine learning techniques in order to make the best use of business information while humans will be more focused on logic and reasoning that will provide satisfactory and justifiable results.

The Effect of The Artificial Intelligence on Learning Quality & Practices in Higher Education : According to Dr. Hussain, M., et.al (2019) Artificial Intelligence and its usage in different segments of our regular life seem to be increasing day-by-day and the same is reported in various studies. In the field of education, AI started making its mark by acting as an aid to support the teaching and learning process. The current study identified that both teachers and students needed more understanding on how the application of AI can benefit them in developing their teaching and learning abilities respectively. It also identified that an optimum utilization of this technology may yield better results. Majority of the participants opined that replacing a teacher with a robot can

only degrade the present education system and that AI should only be a support to the regular teacher, except in few situations where it demands the role of complete technological intervention. Teachers seem more adaptable to the technological changes than students. Further research with a wider range of participants in different geographical locations and different age groups may bring in more inputs from teachers and students on the application of AI in education.

The analysis focused on evaluating the impact of AI on administrative, instruction, and learning aspect of education, with a focus on assessing how AI has been applied and the effects it has had. AI in education initially took the form of computers and computer-related systems, and later, the form of web-based and online education platform. Embedded systems have made it possible to use robots, in the form of cobots or humanoid robots as teacher colleagues or independent instructors, as well as chatbots to perform teacher or instructor-like functions. The use of these platforms and tools have enabled or improved teacher effectiveness and efficiency, resulting in richer or improved instructional quality. Similarly, AI has provided students with improved learning experiences because AI has enabled the Dr. Mohammad Irshad Hussain 1008 customization and personalization of learning materials to the needs and capabilities of students. Overall, AI has had a major impact on education, particularly, on administration, instruction, and learning areas of the education sector or within the context of individual learning institutions.

Integration of Artificial Intelligence (AI) Technology in the Information Technology Education (ITE)

Curricula of Studies : The integration of Artificial Intelligence (AI) technology into Information Technology Education (ITE) curricula is a dynamic trend, as outlined by various authors. Straits Research (2019) emphasizes the increasing demand for AI-based technologies in education, particularly in e-learning platforms, highlighting the need for 21st-century ICT skills. Balakrishnan & Ponnusamy (2018) underscore the role of AI in education through big data application, anticipating the streamlining of complex tasks through automation. Baker and Smith (2019) provide a comprehensive view of AI, encompassing technologies like machine learning and natural language processing, demonstrating its capacity to perform cognitive tasks akin to human abilities. Ortola (2019) stresses the importance of universities embracing AI to enhance "tech intensity" and remain competitive, emphasizing the need for reskilling. Kubickova (2019) discusses the significance of Educational Technology in the Philippines, aligning learning techniques with digital technology to prepare students for a global digital economy. Finally, Smith (2019) highlights the transformative impact of AI on various sectors, calling for responsible, ethical, and inclusive deployment globally. In summary, the integration of AI into ITE curricula holds transformative potential for enhancing learning experiences, automating processes, and preparing individuals for the digital era, contingent on ethical considerations and ongoing investments in human capital. AI Technology in

Philippine Education System : This paper explores the utilization of Artificial Intelligence (AI) technology in the education system of the Philippines, with a focus on the year 2023. The abstract outlines the current status of AI implementation, evaluating its advantages and disadvantages. Future applications of AI in the Philippine educational system, such as personalized learning experiences and access to specialized resources, are considered. The paper also delves into the ethical implications and potential risks associated with the widespread adoption of AI in education. The introduction emphasizes AI's transformative potential in various industries and its promising applications in education. The focus is on the Philippines, where AI is gradually being incorporated into the educational system to enhance quality and provide specialized resources. The paper aims to analyze the current state of AI use in Philippine education, its pros and cons, potential future applications, and ethical considerations. The current state of AI use in the Philippine educational system is discussed, highlighting its adoption to enhance education quality and provide specialized resources. Examples include personalized learning experiences, virtual classrooms, personalized tutoring, adaptive learning systems, automated grading systems, and AI-powered chatbots for real-time access to educational resources. Advantages of AI in education include improved efficiency, increased resource access, personalized learning experiences, and enhanced assessment accuracy. Specialized resources, like virtual classrooms and tutoring, are expected to boost student engagement and outcomes. However, potential disadvantages include privacy concerns related to student monitoring, an overreliance on technology affecting critical thinking skills, potential higher implementation costs, and challenges ensuring fairness and equity in AI-driven systems.

ChatGPT and Academic Research: A Review and Recommendations Based on Practical Examples :

According to Rahman M., et.al. (2023) The fundamental objective of this study is to highlight the application of ChatGPT in academic research by demonstrating a practical example with some valuable recommendations. This study draws upon a demo research topic and investigates the potential and limitations of ChatGPT in drafting and writing an academic research paper. The study revealed that ChatGPT has several advantages for researchers regarding new idea generation, outlining a research topic, even writing abstracts using prompts, etc. Second, the researchers recommend that academic researchers may use this tool to summarize large text and identify key findings from the literature. However, the researchers also observed several limitations of ChatGPT in writing an academic article. For instance, ChatGPT sometimes misleads in writing the research problem, questions, and gaps since it provides hypothetical problem statements and research gaps with fake references. However, it should only be used to write part of the literature review section as the tool cannot synthesize literature and generates made-up citations and references. Besides, ChatGPT cannot conduct statistical analysis because it cannot access the dataset. Thus, the researchers recommend not using ChatGPT to write a research article alone; human control should be apparent. Instead, this tool can be used as an e-research assistant that can complement different works of a researcher and improve work efficiency. Since accountability and research integrity are two major concerns in academic publishing, researchers should take full accountability for using ChatGPT in research and mention its use in the article. As this is one of the first studies that assess the application of ChatGPT in academic research, the findings will have full and crucial implications for theory and practice.

Artificial Intelligence and new perspectives in traditional education :

According to Lombardi, D. (2022) Sustainable Development Goals (SDGs) were identified in the 2015 United Nations Development Program (UNDP). The Oxford Initiative on AIxSDGs seeks to determine how artificial intelligence has been and can be used in the future to promote the sustainable development goals first mentioned [90]. The intent at Oxford is to pursue ethically sound design aimed at addressing and solving societal issues of global significance through the potential of AI. The projects promoted by the organization all cover areas of undeniable relevance to humanity, which has been bedeviled in recent times, as never before, by suffering battles that undermine the integrity of the individual and society. Among goals such as: the defeat of poverty, the defeat of hunger, health and well-being, gender equality, clean and affordable energy, decent work and economic growth, we find the one that most interests this study, namely, quality education. Artificial intelligence, since its official birth in 1956 at Dartmouth College in Hanover, has revolutionized by improving people's lives over time. Consider how in the Philippines and India millions of students thanks to intelligent educational platforms are assured the right to education, enshrined as inviolable, inalienable and fundamental to man and citizen. This shows that similar technologies, used in a consonant manner, are very powerful tools that are useful in achieving greater social justice. An intelligent machine can collect data during the interaction with the learner, and then simultaneously identify and prepare the most useful educational strategy for the learner's education, all of which is sealed by the most transparent, impartial and timely assessment to the learner's work. The world of education integrates technologies into teaching processes, according to increasingly complex schemes, because their use contributes to the mental and physical well-being of students. Such devices allow teachers to invest their time and energy more effectively, without being absorbed by bureaucratic and administrative commitments that could, at times, cause teaching to fall by the wayside. AI is the tool and potential vehicle useful in

making concrete and possible a quality education, accessible to all, that effectively supports the growth of educands and educators. Scenarios are posed before us that are futuristic, as in the case of Zuckerberg's Metaverse, which has the right potential to provide a very strong impetus to distance education, making it experienced by all as in presence and in a more meaningful way, especially in reference to educational intervention aimed at the training of students who have disabilities, physical dysfunctions and therefore with special educational needs. We are analog beings, projected into the Infosphere where we regularly share our experiences with intelligent agents [94], seeking greater well-being and a better quality of life. The evaluation of a technologically intelligent device, regarding its use in pedagogy and education, besides being accurate and unbiased, would certainly be positive. This is because the digital increases the possibilities of interaction between humans and at the same time allows them to find a link between the phenomena that characterize modernity. This increasingly solid relationship between society and technology breaks down distances because it creates communicative bridges between people. It elevates the potential of users by guiding them to a modernity free of limiting boundaries. It projects the world of education

toward new scenarios, such as that of best educating the totality of students. By virtue of a future that increasingly conceives technologies as tools aimed at the dissemination of knowledge and useful for society to freely form itself.

How to

Measure Teachers' Acceptance of AI-driven Assessment in eLearning: A TAM-based Proposal : According to Benito, J. (2019) The use of AI resources in the educational settings constitutes a growing interest in the research community. However, this field is still in a very early stage of development with a lot of grey areas pending to be explored which includes the adoption of these technologies among the educational agents. The good disposition of the teachers is an essential requirement for the success of any technology innovation in education, therefore it is key to achieve a deep knowledge of the factors that will help to ensure it. This paper intends to contribute to the development of the field offering a TAM-based model composed by 8 constructs and 10 relational hypotheses that can help to analyze the disposition of the teachers towards the use of these technologies providing information on the factors that condition the adoption of this technologies. This data can be used in the design of AI-driven assessment integration programs. The model proposed intends to extend the TAM model covering some factors that were not included on the Davis proposal and are of relevance for the study of the adoption of AI-driven assessment among teachers. As a future line of research, we are in the validation process of an instrument designed to measure the constructs of the model. This process will include the content validation of the items to measure the constructs and the performance of a pilot study to establish the validity of the model. Once the instrument is validated, it will be used to carry out a study on the acceptance of AI-driven assessment among eLearning teachers.

Leveraging Education through Artificial Intelligence : The study aims to explore an in-depth analysis of leveraging education through artificial intelligence (AI) virtual assistance among visually impaired learners. The investigation centers on describing the challenges and struggles encountered by visually impaired learners, highlighting the usage of AI virtual assistance, the adaptability of the visually impaired learners, and the enhancement of the curriculum. This study utilized a qualitative case study research design using Braun and Clarke's (2018) data analysis method to describe an in-depth dissection of a case study involving five visually impaired learners through semi-structured interviews. Findings revealed five themes: (1) barriers in the learning process, (2) essentiality of AI virtual assistants, (3) achieving competence through technology, and (4) inclusive teaching and learning environment. The findings show that this pandemic has brought challenges to visually impaired learners in education, such as personal struggles, insufficiency of resources, and adapting to new learning modalities. However, AI virtual assistance allowed them to explore their potential and help them achieve academic tasks that are generally difficult due to their visual impairment. Researchers recommend improving the teaching and learning of visually impaired students in secondary schools. In recent years, technology, particularly Artificial Intelligence (AI) and machine learning, has played a crucial role in overcoming various challenges (Levy, 2019; Rasli et al., 2020; Schade et al., 2019). AI-powered Virtual Assistants, such as Siri, Cortana, Alexa, and G-Assistant, have become prominent in aiding individuals, including those with disabilities (Afshar, 2021). These virtual assistants, utilizing voice recognition and emulating human interaction, aim to streamline user experiences (Cho et al., 2019). The educational sector has witnessed the implementation of AI virtual assistants, benefiting students, especially those with disabilities like visual impairments (Forbes & Lasonen, 2021; Martiniello et al., 2021).

Visually impaired learners, facing specific challenges in literacy and academic development, have received special training programs in schools (Yadav et al., 2021). Despite technological advancements, accessibility for visually impaired individuals remains a concern, particularly in the online environment. The study emphasizes the need for self-sufficiency among visually impaired individuals, acknowledging their social restrictions in today's technology-driven world (Yadav et al., 2021). Assistive technology, including AI virtual assistants, has become integral in the core curriculum of junior high schools, aiming to enhance the capabilities of visually impaired learners (Sah, 2013; Kotain & Sharma, 2015; Ampratwum, 2019). The COVID-19 pandemic prompted the closure of schools, leading to a shift from physical to virtual classrooms, posing significant challenges for learners with disabilities (Azhari & Fajri, 2022; Chopra et al., 2021). In response, educational interventions, such as the use of AI virtual assistants, have been adopted to supplement learning, especially for visually impaired students facing hurdles in virtual environments (Geverola et al., 2022).

Analyzing the Impact of Artificial Intelligence : The exploration of the intersection between artificial intelligence (AI) and education is a key focus in the study by Oca Valenzuela and Garro in 2019 and Yang, Zhuang, and Pan in 2021. As society embraces technological advancements, virtual assistants powered by AI have gained prominence, emulating human interaction and offering potential benefits in educational environments. UNESCO's threefold connection between AI and education, encompassing learning with AI, learning about AI, and preparing for AI, underscores the multifaceted role AI plays in shaping the educational landscape. Moreno's work in 2019 emphasizes AI's potential to accelerate global education goals by reducing barriers, automating processes, and optimizing methods to enhance student performance and overall learning outcomes. The study recognizes the rapid evolution of the educational field parallel to technological advances, with AI being a common factor contributing to innovative teaching and learning methods. The term

Educational artificial intelligence (EAI) is defined by Popenici and Kerr in 2017, referring to AI's role in supporting personalized and automated feedback and guidance. The study identifies EAI's association with various fields such as robotics, smart devices, e-learning, virtual and augmented reality, chatbots, and online self-learning platforms, all converging toward the common goals of learning, teaching, and problem-solving. The research aims to conduct an empirical analysis of the evidence within the EAI literature, addressing key questions about the impact of EAI on student performance, its effects on students, the prevalence of AI and computational science in education, and the effectiveness of EAI across educational stages. This study contributes to the ongoing discourse on AI's role in education, emphasizing its potential to enhance instructional processes, reduce learning difficulties, and contribute to the improvement of academic performance.

Artificial Intelligence Approach to Monitor Student Performance : Artificial Intelligence (AI) aspire towards providing adequate intelligence to computers so they can think and act in responses, similar to the human being (Lesinski et al., 2019). Unlike computers, human can learn from their experience which enables them to make intellectual decisions according to their individual circumstances. On the other hand, computer has to follow the man-made algorithms to accomplish the required task. Artificial Intelligence aims to lessen this dissimilarity between computer and human by seeking innovative techniques to equip computers with intelligence and enable them to act like human being. The term is often applied to projects which develop systems conferred on humans' distinct intellectual processes, for instance, the ability to think, discover meaning, or learn from previous experience. The AI applications are steadily growing within distinct commercial, service, manufacturing and agricultural industries, making its more prominent (Došilović et al., 2018). Future AI artefacts will be capable to interact with human beings in their native languages, and adapt to their movements and emotions (Lu, 2019). Machine Learning is one of the AI applications to facilitate systems with the ability to automatically learn and improve from experience without any explicit programming (Mitchell et al., 2019). The prime goal is to enable computers to learn automatically and set the procedures to make future decisions (Nilsson, 2014). Machine Learning algorithms learn from the prearranged data and then make decisions for unseen data. Machine learning uses two major classes of algorithms: supervised learning and unsupervised learning. Supervised learning are either classification or regression algorithms. The classification algorithms comprises of input, output and the aim is to apply an algorithm to identify the mapping function from the input to the output (Qazdar et al., 2019). Each instance consists of independent variables (prediction features) and a dependent variable (prediction class). The algorithms process the entire training dataset and identify the patterns and rules hidden in the data.

