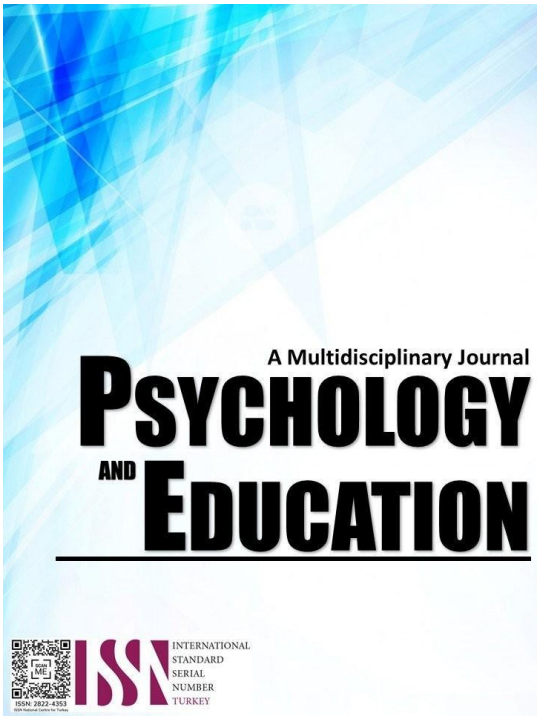
TEACHERS' DEMOGRAPHIC PROFILE AND THE USE OF ARTIFICIAL INTELLIGENCE IN EDUCATION



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 43
Issue 6
Pages: 752-762
Document ID: 2025PEMJ4192
DOI: 10.70838/pemj.430606
Manuscript Accepted: 05-29-2025

Psych Educ, 2025, **43**(6): 752-762, Document ID:2025PEMJ4192, doi:10.70838/pemj.430606, ISSN 2822-4353

Research Article

Teachers' Demographic Profile and the Use of Artificial Intelligence in Education

Sharie Jane D. Obedencio*
For affiliations and correspondence, see the last page.

Abstract

Artificial Intelligence (AI) is increasingly reshaping educational landscapes in an era marked by rapid technological advancements. This study examined the relationship between teachers' demographic profiles and their perceptions of AI integration in public elementary schools within District 2, Valencia City Division, Bukidnon, Philippines. Utilizing a descriptive-qualitative research design, the study involved 121 teachers selected through complete enumeration from six public elementary schools. A self-modified questionnaire—partly based on the Opinion Scale on Artificial Intelligence—was administered to gather data on demographics and AI-related perceptions. Findings revealed that teachers generally held a positive perception of AI in education, particularly its role in enhancing personalized learning, increasing productivity, and improving student engagement. The highest-rated benefit was that AI "makes learning easier" with a mean score of 4.37, followed by its ability to "increase productivity" (4.32) and "make learning more fun" (4.32). Conversely, concerns were raised about the confidentiality of information (mean = 4.03) and AI's potential to undermine the teacher's role (mean = 3.86). Statistical analyses showed significant differences in perceptions based on age, educational attainment, years of service, and teaching position. For example, younger teachers and those with higher educational qualifications exhibited more favorable views. Differences were significant in areas such as the scope ($F = 5.357$, $p < 0.05$) and concept ($F = 3.258$, $p < 0.05$) of AI. However, sex was found to have no significant impact across all measured domains ($p > 0.05$). The study underscores the need for sustained professional development, improved access to AI tools, and policy support to bridge demographic gaps in AI adoption. Equipping teachers with AI literacy ensures effective technology integration and prepares learners for a digitally driven future.

Keywords: *artificial intelligence in education, teachers' perception, demographics, educational technology, professional development*

Introduction

Education is vital in equipping learners with the knowledge and skills necessary to navigate life's challenges. In today's digital age, teachers must be proficient in using technology to meet the evolving needs of tech-savvy students. The emergence of Artificial Intelligence (AI) in 2024 has transformed technological applications across sectors, including education, making information more accessible and the use of digital tools more efficient. Continuous professional development is imperative for educators, particularly those in the Department of Education, through regular training, seminars, and workshops addressing current trends, technological innovations, and pedagogical strategies.