Review of Artificial Intelligence (AI) in Education : Performing the Review. Following Wu et al., this study was conducted in two steps: identification and coding. In the first step, an article was selected to the potential pool when it qualified for either of two criteria: (a) the research involved a specific AI technique as an intervention in assisting learning or teaching and (b) it provided empirical evidence or in-depth analysis. As already noted, only articles indexed in SSCI were considered. It should be noted that studies that focused on the development processes of AI without educational implications or only adopted AI as a learning subject without the employment of AI were excluded from this review. Second, as for the analytic studies, only studies that discussed the effect of AI techniques on education were included. Each full text of all the identified papers was read and screened individually by three-panel members with doctoral degrees or professorships in the field of learning technology. Studies that did not fit clearly with the criteria were brought up

For panel discussion. e screening process yielded 100 articles out of the original set of 121. In the second step, all the authors discussed thematic analysis principles and established a coding scheme in terms of how AI was used in education. Two main categories were investigated: research questions and technology adoption. Firstly, with regard to research questions, previous research has found three basic models of AI in knowledge processing: knowledge representation, knowledge obtaining, and knowledge derivation. Building on that foundation, the Investigating decentralized theory of artificial intelligence Exploring creative thinking Vattam et al. REA Visualization Science education 157 middle school student QE OTH+ Jonassen Introducing an ask system: interactive learning system Magnisalis et al. Review of adaptive and intelligent systems for collaborative learning support: adaptive and intelligent systems Albin-Clark et al. ROL GAM Graphic simulation Construction 4 early childhood lectures and many students EXP, SUR PER+ Wong and Looi Exploring swarm intelligence Seni Investigating the relationship between neurosciences and organizational cognition Lin et al. Pondering the transformation of teacher' professional roles Kessler Analytic essay of AI in the language teaching Petit et al. [Investigating the existing digital structural violence and the approaches to tackling it Rowe Exploring the effect on education reform brought by intangible economy which is shaped by globalized datasets such as OECD PISA and artificial intelligence Ally Identifying the shaping forces for future education and competencies required by future digital teachers Song and Wang Analyzing analysis of worldwide educational artificial intelligence research development in recent twenty years Ulum Constructing guidelines to apply data mining techniques to predict student success Renz and Hilbig Analyzing the drivers and barriers that currently affect data- based teaching and learning paths from the perspective of EdTech companies. All empirical studies reviewed presented the positive effects of AI techniques on education However, the interview and the review paper have, respectively, surfaced the

Challenges or misunderstanding of AI in education. ere is a need to articulate a holistic evaluation criterion to measure the effectiveness of AI in education. To ensure the validity and reliability of the evaluation, a multidimensional model should be adopted, which includes technique, pedagogical design, domain knowledge, and human factors. Woolf's Roadmap for Education Technology predicted that in the era of AI Educational Data Mining, the lifelong assessment of students' knowledge, their progress, and the environments where they learn, as well as the success and failure in teaching strategies, can be chronologically tracked. Besides, current research is disproportionately focused on specific educational contexts and a handful of variables. The most research sampled students as participants, while teachers and professor practitioners were less noticed; additionally, most researchers considered science, humanity, and social science as subjects, but less attention was paid to sports, arts, and special education. For example, only one study was found to develop text-to-diagram conversion as a novel teaching aid for blind learners.

Using Artificial Intelligence and Emerging Technologies : The concept of a "S.M.A.R. T" Classroom, as elucidated by Huang et al. in 2019, integrates digital tools and resources to create an interactive and technologically advanced learning environment. It combines various high-end technologies, including mobile technologies, communication tools, projectors, cameras, sensors, and facial recognition software, to optimize the learning experience for both educators and students. This paper, focusing on the technological dimension of a smart class, delves into the introduction of Artificial Intelligence (AI) and its integration with emerging technologies in physical or remote spaces, defining a smart classroom as one that utilizes AI to enhance learning experiences. The discussion explores the historical background of AI, its role in education through the field of Artificial Intelligence in Education (AIED), and the recent influence of deep learning technology in advancing AI applications. The survey conducted by the authors reviews existing literature on smart classes, emphasizing the use of emerging technologies coupled with AI. The paper provides a comprehensive discussion of the advantages, disadvantages, and potential dangers of integrating AI into smart classrooms, presenting statistical figures and insights into the current landscape of AI in education. Compared to previous surveys, this work offers a more extensive coverage of key technologies related to smart classes, contributing to the understanding of AI's potential in smart educational environments and discussing future directions for research in the field.

Artificial Intelligence for Research : Keerthiwansha presents a system for nonnative English learners, integrating a virtual environment with artificial intelligence (AI) to enhance listening and speaking skills. The system tracks user activities and assesses proficiency, resulting in a 14% improvement in appropriate responses, a 3% reduction in linguistic mistakes, and an overall learning proficiency acceleration of 11%. Speaking periods are reduced by 16%, contributing to increased effectiveness and productivity in English as a second language (ESL) classes in Sri Lanka.

The proposed architecture offers individualized learning paths, overcoming constraints of space and time, enabling remote learning, and minimizing documentation work. Zhu (2022) emphasizes the development of AI-based English classrooms to ease the burden on educators and enhance learning productivity. The proposed system allows teachers to organize video classes, assess students using data technology, and monitor their progress. Chatbots play a crucial role in education, as highlighted by Adamopoulou and Moussiades, providing an amicable and fruitful environment for English learners to improve speaking and listening skills. Okonkwo and Ade-Ibijola (2022) review previous approaches to chatbots in education, outlining their potential for teaching, learning, and administration. AI-based intelligent systems, discussed by Al-Mohammadi et al., contribute to an adaptive e-learning atmosphere,

Replicating human decision-making and cognitive skills for effective learning. Kucak et al. (2022) explore machine learning's role in education, emphasizing its ability to predict students' knowledge and skills, identify weaknesses, and offer continuous feedback to teachers and parents. Lastly, Kulkarni et al. (2022) present a chatbot for handling customer queries in a bank, offering time-saving solutions, reducing the burden on humans, and increasing effectiveness in customer service. Muhammad et al. (2021) propose an AI-based chatbot integrated with speech recognition to enhance users' English speaking abilities, achieving 100% effectiveness according to expert opinions. Sung investigates the performance of AI-driven English-speaking chatbots, revealing that playful and adaptive interactions significantly contribute to improving students' speaking and listening skills, boosting their confidence. Liu explores the positive impact of Internet-Based Multimedia Assisted Language Learning (IB-MALL) on English teaching, finding that students in China, especially those with no English background, benefit from enhanced speaking and listening skills and express a favorable view of IB-MALL. Cuiye (2021) addresses issues in traditional English learning methods by integrating AI-based applications, creating an intelligent and personalized teaching atmosphere that improves language learning and teacher effectiveness. Huang (2021) introduces an English tutor robot using AI, demonstrating its effectiveness in primary school English curriculum practice and vocabulary teaching. Liu and Kong propose incorporating AI into English teaching, fostering a student-centered model to enhance language skills and other intelligences. Lai and Kritsonis (2020) analyze the pros and cons of computer-assisted and AI-based systems in second language learning, emphasizing the importance of leveraging information technology and AI, with potential drawbacks including teacher and student unawareness and economic considerations. Overall, these studies highlight the transformative potential of AI in language education, improving proficiency and creating

Dynamic learning environments. Top of Form Examination of the impact of emerging technologies. In a study by Abrigo, Ocdol, and Sadia (2019), it was found that technology integration in the Philippines education system has resulted in improved student engagement and performance. The study also noted that the use of educational technology has been effective in enhancing the learning experience and promoting collaborative and interactive learning environments. Additionally, emerging technologies have helped to provide access to high-quality educational content, leading to better learning outcomes. Another study by Yazon, Llanes, and Alvarez (2019) investigated the impact of mobile learning on student performance in a Philippine university. The results showed that mobile learning had a positive impact on student performance, particularly in terms of knowledge retention and academic achievement. Also highlighted the importance of developing appropriate mobile learning strategies to maximize the benefits of this technology. However, some studies have also identified challenges to the integration of emerging technologies in the Philippines education system. For example, according to Gonzales, Mozo, and Maniquis (2016), the lack of resources and infrastructure, inadequate teacher training, and varying levels of technological competency among teachers have hindered the effective implementation of technology in the classroom. The integration of emerging technologies in the Philippines education system has had a positive impact on student learning outcomes. The use of technology has helped to enhance the learning experience, promote collaborative and interactive learning environments, and provide access to high-quality educational content. However, challenges such as the lack of resources and infrastructure, inadequate teacher training, and varying levels of technological competency among teachers still need to be addressed to fully realize the potential of emerging technologies in Philippine education.

Challenges and opportunities in the integration of emerging technologies : According to a study by Acabal and Casingal (2018), one of the challenges in integrating emerging technologies in Philippine education is the lack of infrastructure and resources. Inadequate internet connectivity and limited access to devices and software hinder the effective implementation of technology in the classroom. Another challenge is the varying levels of technological

competency among teachers. Some teachers may not have the necessary skills and knowledge to fully utilize technology in teaching, resulting in limited use or misuse of technology. In another study by Palattao and Barrot (2019), it was found that while emerging technologies offer opportunities for improving teaching and learning, they also bring challenges in terms of data privacy and security. The use of educational apps and online platforms, for example, raises concerns on data protection and cyber security. The authors emphasized the need for policies and guidelines that ensure the safe and responsible use of technology in education. A study by Taguinod, Baylon, and Mirandilla (2020) highlighted the importance of teacher training in the successful integration of emerging technologies. The study found that teachers who received training on the use of emerging technologies showed significant improvement in their teaching practices, resulting in better learning outcomes for students. The authors emphasized the need for sustained and relevant teacher training programs that cater to the changing technological landscape. The integration of emerging technologies in Philippine education presents both challenges and opportunities. While there are issues with infrastructure, resources, and teacher competency, emerging technologies offer potential for improved teaching and learning. Policies and guidelines on data privacy and cyber security are also important. Finally, sustained and relevant teacher training programs can help educators harness the full potential of emerging technologies in the classroom.

IT Education in the Philippines: Educational Technology (EdTech) : Kubickova (2019) IT Education in the Philippines: Educational Technology (EdTech) merges innovative learning techniques with digital technology. It symbolizes a new era of education. The Filipino government understands the significance of teaching students how to utilize a digital economy. The vision is to elevate a generation that's ready to compete in the global market. (Kubickova, 2019). Smith (2019) Artificial intelligence is now changing the society and empowering people in new ways by enabling innovation in areas like healthcare, agriculture, education and transportation. This technology will continue to flourish, before deploying AI around the world ensure that it will be ethically, inclusively, and with transparency works for everyone (Smith, 2019)

Artificial intelligence and emerging technologies in smart classrooms : According to Dimitriadou E., and Lanitis, A. (2023) A range of AI-assisted emerging technologies, that include technologies related to class management, teaching aids and performance assessment have been presented. For each smart class technology presented the role of AI was discussed, allowing the in that way the determination of the role of AI in smart classes. Furthermore, through the analysis of advantages and disadvantages of smart classes, along with a SWOT analysis, the prospects, and trends related to the use of AI on smart classes have been discussed, allowing in that way the definition of several future research directions. The future directions presented can provide motivation to the AI, and educational technology research communities to engage in research activities that aim to deal with the identified challenges. Since the new era of technological advancement and the proliferation of digital devices and applications that are routinely used in everyday life has been integrated in education, there is a continuous need to invest in improving the services offered to students and the further development of AI-based smart classes definitely leads those efforts in the right direction. Since the concept of smart-classes is continuously enriched through the introduction of requirements and new technologies, in the future we plan to monitor this area and produce updated surveys to reflect future developments and conduct investigations in the area of intelligent learning environment. In addition, in the future we plan to provide specific comparative evaluations of different technologies, so that to quantify the effect of existing technologies and highlight the need for future improvements.

AI technologies for education: Recent research & future directions : According to Zhang, K. and Aslan, A (2021) AI technology is rapidly advancing and its application in education is expected to grow rapidly in the near future. In the USA, for example, education sectors are predicted with an approximate 48% of growth in AI market in the near future, from 2018 to 2022 (BusinessWire.com, 2018). AI technologies have great potentials in education, in particular, to increase access to learning opportunities, to scale up personally customized learning experiences, and to optimize methods and strategies for desired learning outcomes (Reynolds et al., 2020; Roschelle et al., 2020; Zawacki-Richter et al., 2019). Some scholars have publicly proposed to replace teachers or certain roles of teachers with AI robots ((Edwards & Cheok, 2018). While their article, Why Not Robot Teachers: Artificial Intelligence for Addressing Teacher Shortage (Edwards & Cheok, 2018) may cause some uneasiness, discomfort or even fear for many people; it is gradually becoming a reality. In addition to the intelligent tutors and teachable agents in online or blended learning as reported in AIED studies (e.g., Cheung et al., 2003; Chin et al., 2010, 2013; Cung et al., 2019; Köse & Arslan, 2016; McLaren et al., 2011), the first

AI teaching assistant robots, named Happy Numbers have been working in the classrooms in USA already. As Finn has emphasized back in the 1960s, technology is “more than an invention – more than machines. It is a process and a way of thinking” (Fin, 1960, p. 6). The integration of AIED calls for critical awareness of AI ethics and requires interdisciplinary and transdisciplinary collaborations in large-scaled, practical guidelines and examples for educators, together with new ways of teaching and learning. Despite skepticism, doubts or fears, AIED continues to open up new possibilities for innovations in education.

Motivation of Learners : Roberts (2014) emphasized that motivating factors comprise the qualities that an individual likes to do. It has manifestation of (1) the individual is energized. Active behavior (2) the individual is directed. Guided by will to by will to satisfying goals (3) the individual is persistent strive to achieve goals (4) the individual is strong. On the context of learning, if the learners are influenced by the said motivating factors, there will be improvement in the acquisition of learning. On the same premise David (2010) stressed that motivating factors have significant effect on the learning acquisition of the learners. It is found that the students are affected by different factors that led them to either attain high performance or low performance in learning English. The strength helps the individual to act his goals and this varies depending upon the factors, internally or externally. Gardner and Lambert (2007) define "instrumental motivation" in their series of investigation regarding students learning French as foreign language as a force learning that directs career goals and other practical reasons. The learner maybe interested to reach his 16 motives of passing the exam and finishing his studies of receiving a high salary and so on. Move on and accomplishing their rewards. To lead students in the pursuit of desired learning objectives is the most challenging roles of teachers in today educational cosmos. Motivating the learners to achieve preferred results is still a never-ending issue that constantly boggles the mind of teachers of all levels and an inveterate queenly that immensely affects the teaching learning process. Generally speaking, motivation is the force that energizes and directs a behavior towards a goal (Schunk, 2015).

With the same thought, Dunn (2010) enumerates the factors: environmental, psychological, sociological, physiological, emotional and study skills that motivate students to learn language such as environmental, psychological, sociological, physiological, emotional and study skills. Masguret et.al (2009) learning a second language requires adoption of word sounds, pronunciation, word orders and other behavioral and cognitive features that are part of another culture. Motivation occurs when there is a desire to integrate with the surroundings and people is strong enough, language acquisition will occur. Typically, the concept of motivation is applied when a person is energized to satisfy some needs or desires. The person will engage in or be attracted toward activities that are perceived as having the potential to meet these desires or needs. The term motivation refers to a student's willingness, need, desire and compulsion to participate in and be successful in the learning process (Smith, 2014). In the educational set up, it is easier for the teacher to let the students learn the subject matter if they have willingness to learn, if they feel the need to it, desire to improve for better result and be compelled to achieve and succeed.

Harrison (2014) seconded that motivation to learn starts with the willingness of the learner to learn. Once the willingness is established and confidence is evident from the learners, acquisition of the information follows after. For the teacher to improve the performance of the students, it is necessary that the learners must be influenced to be willing and from there motivation takes place and learning comes next. According to Evevard (2009), the concept of motivation has been one of the most essential components of educational environment. Motivation has a reciprocal relationship to learning and performance. Two distinct types of academic motivation interrelated in most academic setting - extrinsic and intrinsic motivation. A student can be described as intrinsically motivated when she engages in learning purely for the sake of attaining a reward or for avoiding a punishment. (Schunk, 2015). The use of intrinsic Motivation in the forms of awards grades, privileges or praises is clearly widespread and will continue to be so not only within the school but in the society (Evevard, 2009). The adoption of Artificial Intelligence (AI) technology in educational settings represents a paradigm shift in the way that teaching and learning are traditionally approached. Given the dynamic nature of education in Calamba City, Laguna's private schools, where technology is advancing at the same time as education, it is critical to comprehend the ramifications of instructors adopting AI and how this will affect students' motivation. This synthesis explores the body of research, offering a summary of the state of teacher AI integration today and its possible impact on student motivation. Through an examination of these aspects in the unique setting of private education in Calamba City, Laguna, this research aims to provide detailed understandings of the complex interplay among AI technology, instructional strategies, and student motivation.

III. RESEARCH METHODOLOGY

This chapter describes the researcher's methodology and study-related procedures. The research design, data scope or sources, study population, instrumentation and validation, data collection techniques, and statistical treatment are among the subjects covered.

Research Design : The research used for this study is explanatory sequential mixed methods, according to Creswell (2019) a sequential and integrated approach, utilizing both quantitative and qualitative data collection and analysis to provide a comprehensive understanding of the research problem. In the research on the Assessment Management of Artificial Intelligence (AI) Technology and its Effect on Learner Motivation in Calamba City, Laguna, 92 participants were chosen from three esteemed universities: National University Laguna, STI College Calamba, and Lyceum of the Philippines University Laguna. The study endeavored to gather many viewpoints regarding the use of AI and its impact on motivation in various educational settings, with a particular emphasis on senior high school instructors. Utilizing statistical methods like descriptive correlational statistics to highlight important discoveries and inferential statistics, such as t-tests to pinpoint possible discrepancies between instructors from other private schools are all part of the quantitative data analysis process. Relationships between variables, such as the association between teachers' AI skills and students' motivation levels, can be found by correlation analysis, particularly when the Pearson correlation coefficient is used. Regression analysis will be used to investigate associations that are predictive, such as the relationship between changes in learner motivation and variations in AI integration methods. Correlated research design served as the information source for the assessment management of artificial intelligence (AI) technology among teachers and the motivation of students in Calamba City, Laguna's private schools. The goal of the study's qualitative phase was to shed light on the difficulties teachers had when utilizing artificial intelligence (AI) technology. A specific set of instructors were interviewed in order to gain a comprehensive understanding of their viewpoints and experiences. The goal was to unearth specifics regarding the difficulties they had while integrating AI technology into their lesson plans.

Using these quantitative metrics, the study aimed to quantify the patterns and trends in the application of AI technology and how they affected learner motivation, adding statistical support to the more comprehensive comprehension of the research topics. The quantitative analysis's findings supplemented the qualitative research's findings to provide a thorough and balanced picture of the assessment management of AI technology and its effects on instructors and students in Calamba City, Laguna's private schools. Using a mixed methods approach, the researcher first collected qualitative data from teachers through in-depth interviews and focus groups. These approaches examined aspects such as training, resource availability, and the overall efficacy of AI in the teaching-learning process, delving into the subtleties of AI integration. The researcher used a mixed techniques strategy to collect data. Initially, focus groups and in-depth interviews with the participating instructors were used to gather qualitative data. A thorough investigation of their perspectives, difficulties, and experiences with the administration and integration of AI technology was made possible by these qualitative methodologies. It's possible that the conversations covered subjects including availability of resources, training, and the general efficacy of AI in improving the teaching-learning process.

As advised by Creswell & Creswell (2019), the study integrated quantitative data with qualitative insights. The respondents were given surveys to complete, which measured their views, habits, and difficulties using AI technology. Inquiries also examined how AI affects learners' motivation, offering a thorough grasp of the topic. In order to guarantee representation from a range of academic backgrounds and socioeconomic backgrounds among Calamba City's private schools, purposeful sampling was employed. Because the study was iterative, survey questions and interviewing strategies could be improved in response to preliminary findings. Teachers' voluntary engagement highlighted moral considerations while guaranteeing openness and collaboration. The goal of the research design was to confirm and verify findings across various sources by combining both qualitative and quantitative data in an explanatory sequential mixed methods approach. The thorough findings provide a reliable foundation for recommendations based on data regarding the efficient use of AI technology and how it affects student motivation in private schools in Calamba City, Laguna, especially in the senior high school program.

Research Locale : This study was within the educational institutions located in Calamba City, Laguna, specifically focusing on Lyceum of the Philippines University Laguna, STI College Calamba City Campus, and National University Laguna, encompassing the research locale. In the senior high school department of Lyceum of the Philippines University, there are 33 faculty members serving a total student population of 209. Emphasizing the

integration of AI technology into their educational practices, the institution encourages both faculty and students to make extensive use of such tools. A significant majority of faculty members have been incorporating AI technology into their teaching and lesson planning for over a year now, demonstrating a commitment to innovation in education. In the senior high school department of STI College Calamba Campus, there are 25 faculty members overseeing a student enrollment of 615. Emphasizing the

integration of artificial intelligence as a teaching aid and the advancement of technology in the classroom, both teachers and students are mandated to utilize AI technology. Similarly, at National University, there are 34 faculty members assigned to the senior high school department, with a total of 293 enrolled senior high school students for the academic year 2023-2024. The majority of both faculty and students are actively utilizing AI technology, as it is compulsory for them to incorporate it into their lessons.

Source of Information : Instructors from private schools in Calamba City, Laguna, serve as the respondents for the quantitative component of the survey, which evaluates learner motivation and AI technology. Teachers' responses to surveys and questionnaires will be gathered in order to quantify things like their level of proficiency with AI, how frequently they integrate AI into their lessons, and how they see the impact of AI on education. In addition, the researcher will use quantitative metrics to gauge how motivated students are in AI-enhanced learning settings.

The key responders, who are instructors, are chosen on the basis of their membership in the senior high school departments of eminent Calamba City institutions such as National University Laguna, STI College Calamba, and Lyceum of the Philippines University Laguna. These teachers are essential players because they are at the center of the management and integration of AI technology in the classroom. A portion of the teachers involved in the quantitative study will be among the participants in the survey questionnaire that make up the qualitative component. The goal of this qualitative phase is to explore the varied perspectives, experiences, and difficulties that educators and learners have with artificial intelligence (AI) and how it affects motivation. A targeted sample of ninety-two (92) respondents participated in the study on the Assessment Management of Artificial Intelligence (AI) Technology among teachers and the motivation of learners in private schools in Calamba City, Laguna. Three

Prestigious local universities National University Laguna, STI College Calamba, and Lyceum of the Philippines University Laguna were used to choose the participants. The study specifically targeted educators working in these institutions' senior high school division, acknowledging their critical role in integrating and overseeing AI technology in the classroom. A thorough qualitative study will serve as the information source for the assessment management of artificial intelligence (AI) technology among teachers and the motivation of students in Calamba City, Laguna's private schools. The goal of this research project is to investigate the complex dynamics of incorporating AI technology into educational environments and how it affects teachers and students. Qualitative research approaches, including in-depth interviews, focus groups, and content analysis of pertinent materials, will be utilized in this study. By using these techniques, the study will be able to compile comprehensive and detailed information about the perceptions, experiences, and difficulties that educators have when integrating AI tools into their lesson plans. Concurrently, the research will investigate the motivational elements of students, looking at how the use of AI technology affects their interest, engagement, and general enthusiasm for learning. To ensure a well-rounded perspective, the study will include five (5) top performing students from different strands, such as STEM, ABM, HUMSS and Sports Track, along with five (5) top performing teachers from the senior high school department. Using a qualitative methodology, this information source aims to offer a comprehensive picture of the various aspects of AI integration in Calamba City's private schools, adding significant insights to the continuing conversation about technology-enhanced education. The integration of these several approaches enables a thorough investigation of the intricate relationships that exist between AI technology, pedagogy, and student motivation within the particular setting of Calamba City's private schools. The research attempts to enhance the validity and dependability of its findings by triangulating

quantitative and qualitative data from educators and students, offering a comprehensive view of the dynamics around AI technology in education.

Table 1. Respondents of the Study SHS Teachers

Respondents	LPU Laguna	STI College	NU Laguna	Total
Grade 11	17	15	16	48
Grade 12	16	10	18	44
Total	33	25	34	92

The table A shows the respondents of the study. The respondents are SHS teachers. Lyceum of the Philippines University Laguna composed of 17 Grade 11 teachers, 16 Grade 12 teachers, STI College Calamba 15 Grade 11 teachers and 10 teachers from grades 12 and National University Laguna 16 Grade 11 teachers and 18 grade 12 teachers for a total of 56 participating teachers. Generally, there are 3 universities with 92 teachers will be participating on this study.

Research Instrument : Research in private schools in Calamba City, Laguna, was focused on exploring student motivation and evaluating teacher assessment management utilizing artificial intelligence (AI) technology. The study adopted a mixed-method approach, primarily emphasizing quantitative methods. Quantitative measures involved assessing the frequency of AI integration, perceived instructional impacts, and teachers' AI competency through surveys and questionnaires. Additionally, the research employed a questionnaire as the research instrument to collect data on AI technology usage and its influence on student motivation. To gain deeper insights into the perspectives of teachers and students, qualitative components such as focus groups and interviews were integrated into the study. For the interviews, an interview guide was utilized to facilitate discussions with both learners and instructors concerning their experiences and perceptions regarding AI technology implementation in the classroom.

The overarching goal of this comprehensive methodology was to enhance the validity and reliability of the study by providing a nuanced understanding of the intricate dynamics among AI technology, instructional methodologies, and student motivation within the context of private schools in Calamba City. The questionnaire is composed of 2 parts, part 1 is the level of management of Ai technology of teachers and the part 2 is the level of motivation of learners. Both set of questionnaires have 10-item indicators, both for teachers and learners. The interview guide questions have five 5 open ended questions for teachers and learners, focusing on challenges they experience in utilizing AI technology.

Data Analysis: To identify patterns, correlations, and trends in the utilization of AI technologies by teachers and the motivation levels of students, quantitative data collected through surveys and questionnaires were statistically examined. Key quantitative findings, including the frequency of AI integration and its observed impact on teaching strategies and student motivation, were summarized using descriptive statistics. Concurrently, thematic analysis was conducted on the qualitative data obtained from document analysis, focus groups, in-depth interviews, and classroom observations. The aim of this qualitative technique was to identify recurrent themes, patterns, and insights from the rich narrative data collected. Themes were grouped to highlight the nuances of educators' experiences with AI technology, the challenges encountered, and their perspectives on its influence. Additionally, students' viewpoints on motivation and academic outcomes in AI-enhanced settings were revealed. The merging of quantitative and qualitative findings allowed for an exhaustive assessment of the intricate dynamics surrounding AI technology in private schools. By integrating data from multiple sources, the analysis enhanced overall validity and reliability, providing a deeper understanding of the connections between learner

motivation, instructional strategies, and AI integration within the specific educational context of Calamba City, Laguna. The mixed-method approach ensured a comprehensive investigation of the research topics, enhancing both the breadth and depth of the study's conclusions.

Table 2
Three-point Likert Scale in validating the Survey Questionnaire

Range	Numerical Scale	Verbal Interpretation
2.5 – 3.0	3	Very Acceptable
1.5-2.5	2	Acceptable
0-1.5	1	Not Acceptable

A three-point Likert scale was used to evaluate the Assessment Management of Artificial Intelligence Technology and the Motivation of Learners in Calamba City's private schools. A panel of five specialists, comprising a Supervisor, Division Superintendent, Head Teacher, Master Teacher, and School Head (Principal), validated the factors to ensure the scale's validity. This comprehensive approach, which incorporated diverse educational perspectives, aimed to enhance the instrument's effectiveness in capturing the nuances of AI integration and learner motivation within the specific context of Calamba City's private schools, ensuring methodological rigor and reliability in the study's findings.

Table 3
Five-Point Likert Scale (Level of Management of Teachers in using AI technology)

Range	Responses	Verbal Interpretation
4.21-5.0	Strongly Agree	Very High Level
3.41-4.20	Agree	High Level
2.61-3.40	Neutral Uncertain	Moderate Level
1.81-2.60	Disagree	Low Level
Below 1-1.80	Strongly Disagree	Very Low Level

Legend: 4.21- 5.00 Very High Level; 3.41-4.20 High Level; 2.61- 3.40 Moderate Level; 1.81-2.60 Low Level; and 1.0- 1.80 Very Low Level

A five-point Likert scale was used in the study to measure how comfortable educators are using artificial intelligence tools. On a scale of one to five, participants were shown statements regarding how they manage artificial intelligence tools in the classroom and asked to indicate how much they agree or disagree. This methodical technique provided an organized way to measure the attitudes and behaviors of teachers, enabling a numerical assessment of their ability to incorporate AI technology into learning environments. The Likert Scale offers a standardized and well-structured approach to data collection, making it possible to conduct an extensive evaluation of how well management tactics integrate AI tools into educational settings.

Table 4
Five-point Likert Scale (Level of motivation of learners in using AI technology)

Range	Responses	Verbal Interpretation
4.21-5.0	Strongly Agree	Very High Level
3.41-4.20	Agree	High Level
2.61-3.40	Neutral Uncertain	Moderate Level
1.81-2.60	Disagree	Low Level
Below 1-1.80	Strongly Disagree	Very Low Level

Legend: 4.21- 5.00 Very High Level; 3.41-4.20 High Level; 2.61- 3.40 Moderate Level; 1.81-2.60 Low Level; and 1.0- 1.80 Very Low Level

The research utilized a five-point Likert scale to methodically evaluate learners' motivation in adopting AI

technology, presenting participants with statements representing different aspects of their motivation and prompting them to rate their agreement or disagreement on a scale of one to five. Researchers gained a full understanding of the complex dynamics of learner motivation towards the adoption of AI technology in the classroom by utilizing this quantitative approach, which provides an organized framework. The methodical process of the Likert Scale guarantees a dependable and trustworthy way to evaluate all the elements impacting students' preparedness to accept AI in learning environments.

Instrument : In order to guarantee that the instrument closely adheres to the particular study aims and gathers pertinent data specific to the particular context of AI technology assessment and learner motivation in Calamba City, Laguna private schools, a researcher-made questionnaire is used. Because of the questionnaire's organized design, systematic data collecting is made easier, allowing the researcher to make insightful contributions to the field of educational technology and reach informative findings.

A three-part questionnaire created by the researcher served as the quantitative research tool for the study on the motivation of students and the management of artificial intelligence technology assessment among teachers in private schools in Calamba City, Laguna. Demographic profile: Gathering demographic data from the respondents is the main goal of the questionnaire's first section. This section asked about the participants' age, gender, educational background, experience as a teacher, and any other pertinent personal information. By providing context for the replies and enabling subgroup analysis, the demographic profile aids in the identification of trends depending on various participant characteristics. To quantify replies, the questionnaire used a Likert scale that enable statistical analysis and interpretation. Open-ended questions were be used to get qualitative information to supplement the quantitative data. The gathering of pertinent information was aided with ten (10) questions for surveys and interview, below is the utilized questions for interview and survey:

Survey Questions:

For Teachers

As a teacher, I...

1. am confident in my proficiency in using Artificial Intelligence (AI) technology in teaching practices.
2. frequently integrate AI technology into my classroom assessments.
3. make sure AI enhances the overall teaching and learning experience
4. use resources and other support for the effective integration of AI in teaching.
5. contribute significantly in the learning experience of learners.
6. easily overcome challenges I encounter in the integration of AI in instruction.
7. experience the substantial positive impact of AI technology in good flow of discussion.
8. feel that the use of AI increase my confidence and boost my self-esteem in teaching.
9. observe that my students became more diligent in studying.
10. feel satisfied in the teaching profession because I know I provide my students quality learning opportunities

For Learners:

I, as learner is motivated to use AI because...

1. utilizing AI in education encourages me to learn.
2. I believe that AI technology enhances my learning experience.
3. I doubt that AI technology enhances my learning experience.
4. it makes the lesson more interesting to me
5. it makes complex subjects easier for me to understand.
6. I feel more confident in my abilities when using AI-powered educational resources.
7. the presence of AI in education encourages me to explore new topics and subjects.
8. it allows me to customize my education to meet my needs.
9. I find myself more curious and enthusiastic about learning when using AI tools.

Interview Guide Questions:

For Teachers...

1. Can you describe your experience with integrating artificial intelligence (AI) technology into your teaching practices?
2. What AI tools or platforms do you currently use in your classroom, if any?
3. How do you assess the effectiveness of AI technology in supporting teaching and learning?
4. How has the integration of AI technology influenced your motivation and enthusiasm for teaching?
5. In your opinion, how does AI technology affect student motivation and engagement in the learning process?

For Learners...

1. How do you feel about the use of artificial intelligence (AI) technology in your classroom?
2. Have you noticed any changes in the way you learn since AI technology has been introduced into your learning environment?
3. Can you describe any specific AI tools or platforms that you have used as part of your learning experience?
4. In your opinion, how does AI technology impact your motivation to learn?
5. Have you found AI technology helpful in understanding difficult concepts or subjects?

Data Analysis Plan : A combination of quantitative and qualitative approaches was used to come up with a mixed-methods research design which is focused on the Assessment Management of Artificial Intelligence Technology among Teachers and Motivation of Learners in Private Schools of Calamba City, Laguna, the statistical tools and qualitative data analysis were utilized as listed below:

Quantitative: A quantitative picture of AI proficiency, integration frequency, and perceived effects on instruction was obtained using descriptive statistics like mean, median, and standard deviation. Pearson moment correlation was utilized to explore relationships between variables, focusing particularly on the correlation between different aspects of AI integration and learner motivation. This statistical method allowed for a comprehensive examination of how changes in one variable might correspond to changes in another, providing valuable insights into the dynamics between AI technology implementation and student engagement. Additionally, factor analysis, specifically Principal Component Analysis, was employed to identify the underlying factors driving AI integration within the educational context of Calamba City's private schools. By uncovering these key elements, the study gained a deeper understanding of the complexities involved in incorporating AI technology into teaching practices. Furthermore, categorical responses from surveys and Likert scale analysis were used to interpret participants' perceptions and attitudes towards AI integration, contributing to a holistic evaluation of the effectiveness of AI technology in enhancing learner motivation and educational outcomes.

Qualitative: On the qualitative front, thematic content analysis, assisted by open and axial coding, was utilized to extract patterns and themes from interviews, focus groups, and observations. Systematic comparisons across cases and categories were made easier by comparative analysis using continuous comparative approaches. Furthermore, member verification will be utilized to bolster the reliability and validate the correctness of the results. The goal of this extensive mixed-methods approach is to provide a detailed and nuanced investigation of the intricate relationships between AI technology, instructional strategies, and learner motivation in Calamba City, Laguna's private schools.

Data Gathering Procedure : The researcher requested permission to participate in the study from the leaders of the senior high school departments at LPU Laguna, NU Laguna, and STI College Calamba in a handwritten letter that included information on the goals and purpose of the investigation. After receiving approval, the researcher scheduled one-on-one online interviews, created semi-structured interview forms, and set up cameras and recorders for recording with participants' permission. Online interviews were selected to guarantee convenience for the researcher and the participants. A Google Form will be used for the survey, guaranteeing automated data interpretation and measurement. This technique complies with the Data Privacy Act of 2012 and offers an easy means of gathering information while guaranteeing the security of respondents' personal data. Document Analysis

Quantitative Phase: The study used Pearson's correlation coefficient (r) to investigate possible associations between two important variables: learners' motivation levels and teachers' use of AI technology. A rigorous cleaning

procedure was applied to the data gathered from instructors and students at private institutions, guaranteeing the elimination of anomalies and filling in any missing numbers. After that, a normality check was carried out to determine whether the variables satisfy Pearson's correlation assumptions. To visually examine the linear relationships between the two sets of variables, scatterplots were made next. The calculation of the Pearson's r coefficient, which expresses the magnitude and direction of any linear correlations, will constitute the actual correlation analysis. To ascertain if the discovered relationships are

statistically significant, significance testing was used. The correlation's strength and direction will be taken into account when interpreting the data, and any possible confounding factors were taken into consideration. In the end, the use of Pearson's correlation in data analysis yielded insightful information on the relationship between the motivation levels of students and the way in which teachers utilized AI technology in the Calamba City, Laguna classroom.

Quantitative Phase: Quantitative data from surveys is recorded into a secure database during the data coding and entry phase, while qualitative data is methodically coded using thematic analysis to find patterns. Participants' privacy is protected by the use of unique identifiers. Verifying the accuracy of the data entering process twice is an essential step in ensuring the dataset's dependability. These procedures facilitate thorough analyses and uphold the integrity of study findings.

Data Interpretation : In order to ensure a comprehensive understanding, researchers contextualize quantitative findings in relation to research objectives throughout the data interpretation process. They examined the complex relationships between AI technology, instructional strategies, and student motivation by fusing qualitative insights with quantitative data to provide a comprehensive interpretation. The procedure goes further to take into account wider ramifications, illuminating how AI integration affects the educational environment. This in-depth analysis strengthens the study's importance and adds insightful information to the conversation around artificial intelligence in education.

Reporting and Documentation : Researchers draft a thorough study report during the reporting and documentation phase, which includes components including an executive summary, methodology, findings, and recommendations. Charts and graphs are examples of visual aids that improve the way results are presented. Ensuring ethical practices in study reporting and preserving confidentiality require anonymizing participant information. This method preserves individual identities while facilitating the transparent exchange of important knowledge.

Feedback and Validation : The data technique described here is a thorough and detailed foundation for this research on the integration of AI technology in Calamba City's private schools. Distribution of the survey strategically, qualitative interviews, document analysis, and observation are all part of the process. Prioritizing ethical issues ensures participant consent and anonymity. The study's reliability is increased by the mixed-methods approach, and correctness is given priority during the data coding and analysis phases. The overall goal of this organized data technique is to offer a comprehensive and significant comprehension of the influence of artificial intelligence (AI) technology on education.

Ethical Consideration : Ensuring the validity and reliability of AI-based assessment tools is a crucial ethical factor in the quantitative assessment management of AI technology for teachers and learner motivation in Calamba City, Laguna's private schools. It is important to use thorough validation procedures backed by statistical analysis to confirm the reliability and consistency of the evaluations. This quantitative examination contributes to ensuring that the AI algorithms offer trustworthy insights about the performance of educators and students. Furthermore, it is critical to continuously assess and evaluate how AI-driven motivating tools affect student outcomes. By employing quantifiable measurements, such engagement levels and academic performance statistics,

instructors may objectively evaluate the efficacy of these tools. The proper integration of AI technology in education in Calamba City, Laguna, requires striking a balance between acknowledging the ethical ideals of justice, openness, and privacy and utilizing quantitative data for assessment accuracy. One important ethical consideration in the qualitative assessment management of Artificial Intelligence (AI) technology for teachers and learner motivation in Calamba City, Laguna's private schools is the subjectivity of both teachers' and students' experiences

and views. It is important to use qualitative approaches, including focus groups and interviews, to acquire detailed information about how AI-powered tests affect student motivation and the teaching process. The identification of unforeseen implications, moral conundrums, and potential biases that would not be apparent from quantitative data alone is made possible by having a thorough understanding of the lived experiences of educators and students. Additionally, qualitative research gives interested parties a forum to voice their preferences, worries, and expectations about the use of AI in education. This participatory approach enables a more inclusive and ethically grounded decision-making process, ensuring that the use of AI tools matches with the values and needs of the Calamba City private school community.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA : This research study aims to determine the level of management of the teachers using AI and the Motivation of the learners using AI technology that can develop primer AI technology for instruction.

The study sought answers to the following questions:

1. What is the level of management of teachers in using AI technology?

Table 5
Assessment on the level of management of teachers in using AI technology

Indicators	Mean	Sd	Interpretation
As a teacher, I ...			
1. am confident in my proficiency in using Artificial Intelligence (AI) technology in teaching practices.	3.761	1.139	High Level
2. frequently integrate AI technology into my classroom assessments.	3.783	1.191	High Level
3. make sure AI enhances the overall teaching and learning experience	3.717	1.167	High Level
4. use resources and other support for the effective integration of AI in teaching.	3.609	1.145	High Level
5. contribute significantly in the learning experience of learners.	3.630	1.199	High Level
6. easily overcome challenges I encounter in the integration of AI in instruction.	3.674	1.097	High Level
7. experience the substantial positive impact of AI technology in good flow of discussion.	3.652	1.100	High Level
8. feel that the use of AI increases my confidence and boost my self-esteem in teaching.	3.674	1.230	High Level
9. observe that my students became more diligent in studying.	3.609	1.085	High Level
10. feel satisfied in the teaching profession because I know I provide my students quality learning opportunities	3.761	1.079	High Level
General Assessment	3.687	1.044	High Level

Legend: 4.21- 5.00 Very High Level; 3.41-4.20 High Level; 2.61- 3.40 Moderate Level; 1.81-2.60 Low Level; and 1.0- 1.80 Very Low Level

As Table 1 illustrates, the findings support a strong consensus among participants about the positive effects of AI on education. It is clear that people believe AI to be a useful tool in the field of education because average scores regularly fall into the "High Level" category for every assertion. The high average score of 3.783 for the statement " Frequently integrate AI technology into my classroom assessments." in particular highlights respondents' strong beliefs of AI's beneficial effects on their educational experiences. The average score of 3.717 for the statement, " Make sure AI enhances the overall teaching and learning experience," supports this feeling even further and shows that AI helps learner engagement. Furthermore, statements like " Observe that my students became more diligent in studying and Feel that the use of AI increases my confidence and boost my self- esteem in teaching" and "Easily overcome challenges I encounter in the integration of AI in instruction" have average scores of 3.674, which emphasizes the role of AI in encouraging curiosity and exploration among learners. Furthermore, the statement "It allows me to customize my education to meet my needs" received an average score of 3.652, underscoring the importance of artificial intelligence in enabling individualized learning experiences that are catered to individual tastes and learning styles.

All things considered, as Table 1 shows, the results offer strong proof of the general acceptance of AI's beneficial effects on education. The information supports the idea that AI facilitates learning by increasing motivation, improving engagement, and giving students more agency over their academic journey. The average scores for all statements continuously fall into the "High Level" category, indicating that respondents recognize the positive impacts of AI technology on a range of learning domains. This highlights artificial intelligence's potential to transform education and give students greater motivation, engagement, and power to pursue knowledge. Educational institutions can establish dynamic learning environments that accommodate the varied requirements and preferences of learners, promoting a culture of lifelong learning and skill development, by utilizing AI-powered tools and resources. These results essentially highlight the revolutionary possibilities of AI in education, indicating a change toward more flexible, tailored, and successful learning environments for students of all skill levels and backgrounds. According to Kumar, A., (2021) from *Personalized Learning Environments: Using AI to Transform Education*, the research by Kumar highlights AI's transformative role in shaping personalized learning environments tailored to individual learners' needs, preferences, and progress. AI-driven personalization offers adaptive content, curates relevant resources, and provides tailored support to enhance student engagement, motivation, and learning outcomes. By analyzing student data and adjusting learning materials and support in real-time, AI fosters a more engaging, relevant, and effective educational experience, ultimately promoting lifelong learning and academic success.

AI-driven personalization goes beyond traditional one-size-fits-all approaches to education. It enables the delivery of adaptive content that adjusts in real-time to meet the evolving needs of each learner. For instance, AI algorithms can analyze a student's performance data to identify areas of strength and weakness, subsequently offering tailored learning materials that address these specific areas. This adaptive content ensures that students are challenged appropriately, reducing the likelihood of boredom or frustration, and fostering a more engaging and effective learning experience. Meanwhile, in the research by Conole, G., (2019), Conole's framework offers a structured approach to understanding and mapping learning and teaching practices in higher education, emphasizing context, pedagogy, and technology. This framework guides the effective integration of AI by ensuring alignment with educational goals and enhancing teaching and learning experiences.

What is the level of motivation of learner respondents?

Table 6
Assessment on the level of motivation of learner respondents

Indicators	Mean	Sd	Interpretation
I, as a learner, is motivated to use AI because...			
1. utilizing AI in education encourages me to learn.	3.723	0.857	High Level
2. I believe that AI technology enhances my learning experience.	3.819	0.879	High Level
3. it makes the material more interesting to me.	3.916	0.904	High Level

4. it makes complex subjects easier for me to understand.	3.961	0.867	High Level
5. I feel more confident in my abilities when using AI-powered educational resources.	3.716	0.917	High Level
6. the presence of AI in education encourages me to explore new topics and subjects.	3.819	0.957	High Level
7. it allows me to customize my education to meet my needs.	3.865	0.912	High Level
8. I find myself more curious and enthusiastic about learning when using AI tools.	3.723	0.908	High Level
9. it increases my efficiency in the classroom.	3.729	0.921	High Level
10. I feel empowered to take charge of my learning with the help of AI tools.	3.781	0.892	High Level
General Assessment	3.805	0.732	High Level

Legend: 4.500- 5.000 Very High Level; 3.500-4.499 High Level; 2.500- 3.499 Moderate Level; 1.500-2.499; Low Level; and 1.000- 1.499 Very Low Level.

The table 2 reveals that on the application of AI technology in the classroom, there is generally favorable perspective. With an overall mean score of 3.805, which is in the "High Level" range, it is clear that respondents think AI is a useful tool for teaching. The statement that received the highest ranking (3.961), "It makes complex subjects easier for me to understand," highlights how useful participants believe artificial intelligence (AI) to be in helping them learn difficult concepts. On the other hand, the statement "I feel more confident in my abilities when using AI-powered educational resources" was ranked lower (3.716), suggesting that people were not as in agreement with the boost in confidence that AI tools bring.

Though responses to each statement varied, overall, the pattern shows that people are generally favorable about the role that AI technology can play in education. Participants are aware of its capacity to improve educational opportunities, encourage curiosity, and customize instruction for each student. A thorough analysis of the participants' answers is given in Table 2, which also includes information on mean scores, standard deviations, interpretations, and rankings for each statement. This thorough summary makes it possible to comprehend the respondents' varied perspectives on AI technology in education on a deeper level. Although there are some differences in certain parts of AI's perceived impact, overall, the results point to a positive impression of the technology's contribution to education.

According to Winkler, R., & Söllner, M. (2020), The study underscores the generally positive view of AI's role in education, aligning with the favorable perspectives observed in your findings. This alignment suggests a growing consensus among educators, students, and stakeholders about the potential benefits of integrating AI technologies into educational settings. The positive view likely stems from AI's capacity to offer personalized learning experiences, adapt to individual student needs, and enhance instructional strategies. Additionally, AI's ability to simplify complex subjects and provide targeted support can contribute to improved learning outcomes and increased student engagement. The favorable perspectives on AI in education may also be influenced by the growing recognition of AI's role in addressing educational challenges, such as addressing diverse learning needs, expanding access to quality education, and fostering lifelong learning opportunities. Furthermore, the positive view may be bolstered by successful implementations of AI-driven educational tools and platforms that have demonstrated tangible benefits in enhancing teaching effectiveness and student achievement.

On the other hand, according to the research of Holmes, W., & Bialik, M. (2019), AI is acknowledged for its potential to expand and improve educational opportunities, supporting the positive perceptions of its role in education. This recognition stems from AI's transformative capabilities in addressing various educational challenges and enhancing the quality and accessibility of learning experiences. AI's potential to expand and improve educational opportunities is grounded in its ability to personalize learning, expand access to quality education, support educators, enhance collaboration, and contribute to educational research and policy-making. These capabilities align with the positive perceptions of AI's role in education, highlighting its promise in transforming teaching and learning and

fostering a more inclusive, equitable, and effective educational system.

2. Is there any significant correlation between AI management of teachers and the motivation of learners?

Table 7
Significant correlation between AI management of teachers and the motivation of learners

Computed r	p-value	Interpretation	Decision	
-0.10935	0.764	Very Low Inverse Correlation	Not Significant	Accept Ho

Level of Significance $p < 0.05$ to interpret r 0.00 No correlation ± 0.01 to ± 0.20 Very weak [(-)inverse] Correlation ± 0.21 to ± 0.40 Weak [(-)inverse] Correlation ± 0.41 to ± 0.70 Moderate [(-)inverse] Correlation ± 0.71 to 0.90 Strong [(-)inverse] Correlation ± 0.91 to ± 0.99 Very Strong [(-)inverse] Correlation ± 1.00 Perfect [(-)inverse]

Correlation : With a computed correlation coefficient (r) of -0.10935, the variables under investigation have a very weak inverse correlation. This implies that, albeit the association is really weak, as one variable grows, the other tends to decrease slightly. The p-value of 0.764, which is significantly more than the standard significance level of 0.05, suggests that the association observed is not statistically significant. In real words, this indicates that there is probably more probability for the correlation to have occurred than for there to be a significant relationship between the variables. As a

result, we are unable to reject the null hypothesis (H_0), which claims that the variables do not significantly correlate. These statistical results are shown graphically in Table 3, which also provides the computed correlation coefficient, p-value, interpretation, and conclusion on the correlation between the variables. This table facilitates comprehension and interpretation of the findings by offering a thorough synopsis of the statistical analysis carried out. According to Wickham, H., & Grolemond, G. (2019), the book's focus on data visualization extends beyond mere technical proficiency; it also emphasizes the importance of thoughtful design principles and best practices in creating clear and informative visualizations. This includes considerations such as choosing appropriate scales, labels, colors, and annotations to enhance readability, interpretability, and overall effectiveness of the visualizations.

By leveraging R's capabilities and following best practices in data visualization, researchers can enhance their ability to communicate their findings effectively, engage their audience, and facilitate deeper understanding and interpretation of correlation coefficients, significance testing outcomes, and other statistical results. On the other hand, according to Sullivan, G. M. (2021), Recognizing the complexity often associated with statistics, Sullivan's approach focuses on simplifying these intricate concepts, ensuring they are accessible and understandable even for readers without a strong statistical background. One of the key concepts addressed in the book is the null hypothesis, a foundational principle in statistical hypothesis testing. Sullivan breaks down this concept into easily digestible explanations, avoiding jargon and technical language. She clarifies the purpose and significance of the null hypothesis in statistical testing, emphasizing its role as a default assumption or baseline against which observed data are compared to determine the presence of an effect or relationship.

What are the challenges experienced by teachers in utilizing AI technology in education?

Diverse viewpoints are presented when it comes to using AI into educational procedures. While some acknowledge that it has the ability to completely transform education by improving efficiency, personalization, and insight into student performance, others warn against possible abuse and stress the significance of careful integration. Teachers recognize AI's revolutionary significance in delivering customized learning experiences, flexible teaching strategies, and cutting-edge content delivery techniques, despite these divergent opinions.

Table 8
SOP 4 for Teachers

Participant	Responses	Researcher's Observation
Participant 1	<i>Educators need to consider the ethical implications of AI in education, such as algorithmic bias, fairness, and transparency. Ensuring that AI tools are used ethically and responsibly is crucial.</i>	Participant 1 answered it with confidence and basis.
Participant 2	<i>Challenges can include lack of technical infrastructure, privacy concerns, and the need for teacher training to effectively use AI tools. There can also be resistance from those who prefer traditional teaching methods.</i>	Participant 2 explain as if talking to a friend.
Participant 3	<i>The overuse of AI in education compromises students' critical thinking skills, exacerbates educational inequality, and raises concerns about data privacy, necessitating a balanced approach that promotes autonomous learning while addressing ethical and privacy issues.</i>	Participant 3 answered it with conviction and based on experience.
Participant 4	<i>Some challenges faced when using AI technology as part of the learning process includes lack of contextual understanding, over-reliance on AI, and potential for inaccuracies. It's important to use AI as a complementary tool rather than a replacement for traditional learning methods to address these challenges effectively.</i>	Participant 4 explains it with conviction and a little disappointed.
Participant 5	<i>Technical blundering and the possibility of over-reliance on AI software are the drawbacks of integrating AI in education. Technical errors, such as malfunctions in AI systems and inaccurate assignment grading, can erode trust in the effectiveness and efficiency of these instruments. Furthermore, a dependence on AI software too much may cause teachers and students to become passive, which would impair their ability to think critically and make human decisions both of which are essential for good teaching and learning. A decrease in creative teaching strategies and individualized learning experiences catered to the requirements of each student may result from this over-reliance.</i>	Participant 5 explains it with basis and the tone of the voice is well expressed.

Participants provide a thorough analysis of the effects of incorporating AI into education in Table 4. Participant 1 highlights the ethical duty of educators, stressing the importance of giving priority to issues like algorithmic bias and openness. Participant 2 acknowledges opposition from proponents of traditional teaching techniques while drawing attention to practical issues such as limits in the technical infrastructure and privacy concerns. Participant 3 offers a thorough examination of the dangers of relying too much on AI, such as diminished capacity for critical thought and increased gaps in educational attainment. On the other hand, participants 2 and 3 have the same perspective on the challenges in using AI technology in classroom.

They support a well-rounded strategy that combines the use of AI with independent thought. In order to effectively handle problems, Participant 4 emphasizes the value of utilizing AI as an additional tool rather than as a substitute for conventional approaches. Participant 5 emphasizes the need for a balanced approach by highlighting the negative effects of an over-reliance on AI, including technical blunders and a decline in critical thinking abilities. Collectively, these viewpoints highlight how difficult it is to integrate AI into education and how crucial it is to take technical difficulties, ethical issues, and striking a balance between AI and conventional teaching techniques into account. Meanwhile, in *Navigating the Ethical Challenges of Artificial Intelligence in Higher Education: An Analysis of Seven Global AI Ethics Policies*, Carballido (2023), Transparency and explainability are essential components of responsible AI development. This criterion includes data, system, and business models relevant to an

AI system’s transparency and is closely related to explicability. AI data collection, labelling, and algorithms should be meticulously documented to ensure traceability and transparency, which helps identify incorrect decisions and prevent future errors. When AI decisions affect human life, they should be explainable and communicated quickly and at the stakeholder’s level of understanding. Guidelines for dealing with the potential displacement of human labor brought on using AI systems are included in the AI ethics policy of the European Commission. This policy emphasizes the need for responsible AI development and deployment, including considering potential effects on employment and the necessity of retraining and social safety nets for workers who may be affected by automation. Finally, AI tools can advance various fields, such as biology, chemistry, medicine, and environmental sciences. Scientific excellence in AI development can be promoted by working with stakeholders to pursue thoughtful leadership in this field, using scientifically rigorous and multidisciplinary methods.

Educational materials, best practices, and research can help more people create practical AI applications. In article published in UCLpress entitled, The use of AI in education: Practicalities and ethical considerations, Reiss, M.J. (2021) mentioned that there is no doubt that AI is here to stay in education. It is possible that in the short- to medium-term (roughly, the next decade) it will have only modest effects – whereas its effects in many other areas of our lives will almost certainly be very substantial. At some point, however, AI is likely to have profound effects on education. It is possible that these will not all be positive, and it is more than possible that the early days of AI in education will see a widening of educational inequality (in the way that almost any important new technology widens inequality until penetration approaches 100 per cent). In time, though, AI has the potential to make major positive contributions to learning, both in school and out of school. It should increase personalization in learning, for all students, including those not well served by current schooling. The consequences for teachers are harder to predict, although there may be reductions in the number of teaching assistants who work in classrooms. Overall, the viewpoints expressed in Table 4 collectively illustrate the multifaceted nature of integrating AI into education. Participants emphasize the ethical responsibilities of educators, practical challenges such as technical limitations and privacy concerns, and the risks of over-reliance on AI. They advocate for a balanced approach that integrates AI as a complementary tool while preserving critical thinking skills and personalized learning experiences. This comprehensive assessment underscores the importance of addressing ethical, technical, and pedagogical considerations to ensure effective and responsible AI integration in education.

Table 9
SOP 4 for Learners

Participant	Responses	Researcher’s Observation
Participant 1	<i>I think the challenge I face when I use AI is that there are different terminologies that I do not understand.</i>	Participant 1 is a little bit uneasy while answering the question.
Participant 2	<i>I experienced some challenges while using AI when I am trying to translate the English paragraph into Filipino because it's not working very well.</i>	Participant 2 is very particular in answering the question.
Participant 3	<i>AI tools potentially hindering the development of critical thinking skills, ethical concerns such as data privacy and algorithmic bias, the lack of human interaction in AI-driven learning experiences, and limited customization of AI systems.</i>	Participant 3 is very particular in pointing out certain things based on the question.
Participant 4	<i>The challenge when I use ai is with bigger data some data is wrong information and some data is unfair result.</i>	Participant 4 is having a hard time to express his/her thoughts.

Participant 5	<i>As a student, some challenges I've faced when using AI technology as part of my learning process include occasional technical glitches or difficulties in adapting to the personalized learning pace suggested by the platform.</i>	Participant 5 emphasizing the glitches with conviction.
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Each participant's comment sheds light on a distinct facet of the AI landscape, highlighting the wide range of difficulties experienced in the use of AI technology.

In order to successfully navigate complicated interfaces, Participant 1 emphasizes the need of user interface design and experience in AI systems. This includes the necessity for clearer communication and intuitive designs. Participant 2's AI translation experience highlights certain technical limits, highlighting the continuous need for improvements in natural language processing to improve translation accuracy. Participant 3 explores more general ethical and pedagogical challenges with AI-enhanced learning settings, covering topics like privacy, bias, and personalization limitations as well as limitations on critical thinking. Participant 4 highlights the difficulties with data quality and fairness and stresses the significance of effective preparation and bias reduction techniques. The story from Participant 5 highlights how AI adoption is dynamic and how algorithms must be continuously improved to fix bugs and enhance individualized learning.

In an article in LinkedIn entitled, AI in Education: Ethical Considerations, Wenting S. (2023) says, The evolution of primary education with AI integration offers both challenges and opportunities. While AI provides clear benefits for personalized learning and effective instruction, it's vital not to overlook the ethical side. Teachers play a crucial role in this transition, harnessing technology's benefits while navigating issues like data privacy, preserving human interaction, and promoting creativity beyond AI's boundaries. By adopting a balanced approach where AI complements rather than replaces, we can foster an educational environment that's both technologically advanced and human-centric. As educators, it's our responsibility to guide children in their interaction with AI, ensuring their ethical and responsible approach to this technology serves them well in the future. Meanwhile, in A Review on Artificial Intelligence in Education, Liu Y. (2021) says, With the development of AI technology, AI will be more and more used in the education field in the future. By analyzing the application of AI in education and the challenges faced by AI technology in education, people have an overall understanding of the situation of AI education. And help teachers and students better face and use AI technology in the teaching and learning process, improve teachers' teaching quality and students' learning methods, make students' learning styles more diversified and personalized.

When taken as a whole, these viewpoints provide a thorough grasp of the complex issues surrounding the adoption of AI and support integrated strategies that incorporate technological innovation, moral issues, user experience, and educational objectives. The following are the themes that emerged from the statement of the participants to each interview questions asked by the researcher. Coding was used by the researcher to extract the themes.

Theme 1 for Teachers: Challenge in the critical thinking and responsible use of AI.

PARTICIPANTS	CODE	EMERGING THEME
Participant 1	Challenge in ethical use of AI	Challenge in inculcating ethical use of AI
Participant 2	Challenge in assessing the submitted work.	
Participant 3	Challenge in learner diversity	

Participant 4	Challenge in learner profiles
Participant 5	Challenge in learner variability

Participants 1, 2, 3, 4, and 5 each face distinct challenges in the realm of AI education and research. Participant 1 grapples with ensuring the ethical use of AI by navigating a complex landscape of moral, social, and technical considerations, including algorithmic bias and privacy concerns. They must establish guidelines and frameworks for fairness, transparency, and accountability in AI development and deployment, while also fostering a culture where ethical principles are integrated into decision-making processes. Participant 2, on the other hand, is tasked with assessing the submitted

work, evaluating its quality, validity, and ethical integrity. This requires navigating issues such as plagiarism and data manipulation while promoting a culture of academic integrity within the AI community. Participant 3 faces the challenge of learner diversity, which encompasses factors such as varying levels of prior knowledge, cultural backgrounds, and learning styles. Educators must develop strategies to accommodate different preferences, provide additional support where necessary, and ensure inclusivity in learning materials and activities. Participant 4 is confronted with understanding the individual characteristics and backgrounds of learners engaging with AI education, tailoring content and experiences to match diverse learner profiles, and creating opportunities for collaboration and mentorship. Finally, Participant 5 grapples with learner variability, addressing differences in learning pace, style, and comprehension through flexible learning strategies and personalized feedback while fostering a supportive and inclusive learning environment. By addressing these challenges collectively, educators and policymakers can advance AI education and research while ensuring its ethical and inclusive development and use.

The integration of Artificial Intelligence (AI) in education presents promising opportunities but also raises ethical considerations and challenges that educators, policymakers, and stakeholders must address. Key ethical considerations include data privacy and security, bias mitigation, and transparency in AI decision-making (UNESCO, 2020). Practical challenges encompass infrastructure readiness and educator training (Eynon & Geniets, 2021; Mellar & Oliver, 2021). Responsible AI practices emphasize ethical design and continuous monitoring of AI systems (UNESCO, 2020; Mellar & Oliver, 2021). Ethical guidelines and frameworks are essential for guiding responsible AI use and promoting algorithmic fairness (Ribeiro et al., 2020). Addressing these aspects ensures responsible and equitable AI integration in education, fostering inclusive and ethical AI-enhanced learning environments.

According to Mellar, H., & Oliver, M., (2021), This book offers a comprehensive exploration of the potential promises and implications of Artificial Intelligence (AI) in the realm of teaching and learning. It delves into the multifaceted aspects of AI integration, encompassing both the ethical considerations and the practical challenges that educators and institutions may encounter. The book not only highlights the transformative opportunities that AI presents for enhancing educational experiences but also addresses the ethical dilemmas and implementation hurdles that need to be navigated. By providing insights and guidance, the book aims to assist educators, policymakers, and stakeholders in fostering responsible AI-enhanced learning environments that prioritize ethical considerations, promote transparency, and ensure equitable access to AI-driven educational resources and tools.

Theme 2 for Learners: Challenge in the Critical Thinking and Responsible use of AI

PARTICIPANTS	CODE	EMERGING THEME
Participant 1	Challenge in stimulating critical thinking.	Challenge in the Critical

Participant 2	Challenge in managing the data	Thinking and Responsible use of AI
Participant 3	Challenge in adhering to ethical use of AI	
Participant 4	Challenge in upholding ethical standards in AI	
Participant 5	Challenge in maintaining ethical practices in AI	

Participants 1, 3, 4, and 5 are collectively engaged in ensuring the ethical use of AI and stimulating critical thinking among learners. Participant 1, in particular, faces the challenge of stimulating critical thinking among students, guiding them to analyze information critically and make informed decisions, especially in the context of AI education. This involves fostering curiosity, creativity, and problem-solving skills while promoting a deeper understanding of AI technologies and their societal implications. Additionally, ensuring responsible use of AI is essential, requiring educators to instill ethical considerations and guide students in making ethical decisions when developing or using AI technologies. Participants 3, 4, and 5 also contribute to this endeavor by focusing on adhering to ethical standards and maintaining ethical practices in AI. They navigate complex ethical landscapes, addressing issues such as algorithmic bias, privacy violations, and societal impacts, while working to establish guidelines and frameworks that promote fairness, transparency, and accountability in AI development and deployment.

Participant 2 grapples with the challenge of managing data effectively, a fundamental aspect of AI development and research. This involves acquiring, storing, processing, and analyzing large volumes of data while ensuring its accuracy, integrity, and security. Managing data effectively includes addressing issues such as data quality, privacy concerns, and compliance with regulations like GDPR and CCPA. Moreover, as data is crucial for training AI models, Participant 2 must also consider biases and representativeness in the data to avoid perpetuating unfair or discriminatory outcomes. Together, these participants strive to navigate the complexities of AI education and research, addressing challenges related to critical thinking, ethical use, and data management to ensure that AI technologies are developed and utilized responsibly and ethically. According to Miller, G., (2019), The research delves into the specific terms, phrases, or jargon unique to AI that users find perplexing or hard to grasp.

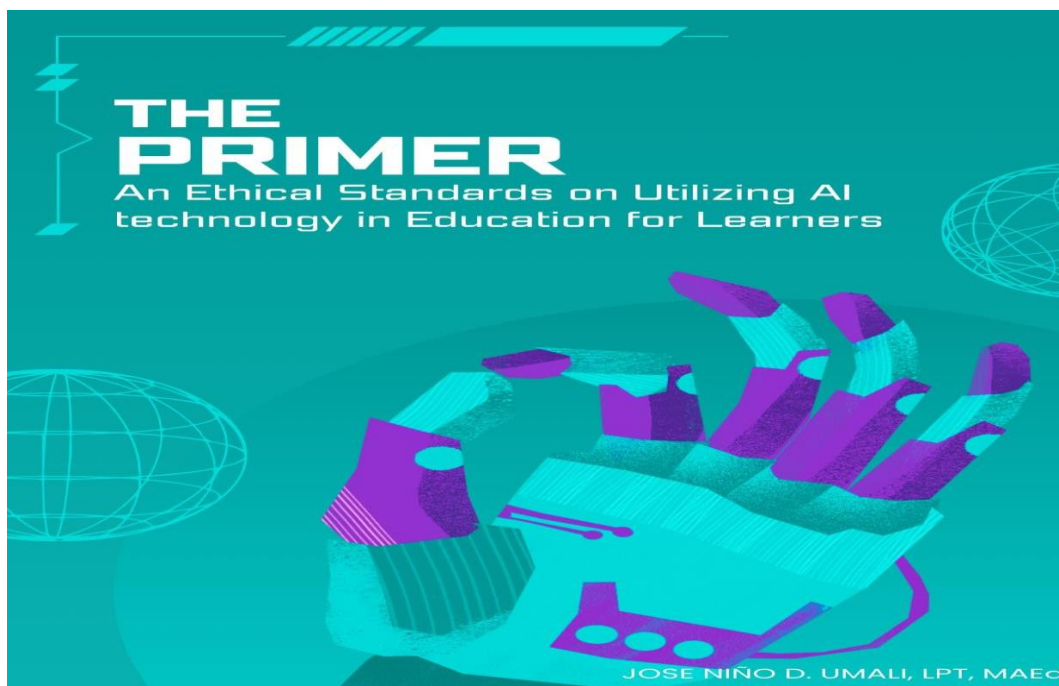
It examines how these terminological challenges can create confusion, hesitation, or even frustration among users when interacting with AI systems. Furthermore, the study investigates the broader impact of these challenges on users' overall experience with AI technologies. It considers various aspects of user experience, such as usability, satisfaction, and engagement, to assess how unfamiliar AI terminologies can influence these factors. For instance, the study might explore whether users feel more comfortable and confident when using AI systems that employ more accessible language or provide explanations for complex terms. Conversely, it may examine how the lack of clarity or understanding of AI jargon can hinder users' ability to effectively utilize AI tools, potentially leading to reduced satisfaction or engagement with the technology. On the other hand, in Smith, A., & Johnson, K. (2021) research, "Navigating AI Jargon: Terminological Challenges and Their Consequences" provides an in-depth examination of the specific challenges users face when dealing with AI-specific terminology. The research identifies and categorizes the types of jargon or technical terms that users find most problematic or confusing. This could range from specialized terms related to machine learning algorithms, data processing methods, or AI functionalities that are not commonly understood by the general public.

Beyond simply identifying these terminological challenges, the study delves into the real-world consequences they have on users' interactions with AI systems. For instance, the research might explore how misunderstandings or misinterpretations of AI jargon can lead to errors in usage, misuse of features, or inefficient utilization of AI tools. These consequences can, in turn, result in decreased user satisfaction, frustration, or even reluctance to continue

using AI technologies. Furthermore, Smith and Johnson examine the relationship between users' understanding of AI terminology and their overall confidence in interacting with AI systems. The study might find that users who are more familiar with AI jargon or have access to clear explanations of these terms tend to be more confident and competent in using AI technologies. On the other hand, those who struggle with understanding AI terminology may feel less confident and more hesitant, impacting their willingness to engage with AI systems.

Collectively, the studies by Miller, Chen and Zhang, Wang and Lee, Smith and Johnson, and Kim and Park underscore the critical importance of clear and accessible terminology in shaping positive user experiences with AI. They highlight that unfamiliar AI jargon can create confusion, hinder competence, lower user confidence, and lead to decreased satisfaction and engagement with AI technologies. Addressing these terminological challenges is essential for improving user engagement, competence, and confidence, thereby enhancing the overall user experience and promoting broader adoption of AI systems. According to Selwyn, N. (2019), in his book, "Should Robots Replace Teachers?: AI and the Future of Education," Neil Selwyn explores the ethical dimensions of integrating AI into education. Selwyn scrutinizes the potential benefits of AI, such as personalized learning, while also addressing critical ethical challenges like data privacy and algorithmic biases. He emphasizes the need for a balanced approach that values technological innovation without compromising ethical responsibilities. Selwyn calls for transparency, accountability, and ongoing reflection in AI implementation, highlighting the importance of informed decision-making to ensure responsible and ethical use of AI in educational settings. On the other hand, according to Ifenthaler, D., & Yau, J. Y. (2022), the authors emphasize the potential of AI-driven analytics to offer real-time insights into student performance, engagement, and learning trajectories. By harnessing the power of AI, educators can gain a deeper understanding of individual student needs and tailor instructional strategies accordingly. Moreover, the publication underscores the importance of using data analytics to evaluate the effectiveness of AI-integrated

Educational initiatives. It advocates for a continuous feedback loop where data analytics inform instructional decisions, and the outcomes are rigorously assessed to refine and improve AI-driven educational strategies. In conclusion, the study uncovered diverse perspectives on AI's role in education, spanning ethical considerations, practical implementation, and assessment. Participants emphasized the importance of educator preparedness, empowerment, and continuous professional development in AI integration. The multifaceted nature of AI's impact on education was evident, with themes highlighting its potential for personalization, collaboration, and addressing both benefits and challenges. The focus on assessment and metrics underscored the need for accountability and evaluation to ensure effective AI-driven educational strategies. Collectively, these insights offer a comprehensive understanding of the complexities and opportunities associated with AI's integration into educational settings, guiding efforts towards responsible and impactful utilization in fostering inclusive and engaging learning experiences for all students. Further investigation into the use of artificial intelligence (AI) in education reveals that, although AI offers great potential to improve learning and tailor instruction, it also raises difficult ethical issues that should not be disregarded. There is no denying that artificial intelligence (AI) has the potential to revolutionize education, but putting it into practice will necessitate a thoughtful strategy that puts moral principles first, encourages teacher readiness, and takes into account each student's particular requirements. The ethical application of AI technology in educational contexts will be the main topic of this debate, which will build on our overarching research subject that stresses ethical foundations, educator preparation, personalized learning, and overcoming technical constraints.



Rationale

In the current era marked by the omnipresence of digital technologies and artificial intelligence (AI), it's vital to equip learners with the requisite skills and knowledge to effectively engage with these innovations. The primer addresses this imperative by focusing on key areas essential for learners to excel in an AI-dominated landscape. These encompass digital literacy, critical thinking, data privacy awareness, personalized learning, ethical considerations, collaborative learning, adaptive learning strategies, feedback and reflection, problem-solving skills, and continuous learning. By providing guidance and resources across these domains, the primer endeavors to empower learners to navigate and harness AI technologies responsibly, adeptly, and with confidence, thereby preparing them to succeed in a rapidly evolving digital world shaped by AI.



Objectives:

The objectives of the primer are to:

1. Educate students on the basics of AI and its applications to enhance digital literacy.
2. Encourage critical thinking skills to evaluate AI-generated content effectively.
3. Foster awareness of data privacy rights and best practices in AI-driven environments.
4. Guide students in utilizing AI-driven educational tools for personalized learning experiences.
5. Facilitate discussions on ethical considerations related to AI to promote responsible digital citizenship.
6. Promote collaborative learning experiences to enhance teamwork and communication skills.
7. Help students develop adaptive learning strategies to tailor their educational experiences.
8. Provide opportunities for reflection on AI-driven learning experiences to enhance metacognitive skills.
9. Incorporate AI-related problem-solving tasks to develop analytical and creative thinking skills.
10. Encourage continuous learning about AI advancements to remain informed and adaptable in a rapidly evolving technological landscape.

The primer is designed to furnish learners with tangible support, resources, and actionable tasks across all identified domains, with the overarching goal of equipping them with indispensable skills for interacting with AI technologies proficiently and ethically. Each segment of the primer will encompass informative materials, real-life illustrations, interactive exercises, and recommended activities, fostering dynamic learning experiences and practical application of acquired knowledge.



Scope and Limitations:

Although the primer endeavors to encompass a broad spectrum of AI education topics, it acknowledges the inherent limitations stemming from constraints such as time and resources. Consequently, it may not delve into every aspect comprehensively. Moreover, the primer's effectiveness may vary depending on factors such as learners' prior knowledge, access to technology, and individual learning preferences. Additionally, given the rapidly evolving nature of AI technologies, the primer may require periodic updates to remain current with emerging trends and developments in the field. Despite these constraints, the primer remains committed to providing learners with valuable insights and resources to navigate the intricacies of an AI-driven world and thrive in the digital age.

Below are the 10 primers for learners in utilizing AI technology

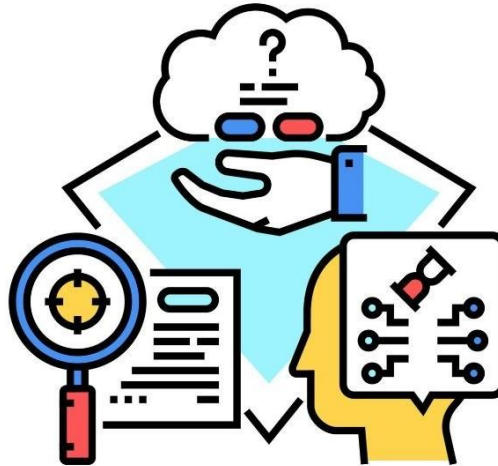
For Learners:

1. **Digital Literacy:** Educate students on the basics of AI and its applications.



In an increasingly AI-driven world, digital literacy is critical. Students must grasp the fundamentals of artificial intelligence (AI) in order to effectively navigate and interact with the digital world as technology continues to pervade many aspects of our everyday life. Students who understand the basic ideas and applications of artificial intelligence (AI) are more equipped to make thoughtful judgments, assess AI-generated information critically, and identify the impact of AI in a variety of contexts, including social media algorithms, internet searches, and automated systems. Moreover, digital literacy equips students with the skills to harness AI tools responsibly, ensuring they can leverage technology for learning, creativity, and problem-solving while being mindful of ethical considerations and potential biases. Thus, fostering digital literacy not only prepares students for the current digital age but also empowers them to thrive in an AI-driven future. **Example:** Introduce students to AI-powered educational apps like Duolingo, etc. Explain how AI algorithms adapt content based on user performance, providing a tailored learning experience.

2. **Critical Thinking:** *Encourage students to question and evaluate AI-generated content.*



Critical thinking skills are indispensable in the age of AI, especially when it comes to analyzing and interpreting AI-generated content with accuracy and discernment. As AI algorithms increasingly shape the information we consume, it becomes vital for individuals to approach this content with a critical mindset. Critical thinking enables individuals to question the validity, relevance, and potential biases of AI-generated information, allowing them to distinguish between credible and misleading content. By honing these skills, individuals can make well-informed decisions, challenge assumptions, and evaluate the implications of AI-driven recommendations or insights. Moreover, critical thinking empowers individuals to navigate the complexities of an AI-driven world responsibly, ensuring they can engage with AI technologies as informed and discerning participants rather than passive consumers. Thus, fostering critical thinking skills is essential for equipping individuals with the tools they need to thrive in a society increasingly influenced by AI.

Example: Have students analyze an AI-generated news article. Guide them to identify potential biases, factual inaccuracies, or sensationalized content.

3. **Data Privacy Awareness:** *Teach students about the importance of data privacy.*



In today's digital age, understanding data privacy and how Artificial Intelligence (AI) utilizes personal information has become paramount for fostering responsible online behavior. As individuals engage with various online platforms and AI-driven services, they often share personal data that can be collected, analyzed, and used by AI algorithms to tailor experiences and make predictions. Awareness of data privacy rights, risks, and best practices

enables individuals to make informed choices about sharing their information, protecting their privacy, and maintaining control over their digital identities. Moreover, understanding the intricacies of data privacy empowers individuals to advocate for transparent data practices, demand accountability from organizations handling their data, and navigate the digital landscape with confidence and autonomy. Therefore, cultivating an understanding of data privacy in the context of AI is crucial for promoting responsible and empowered digital citizenship in the modern world.

Example: Discuss cookies and tracking in AI-driven websites. Show students how to manage privacy settings in their browsers or apps.

4. **Personalized Learning:** *Guide students on utilizing AI-driven educational tools.*



Artificial Intelligence (AI) has the capability to revolutionize education by adapting learning materials to cater to individual student needs, thereby promoting personalized learning experiences. Traditional one-size-fits-all approaches to education can often overlook the unique learning styles, strengths, and challenges of individual students. AI-driven educational platforms and tools can analyze students' performance, preferences, and progress to tailor learning materials and activities accordingly. This adaptability enables students to learn at their own pace, focus on areas where they need additional support, and explore topics that align with their interests and strengths. By providing personalized learning experiences, AI not only enhances student engagement and motivation but also fosters a deeper understanding and retention of content. Thus, AI's ability to adapt and customize learning materials plays a pivotal role in creating more effective, inclusive, and student-centered educational environments.

Example: Use an AI-powered tutoring platform where students receive personalized practice exercises based on their performance and learning pace.

5. **Ethical Consideration Discussions:** *Facilitate discussions on ethical considerations related to AI.*

6. Understanding the ethical implications of Artificial Intelligence (AI) is essential in preparing students to engage



with technology responsibly and conscientiously. As AI technologies continue to evolve and integrate into various aspects of daily life, students must be equipped with the knowledge and awareness to navigate the ethical challenges they present. This includes recognizing issues such as data privacy, algorithmic bias, and the potential societal

impact of AI-driven decisions. By fostering an understanding of these ethical considerations, students can develop a sense of responsibility towards their digital actions, decisions, and interactions. Additionally, awareness of AI ethics empowers students to critically evaluate the implications of technology on individuals, communities, and society at large, enabling them to advocate for fairness, transparency, and ethical use of AI in their future endeavors. Thus, incorporating ethical education into AI learning ensures that students approach technology with both competence and conscience, preparing them to be informed and ethical participants in an increasingly AI-driven world.

Example: Debate the ethical implications of AI surveillance in public spaces, discussing privacy concerns and potential misuse of data.

7. **Collaborative Learning:** Encourage students to collaborate on AI-related projects.



Collaborative projects are instrumental in fostering teamwork and facilitating a dynamic learning environment where students can leverage each other's strengths and perspectives. Engaging in collaborative work not only promotes interpersonal skills but also encourages students to communicate, cooperate, and problem-solve together. By working in teams, students have the opportunity to share ideas, challenge assumptions, and gain insights from diverse viewpoints, enriching their learning experience. Collaborative projects often require students to delegate tasks, manage conflicts, and collectively work towards a common goal, which enhances their interpersonal skills and resilience.

Example: Have students work in groups to create a simple AI chatbot for answering frequently asked questions in the classroom.

8. **Adaptive Learning Strategies:** Help students develop adaptive learning strategies.



Adaptive learning strategies empower students by allowing them to tailor their learning approaches to align with their individual needs, preferences, and learning styles. Unlike traditional one-size-fits-all instructional methods, adaptive learning leverages technology to dynamically adjust the content, pace, and difficulty level of learning materials in real-time based on students' performance and feedback. This personalized approach enables students to focus on areas where they require additional support, explore topics of interest at their own pace, and engage with

learning materials in ways that resonate with their unique strengths and learning preferences. By providing students with agency over their learning experiences, adaptive learning strategies foster a sense of ownership and autonomy, which can enhance motivation, engagement, and overall learning outcomes. Additionally, adaptive learning equips students with valuable metacognitive skills, enabling them to reflect on their learning processes, adapt their strategies, and become more self-directed learners. Thus, adaptive learning strategies play a pivotal role in promoting personalized and effective learning experiences that cater to the diverse needs and aspirations of each student.

Example: Provide resources and tips on how to adjust learning pace and approach when using adaptive learning platforms.

9. **Feedback and Reflection:** Provide opportunities for students to reflect on AI-driven learning experiences.



Reflection is a powerful tool that encourages students to engage in introspection and critical thinking about their learning experiences. By taking time to reflect on what they have learned, how they approached tasks, and the strategies they employed, students can gain valuable insights into their learning processes and outcomes. Reflection prompts students to consider the effectiveness of their study habits, problem-solving approaches, and collaborative efforts, helping them identify areas where they excel and areas that may require further development or refinement. This self-awareness and critical evaluation enable students to set realistic goals, adapt their learning strategies, and make informed decisions to optimize their learning journey. Moreover, reflection fosters a growth mindset by emphasizing the importance of continuous learning, resilience, and adaptability. By integrating reflection into the learning process, educators can empower students to become active participants in their education, equipping them with the skills and mindset to navigate challenges, embrace opportunities for growth, and achieve their academic and personal goals.

Example: Ask students to write a reflection on using an AI-powered language learning app, discussing its impact on their learning and areas they found challenging.

10. **Problem-Solving Skills:** Incorporate AI-related problem-solving tasks.



AI-related problem-solving tasks provide an excellent platform for developing students' critical thinking and analytical skills. Engaging with these tasks requires students to approach problems methodically, analyze data, and

evaluate potential solutions, fostering a deeper understanding of complex concepts and algorithms. As students tackle AI-related challenges, they are encouraged to think critically about the underlying principles of AI, identify patterns in data, and make informed decisions based on evidence and logic. Moreover, these tasks often involve collaborative efforts, allowing students to brainstorm ideas, discuss strategies, and learn from their peers' perspectives. This collaborative problem-solving not only enhances students' teamwork and communication skills but also exposes them to diverse problem-solving approaches and creative thinking. Additionally, AI-related tasks often simulate real-world scenarios, enabling students to apply their knowledge and skills in practical contexts, which enhances their problem-solving abilities and prepares them for future academic and professional challenges. Thus, AI-related problem-solving tasks play a vital role in cultivating students' critical thinking, analytical reasoning, and collaborative skills, equipping them with essential competencies for success in an increasingly complex and technology-driven world.

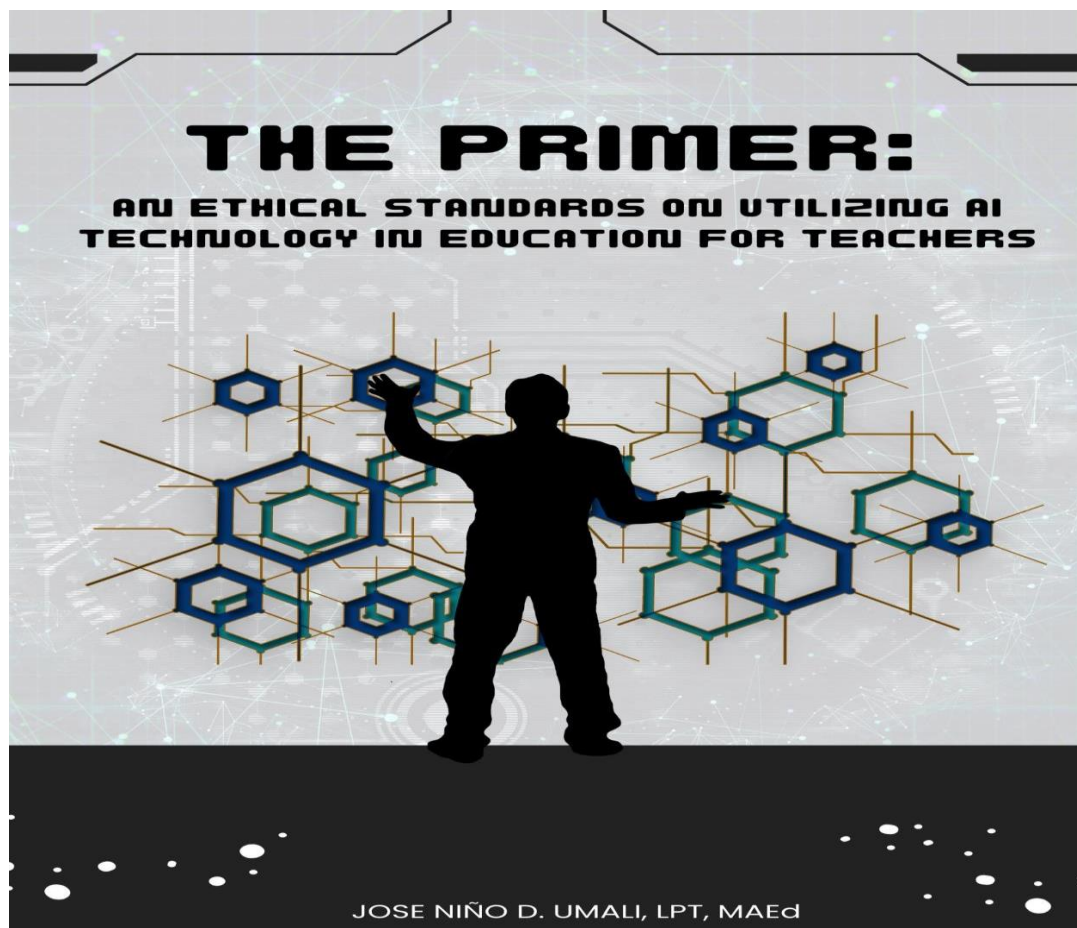
Example: Challenge students to troubleshoot common issues they encounter while using an AI-driven software program, encouraging them to find solutions independently.

11. **Continuous Learning:** *Encourage students to stay updated with AI advancements.*



Staying informed about advancements in Artificial Intelligence (AI) is essential for students to remain competitive and adaptable in today's rapidly evolving technological landscape. As AI technologies continue to advance and reshape various industries, understanding the latest developments, trends, and applications of AI becomes increasingly important for students across disciplines. Keeping abreast of AI advancements enables students to anticipate future trends, identify emerging opportunities, and adapt their skills and knowledge accordingly. Moreover, staying informed fosters a curiosity-driven mindset, encouraging students to explore new ideas, experiment with innovative technologies, and engage in lifelong learning. By actively seeking out information about AI, students can develop a deeper understanding of its potential impact on society, ethics, and their respective fields of study, which prepares them to navigate the complexities and opportunities presented by an AI-driven world. Therefore, embracing a proactive approach to learning about AI advancements equips students with the insights, skills, and adaptability needed to thrive in a dynamic and technology-driven global environment.

Example: Assign a research project where students explore recent advancements in AI technology and discuss their potential impact on various industries. To effectively address the challenges in AI integration highlighted by participants, it's crucial to prioritize ethical considerations, balance AI with traditional teaching methods, and provide guidance on responsible AI use in education. This includes enhancing user interface design, improving natural language processing, addressing ethical and pedagogical concerns, ensuring data quality and fairness, and continuously improving algorithms. Integrating digital literacy education, critical thinking skills, data privacy awareness, personalized learning experiences, ethical consideration discussions, collaborative learning, adaptive learning strategies, feedback and reflection opportunities, problem-solving tasks, and continuous learning about AI advancements can help students navigate the complexities of AI integration while promoting responsible and informed engagement with technology.



Rationale

For learners, the digital age demands a multifaceted approach to education that goes beyond traditional learning methods. First, digital literacy is essential as students must understand AI basics to navigate our AI-driven world effectively. This understanding enables them to interact with technology responsibly and make informed decisions. Critical thinking is equally crucial, equipping students to evaluate AI-generated content critically, discerning between credible and misleading information. Moreover, data privacy awareness is paramount to ensure students engage with online platforms and AI-driven services responsibly, safeguarding their personal information. Personalized learning, facilitated by AI-driven educational tools, tailors learning experiences to individual student needs, enhancing engagement and retention. Ethical discussions around AI encourage students to consider the broader societal implications of technology, promoting responsible digital citizenship.

Collaborative learning fosters teamwork and communication skills, essential for the modern workplace. Adaptive learning strategies empower students to take control of their learning, adjusting approaches based on individual needs and preferences. Feedback and reflection encourage students to engage in introspection, optimizing their learning journey. Problem-solving tasks related to AI cultivate critical thinking and analytical skills, preparing students for real-world challenges. Lastly, continuous learning encourages students to stay updated with AI advancements, fostering a mindset of curiosity and adaptability essential for success in a rapidly evolving technological landscape. Together, these elements form a comprehensive educational approach that prepares learners to thrive in an AI-driven world. According to Floridi, L. (2020), he delves deeply into the intricate ethical landscape shaped by advancements in technology, with a spotlight on Artificial Intelligence. The book meticulously unpacks the ethical dimensions of AI, addressing

concerns such as data privacy, algorithmic fairness, and the societal impact of automated decision-making systems. Floridi underscores the need for a proactive approach to ethical considerations in AI development and deployment, emphasizing the importance of ethical frameworks, guidelines, and governance structures. Meanwhile according to Dillenbourg, P. (2021), he underscores collaborative learning's potential to enhance students' cognitive abilities, interpersonal skills, and overall engagement in the learning process. In this context, Dillenbourg examines the role of Artificial Intelligence (AI) as a supportive tool that can amplify the effectiveness of collaborative learning environments. He explores how AI-driven platforms can facilitate smoother communication among students, offer real-time feedback to guide group activities, and adapt content to meet the diverse learning needs within collaborative settings. However, Dillenbourg also raises critical considerations regarding the integration of AI in collaborative learning, including concerns about maintaining authenticity in group interactions, ensuring equal participation, and addressing privacy and ethical implications. Through this exploration, Dillenbourg offers a balanced perspective on the potential and challenges of harnessing AI to enrich collaborative learning experiences.

The primer aims to empower teachers with the knowledge, skills, and resources necessary to effectively integrate Artificial Intelligence (AI) into their teaching practices. In today's rapidly evolving educational landscape, AI offers transformative opportunities to enhance student learning experiences, personalize instruction, and streamline administrative tasks. However, to harness the full potential of AI, teachers require comprehensive training, ethical guidelines, technical support, and curriculum integration strategies. The primer aims to empower teachers with the confidence and skills to responsibly and innovatively integrate AI technologies, thereby improving teaching effectiveness and student outcomes.



Objectives

1. **Develop Critical Thinking Skills in AI Contexts:**
Enhance learners' critical thinking skills by analyzing and evaluating AI technologies and their ethical implications in educational, professional, and personal contexts.
2. **Promote Ethical Decision-Making in AI Usage:**
Empower learners to make responsible and ethical decisions when using AI technologies, considering factors such as fairness, privacy, and societal impact.
3. **Understand AI Ethics and Their Application:**
Ensure learners understand the ethical principles guiding AI development and use, and how these principles apply in real-world scenarios, such as AI-powered applications and decision-making processes.
4. **Respect Privacy and Data Security in AI Interactions:**
Foster an understanding of the importance of privacy and data security among learners when interacting with AI technologies, empowering them to protect their personal information and digital identities.
5. **Facilitate Informed Decision-Making About AI Technology:**
Provide learners with the knowledge and skills to make informed decisions about the adoption, use, and regulation of AI technologies, considering their own values, needs, and the potential societal impacts.

Focus of the Primer : To develop critical thinking skills in AI contexts, learners can start by understanding the basics of AI, analyzing various AI applications to understand their functionality and societal impact, and evaluating their ethical implications such as bias and privacy concerns. They should engage in ethical decision-making when interacting with AI technologies, considering factors like fairness, transparency, and societal impact, and reflect on personal values to guide their assessments. By exploring real-world examples, engaging in discussions, and reflecting on their own experiences, learners can enhance their ability to critically evaluate AI technologies and make informed decisions about their use in educational, professional, and personal settings.



Scope and Limitations: While the primer aims to cover a wide range of topics related to AI integration in education, it may not address every aspect comprehensively due to constraints such as time, resources, and evolving technology. Additionally, the effectiveness of the primer may vary depending on factors such as teachers' prior knowledge, access to technology, and individual teaching contexts. Moreover, given the rapidly evolving nature of

AI technologies, the primer may require periodic updates to reflect new developments and emerging trends in the field. Despite these limitations, the primer endeavors to provide teachers with valuable insights, resources, and support to navigate the complexities of AI integration and enhance teaching effectiveness in the digital age.

Below are the 10 primers for teachers in utilizing AI technology

1. Understand AI Basics



Begin by learning the fundamental concepts of AI, including machine learning, neural networks, and algorithms, to understand how artificial intelligence systems function and their potential applications. *Example:* Explore educational resources like "Machine Learning for Kids" to understand how AI works through interactive activities.

2. Question AI Decisions



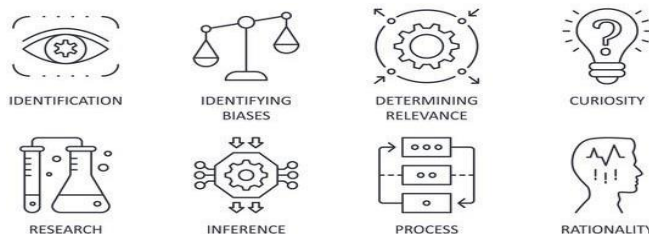
Develop the habit of questioning AI-generated outcomes by critically evaluating their results, understanding the underlying algorithms and data inputs, and considering factors such as bias, accuracy, and potential ethical implications, to ensure informed decision-making and responsible use of AI technologies. *Example:* When using a language translation tool, compare the translated text with the original to identify any inaccuracies and understand why they occur.

3. Evaluate Sources



Critically evaluate the credibility and reliability of AI-generated information and sources by examining the data sources, assessing the accuracy of the algorithms used, considering the potential biases or limitations in the data, and verifying the information with multiple trusted sources or experts in the field to ensure informed decision-making and avoid misinformation or manipulation. *Example:* Use fact-checking tools like Snopes or FactCheck.org to verify the accuracy of AI-generated news articles or social media posts.

4. Analyze Bias



Learn to identify and mitigate bias in AI algorithms and datasets by examining the data collection methods, assessing the representativeness of the dataset, analyzing the algorithm's decision-making process, and implementing strategies such as data preprocessing, algorithm adjustments, or algorithmic fairness techniques to minimize the impact of bias and promote fairness and equity in AI applications. *Example:* Use Google's "What-If Tool" to analyze how changing certain inputs affects the predictions of a machine learning model and detect potential biases.

5. Respect Privacy



Understand the importance of privacy when using AI technologies and respect the privacy rights of individuals by recognizing that personal data collected by AI systems may be sensitive and private, understanding the potential risks of data misuse or unauthorized access, and taking measures to safeguard personal information, such as using encryption, anonymization techniques, or secure data storage methods, to ensure that individuals' privacy is protected and their trust in AI technologies is maintained. *Example:* When using voice assistants like Siri or Alexa, be mindful of the information you share and regularly review privacy settings.

6. Create Ethical AI Projects



Develop AI projects that prioritize ethical considerations and address societal needs by identifying potential ethical issues, such as bias, privacy, and fairness, at the outset of the project, integrating ethical guidelines and principles into the design and development process, consulting with stakeholders to ensure the project aligns with community values and concerns, and conducting regular ethical assessments and reviews throughout the project lifecycle to mitigate risks and maximize positive impacts on society while promoting responsible and inclusive use of AI technologies.

Example: Create a chatbot that provides mental health support while ensuring user privacy and confidentiality.

7. Seek Diverse Perspectives



Explore a variety of viewpoints and perspectives on AI-related topics by engaging with diverse sources of information, including academic literature, industry reports, expert opinions, and public discourse, critically evaluating the arguments and evidence presented, considering different cultural, social, and ethical perspectives, and participating in discussions and debates with peers, educators, and professionals to develop a comprehensive and well-rounded understanding of the complexities and implications of AI technologies in various contexts. *Example:* Participate in online forums or discussion groups to engage with diverse opinions on AI ethics and responsible use.

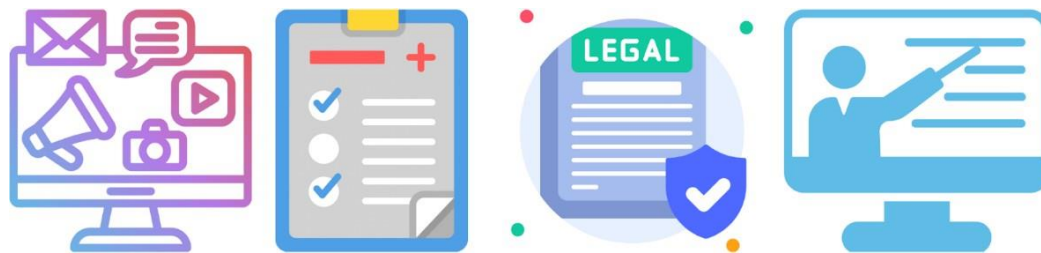
8. Stay Informed



Stay up-to-date with the latest developments and ethical issues in AI technology by regularly monitoring reputable news sources, academic journals, and industry

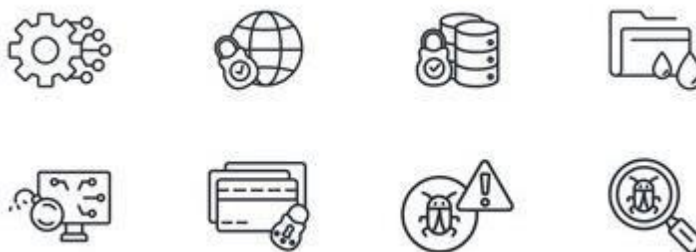
Publications, participating in online forums and communities dedicated to AI ethics and research, attending conferences, workshops, and seminars on AI-related topics, engaging with thought leaders and experts in the field, and actively seeking out opportunities for continuous learning and professional development to ensure a comprehensive understanding of emerging trends and ethical considerations in AI technology. *Example:* Follow reputable AI news websites or subscribe to newsletters like "The AI Ethics Brief" to stay informed about ethical issues in AI.

9. Advocate for Ethical Use



Advocate for ethical practices in AI development and deployment within your community and industry by raising awareness about the importance of ethical considerations in AI, engaging in discussions with stakeholders to promote transparency and accountability, supporting initiatives that prioritize fairness, privacy, and inclusivity in AI technologies, collaborating with organizations and policymakers to develop and implement ethical guidelines and standards, and advocating for responsible regulations and policies that safeguard individuals' rights and promote the ethical use of AI for the benefit of society as a whole. *Example:* Write an article or blog post discussing the importance of ethical AI and sharing best practices for responsible use.

10. Reflect on Impact



Regularly reflect on the potential societal impacts of AI technologies and your role in shaping them by considering the broader implications of AI advancements on various aspects of society, such as employment, healthcare, education, and privacy, critically evaluating your own actions and decisions regarding AI technology use and development, seeking feedback from diverse perspectives to understand different viewpoints and concerns, and actively engaging in discussions and initiatives aimed at promoting ethical and responsible AI practices to mitigate negative impacts and maximize positive outcomes for individuals and communities. *Example:* Keep a journal where you reflect on the ethical implications of the AI technologies you encounter in your daily life and how you can contribute to positive change.

In the present evolving educational landscape, the integration of Artificial Intelligence (AI) presents transformative opportunities to enhance teaching and learning experiences. To harness the full potential of AI in education, it is essential to provide teachers with comprehensive AI training, enabling them to effectively utilize AI tools and technologies in their classrooms. Alongside training, clear ethical guidelines and technical support systems are crucial to ensure responsible AI implementation and address any challenges that may arise. Integrating AI into the curriculum and adopting a student-centered approach can significantly boost student engagement and readiness for a technology-driven future. Collaborative planning and feedback mechanisms foster a supportive learning community, while resource allocation ensures teachers have access to the necessary tools and materials for AI integration. Additionally, data privacy training is vital to safeguard students' personal information, and participating in professional learning networks offers educators ongoing opportunities for growth, collaboration, and knowledge-sharing in the field of AI in education. According to Woolf, B.P. (2021), Woolf's book delves into the intricate design and deployment of intelligent tutoring systems, highlighting a shift towards student-centered methodologies.

Emphasizing the transformative potential of AI, Woolf underscores its role in personalizing the learning experience. By leveraging advanced algorithms and machine learning techniques, these intelligent systems can adapt in real-time to students' needs, preferences, and learning styles. This adaptability allows for a tailored educational journey, where content delivery, pace, and assessment methods are dynamically adjusted to align with individual student requirements. Through this personalized approach, Woolf argues, educators can better engage students, optimize learning outcomes, and foster a deeper understanding of complex concepts, ultimately paving the way for a more effective and inclusive educational landscape.

In connection, according to Baker, R.S., & Siemens, G. (2019), This book provides an in-depth exploration of data analytics within the educational sector, spotlighting the pivotal role of AI and machine learning technologies. By harnessing these advanced computational techniques, educators and institutions can gain profound insights into student behavior, preferences, and performance patterns. The book underscores how data-driven approaches can help optimize learning environments by identifying areas where students excel or struggle, thereby allowing for targeted interventions and personalized learning strategies. Additionally, it delves into how analytics can inform curriculum design, resource allocation, and educational policies, ensuring that teaching practices are both efficient and effective.

In conclusion, the integration of Artificial Intelligence (AI) in education offers transformative potential for personalized learning and student preparation for a digital future. This potential, however, relies on comprehensive support for educators through training, ethical guidelines, and technical assistance, fostering a culture of innovation and responsibility. For learners, a holistic educational approach encompassing digital literacy, critical thinking, and data privacy awareness is crucial. AI-driven personalized and collaborative learning tools enhance engagement, teamwork, and adaptability, while ethical considerations ensure responsible digital citizenship. Insights from Floridi (2020) and Dillenbourg (2021) further highlight the importance of proactive ethics and collaborative learning in AI integration, emphasizing the need for a balanced and informed approach to harnessing AI's benefits in education.

IV. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary findings, conclusions, and recommendations based on the data gathered and presented.

Summary of Findings

Level of Management of Teachers Using AI Technology : The assessment on the level of management of teachers in using AI technology indicates a high level of proficiency and confidence among teachers in integrating AI into their teaching practices. Teachers report feeling confident in their proficiency in using AI technology, frequently integrating it into classroom assessments, and ensuring that AI enhances the overall teaching and learning experience. They also make use of resources and support for the effective integration of AI in teaching and contribute significantly to the learning experience of their students. Teachers report being able to easily overcome challenges encountered in the integration of AI into instruction and observe substantial positive impacts, such as increased student diligence and satisfaction in the teaching profession.

Overall, the assessment suggests that teachers have successfully adopted AI technology into their teaching practices and are experiencing positive outcomes. They feel that the use of AI increases their confidence and boosts their self-esteem in teaching, leading to a high level of satisfaction in providing quality learning opportunities for their students. This indicates a strong commitment to leveraging AI technology to enhance teaching and learning outcomes, ultimately contributing to the advancement of education and preparing students for success in an increasingly digital world.

Level of Motivation of Learner Respondents : The assessment on learner motivation to use AI technology reflects a high level of enthusiasm and engagement among learners towards integrating AI into their education. Learners express that utilizing AI in education encourages them to learn, enhances their learning experience, makes the material more interesting, and simplifies complex subjects, contributing to their confidence and self-efficacy. They are motivated to explore new topics and customize their education to meet their needs, finding themselves more curious and enthusiastic about learning when using AI tools. Additionally, learners report that AI increases their efficiency in the classroom and empowers them to take charge of their learning, indicating a strong belief in the

benefits of AI technology for education. Overall, the assessment suggests that learners are highly motivated to use AI technology in their educational journey due to its ability to enhance learning experiences, increase engagement, and foster a sense of empowerment. This positive attitude towards AI in education highlights its potential to transform the learning process and empower learners to achieve their educational goals more effectively.

Correlation between AI Management of Teachers and Motivation of Learners : The correlation analysis presented in Table 3 offers insights into the relationship between teachers' management of AI technology and the motivation levels of learners. The computed correlation coefficient ($r = -0.10935$) indicates a very weak inverse correlation between the two variables. Additionally, the p-value of 0.764 suggests that this correlation is not statistically significant at the conventional significance level of 0.05. This weak and non-significant correlation implies that while there may be some relationship between how teachers manage AI technology and learners' motivation, the relationship is not strong enough to be considered meaningful or statistically significant.

In other words, the variation in teachers' management of AI technology does not appear to have a substantial impact on the motivation levels of learners in this study. It is important to interpret this weak correlation with caution. The lack of a strong relationship between AI management by teachers and learner motivation could be attributed to several factors. For instance, other variables not examined in this study, such as teaching methods, classroom environment, student-teacher relationships, and individual learner characteristics, could be influencing learner motivation. Additionally, external factors such as socio-economic background, cultural influences, and personal interests might also play a role in shaping learners' motivation levels. Furthermore, the weak correlation does not imply that AI management by teachers has a negative impact on learner motivation. Instead, it suggests that the relationship between these two variables is not straightforward and is likely influenced by a complex interplay of multiple factors. For instance, while AI technology may have the potential to enhance learning experiences and engagement, its effectiveness could be contingent upon how effectively teachers integrate and manage AI tools in their teaching practices, as well as how well these tools align with learners' needs and preferences. In conclusion, the correlation analysis presented in Table 3 reveals a weak and non-significant relationship between teachers' management of AI technology and learners' motivation levels. While this finding may initially seem surprising given the positive perceptions of AI technology among both teachers and learners, it underscores the complexity of factors influencing learner motivation. Future research should aim to explore these factors in more depth to better understand the nuanced relationship between AI management by teachers and learner motivation. Though the level of management of teachers in the use of AI tech is high, there is still room for improvement. However, it can be said that the high level of management of AI tech is commendable to teachers. This manifests that they are versatile and can easily adapt to the needs of this fast-paced world in the field of education.

Conclusions

Positive Perception of AI in Education : The high level of management of AI technology by teachers and the positive motivation among learners collectively point to a favorable perception of AI's role in education. Teachers and learners alike view AI not just as a novel addition but as an essential tool that holds significant promise in transforming educational experiences. AI is perceived as a multifaceted tool capable of enhancing various aspects of education. It can make learning more interactive and engaging through personalized content delivery, adaptability to individual learning styles, and real-time feedback. Moreover, AI's potential to automate routine tasks allows teachers to focus more on providing personalized support and facilitating meaningful interactions with students. This positive perception underscores AI's capacity to revolutionize traditional teaching and learning paradigms, making education more dynamic, responsive, and tailored to the needs of each learner.

High Level of Motivation : The high level of motivation observed among learner respondents in this study highlights the potential of AI technology to serve as a catalyst for enhancing learning outcomes and fostering increased engagement. Learners find AI to be particularly beneficial in grasping complex subjects and venturing into new areas of study. The effectiveness of AI in aiding comprehension of challenging topics and making learning materials more appealing and accessible contributes to heightened learner interest and enthusiasm. Furthermore, AI's ability to offer personalized learning experiences tailored to individual needs and preferences further amplifies its impact on learner motivation. This positive correlation between AI technology and learner motivation underscores the transformative potential of AI in education, paving the way for more effective and engaging learning environments.

Weak Correlation between AI Management and Learner Motivation : Despite the positive perceptions of AI technology among both teachers and learners, the weak and statistically insignificant correlation between AI management by teachers and learner motivation suggests that the relationship between these two variables is not

Straightforward. This finding implies that while AI technology holds considerable promise in enhancing educational experiences and boosting learner motivation, its impact on learner motivation may be influenced by a myriad of factors beyond teachers' management of AI technology. These could include teaching methods, classroom environment, student-teacher relationships, individual learner characteristics, and external factors such as socio-economic background and cultural influences. The weak correlation underscores the complexity of factors influencing learner motivation and suggests that a holistic approach is needed to fully harness the potential benefits of AI in education. Future research should aim to delve deeper into these multifaceted relationships to uncover the underlying factors that influence learner motivation and to identify strategies for optimizing the integration and management of AI technology in educational settings. In summary, the positive perception of AI's role in education, the high level of learner motivation facilitated by AI technology, and the weak correlation between AI management by teachers and learner motivation collectively point towards AI's transformative potential in education. While there is much optimism about the benefits of AI, further research is needed to understand the intricate relationships between AI management, learner motivation, and other influencing factors to fully realize the promise of AI in enhancing teaching and learning experiences.

Recommendations Integration of AI in Education : To fully harness the transformative potential of AI in education, it is crucial for educational institutions to prioritize the integration of AI-powered tools and resources into their curricula and teaching practices. AI can significantly enhance learning experiences by providing personalized and adaptive learning pathways tailored to individual learner needs and preferences. Educational institutions should invest in acquiring and implementing AI technologies that can augment traditional teaching methods, automate administrative tasks, and facilitate data-driven decision-making. Moreover, institutions should create a supportive environment that encourages experimentation and innovation with AI tools among teachers and students. However, merely acquiring AI technologies is not sufficient. Teachers need to be equipped with the necessary training and support to effectively manage and integrate AI technology into their teaching practices. This includes training teachers on how to use AI-powered tools, interpreting AI-generated insights, and leveraging AI to create personalized learning experiences. Providing ongoing support and professional development opportunities will empower teachers to embrace AI technology confidently and creatively in their classrooms.

Professional Development for Teachers

Importance of Continuous Professional Development : In the swiftly evolving world of AI technologies, continuous professional development (CPD) is crucial for equipping teachers with the latest knowledge and skills to integrate AI effectively into their classrooms. CPD ensures that teachers stay abreast of advancements in AI, fostering their ability to adapt these technologies to enhance teaching practices and personalize learning experiences. By engaging in CPD, teachers not only develop essential competencies in AI but also promote a culture of lifelong learning, inspiring students to embrace curiosity and adaptability in an AI-driven world.

Structured Professional Development Opportunities: Educational institutions play a pivotal role in facilitating CPD by offering structured and comprehensive professional development opportunities tailored to the needs of teachers. These opportunities should encompass a variety of formats, such as workshops, seminars, webinars, and online courses, to accommodate different learning preferences and schedules. The content of these professional development programs should be designed to provide teachers with a solid foundation in AI basics, including understanding AI principles, terminology, and applications relevant to education. Additionally, hands-on training sessions with AI-powered tools can equip teachers with practical skills and strategies to integrate AI into their teaching practices effectively. Furthermore, given the ethical implications associated with AI usage in education, professional development programs should also address ethical considerations and best practices for responsible AI usage.

Teachers should be trained to critically evaluate AI tools, ensure data privacy and security, and promote ethical AI practices in their classrooms.

Collaborative Learning and Peer Support : Collaboration with AI experts, educational technologists, and fellow

educators can enrich teachers' learning experiences and provide valuable insights into AI integration strategies. Peer-led workshops, collaborative projects, and mentoring programs can foster a culture of shared learning and innovation, enabling teachers to exchange ideas, troubleshoot challenges, and co-create new instructional approaches using AI technologies. Educational institutions can facilitate these collaborative learning opportunities by organizing interdisciplinary teams, creating professional learning communities, and establishing partnerships with AI industry leaders and research organizations. By fostering a collaborative learning environment, educational institutions can empower teachers to leverage each other's expertise, share best practices, and collectively advance the field of AI in education.

Cultivating a Culture of Continuous Learning and Innovation: To truly empower teachers to become confident and competent users of AI technology, educational institutions must cultivate a culture of continuous learning and innovation. This involves creating a supportive and nurturing environment where teachers feel encouraged to experiment with new technologies, take risks, and embrace a growth mindset. Leadership plays a crucial role in shaping this culture by setting clear expectations, providing adequate resources and support, and recognizing and celebrating teachers' efforts and achievements in AI integration. By fostering a culture that values continuous learning and innovation, educational institutions can create a ripple effect that inspires teachers to explore new possibilities, adapt to change, and continuously strive for excellence in their teaching practices. In conclusion, continuous professional development is essential for equipping teachers with the knowledge, skills, and confidence to integrate AI technology effectively into their teaching practices. By offering structured professional development opportunities, fostering collaborative learning and peer support, and cultivating a culture of continuous learning and innovation, educational institutions can empower teachers to harness the transformative power of AI to enhance learning experiences and prepare students for success in the digital age.

The findings of this study underscore a positive trend in the integration and perception of AI technology within educational settings. Teachers demonstrate a high level of management proficiency with AI tools, suggesting a readiness to incorporate these technologies into their teaching practices. Concurrently, learners exhibit a heightened level of motivation when engaging with AI-enhanced educational experiences, indicating a perceived value and appeal of AI in learning environments. However, while these findings paint a promising picture of AI's potential impact on education, it's noteworthy that the correlation between AI management by teachers and learner motivation appears to be weak and statistically insignificant. This suggests that other factors, beyond the mere presence of AI technology or its effective management by teachers, might be influencing learner motivation in significant ways. These could range from pedagogical approaches, classroom dynamics, individual learner characteristics, to broader socio-cultural influences.

Given these insights, several key implications emerge for educational institutions:

Continued Integration of AI: The positive perception of AI's role in education warrants ongoing efforts to integrate AI tools and platforms into curricula. Educational institutions should invest in the development and deployment of AI-powered educational resources that cater to diverse learning needs and preferences, thereby enhancing the overall educational experience.

Professional Development for Teachers: To capitalize on AI's potential, it's imperative to equip teachers with the necessary knowledge and skills through continuous professional development (CPD) programs. These programs should focus on AI literacy, hands-on training with AI tools, pedagogical strategies for AI integration, and ethical considerations in AI usage. By empowering teachers with the requisite competencies, institutions can ensure effective AI adoption and maximize its benefits in enhancing student motivation and learning outcomes.

Further Research and Exploration: The weak correlation between AI management by teachers and learner motivation underscores the need for further research to delve deeper into the underlying factors influencing motivation in AI-enhanced learning environments. Future studies could explore the interplay of various variables, such as teaching methods, classroom dynamics, learner characteristics, and external factors, to gain a more nuanced understanding of how to optimize the benefits of AI on motivation and learning outcomes. In conclusion, while the findings of this study highlight a positive trajectory in the integration and perception of AI in education, there is room for further exploration and optimization. By fostering a holistic approach that combines effective AI

integration, teacher professional development, and ongoing research, educational institutions can pave the way for a transformative educational landscape that leverages the full potential of AI to enhance motivation, engagement, and learning outcomes for all learners.

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