During one of the researcher's in-service training sessions, she was tasked with presenting on the topic of AI in education. Notably, she observed that only a few of her colleagues were familiar with AI tools—few could name any, and most were unaware of widely used systems like ChatGPT. This observation highlighted a knowledge gap among educators, particularly between age groups. The researcher noted that younger teachers were more familiar with AI, while many seasoned educators nearing retirement were less engaged with these tools. This disparity led to the current study, which aims to explore the relationship between teachers' demographic profiles and their level of engagement with AI and technology in their professional practice.

The growing impact of AI across age groups has attracted increasing scholarly attention. Younger generations tend to adopt AI technologies more readily, using them for communication, entertainment, and personalized digital experiences. Gough (2020) emphasized that younger individuals frequently interact with AI-driven platforms, benefiting from machine learning algorithms that tailor content and streamline digital experiences. As AI becomes more integrated into daily life, this demographic is expected to engage more deeply.

In professional settings, age also influences AI adoption. Wang and Chien (2020) found that younger employees are more open to using AI tools for productivity and decision-making. In contrast, older employees may exhibit resistance due to unfamiliarity or fear of job displacement. However, they also note that with proper training and support, older workers can successfully integrate AI into their routines, demonstrating the need for inclusive professional development programs.

Gender is another important factor influencing engagement with AI. Eubanks' (2018) research warns of the gender biases embedded in many AI systems, which are often trained on data sets that reflect societal inequalities. These biases can negatively affect women, especially in areas such as hiring, healthcare, and welfare decision-making. This highlights the importance of developing AI systems that are gender-sensitive and equitable in their design and application.

Educational attainment further shapes how individuals interact with AI. AI-powered educational tools—such as intelligent tutoring systems and personalized learning platforms—have been shown to support learners with varying academic backgrounds. According to

Baker et al. (2019), these systems can adapt to learners' current knowledge levels, providing individualized feedback and support that enhance learning outcomes, particularly for those with lower educational attainment.

Within educational institutions, years of service and professional roles also influence how teachers engage with AI. Veteran teachers, while possessing extensive pedagogical expertise, may face difficulties adapting to new technologies without adequate training. Redding and Splett (2019) noted that experienced educators are open to the benefits of AI but often require more structured support to integrate it into their classrooms effectively. Furthermore, teachers in leadership positions—such as department heads and principals—are often responsible for managing the adoption of AI technologies. In the Philippine context, Puentedura (2019) found that these leaders play a critical role in facilitating institutional AI integration, offering training, and guiding peers through technological transitions.

In light of these findings, this study examines the relationship between teachers' demographic characteristics—including age, sex, educational attainment, years of service, and position—and their engagement with AI technologies in education. By understanding these dynamics, the study seeks to inform strategies that promote inclusive and effective AI adoption across all sectors of the teaching workforce.

Research Questions

This study investigates the teachers' perception of using artificial intelligence in education among public elementary school teachers in the Valencia City Division. Specifically, it sought to answer the following problems;

1. What is the demographic profile of respondents in terms of
    1.1 age;
    1.2 sex;
    1.3 educational attainment;
    1.4 length of service; and
    1.5 teaching position?
2. What is the perception of teachers towards the use of Artificial Intelligence in Education in terms of
    2.1 the positive aspects of artificial intelligence;
    2.2 negative aspects of using artificial intelligence in education;
    2.3 scope of artificial intelligence; and
    2.4 concept of artificial intelligence?
3. Is there a significant difference in the teachers' perception of using artificial intelligence in education when grouped according to their demographic profile, length of service, and teaching position?

Methodology

Research Design

This study employed a descriptive-qualitative research design. Sevilla (2016) described this design as appropriate for gathering information about existing conditions without manipulating the variables involved. The research focused on describing elementary school teachers' perceptions toward artificial intelligence (AI) without altering their environment or influencing their behavior. The descriptive approach allowed the researcher to observe and document the phenomenon in its natural setting, making it suitable for analyzing teachers' understanding and engagement with AI tools. As an observational study, it adhered to the principle of non-interference and emphasized accurate documentation of the participants' responses and experiences.

Participants

The study was conducted in District 2 of the Division of Valencia City, Bukidnon, targeting six selected elementary schools: Bagontaas Central Elementary School, San Carlos Elementary School, Ulaligan Elementary School, Kilangi Elementary School, New Visayas Elementary School, and Lurugan Elementary School. A targeted sampling technique was used, and complete enumeration was applied to include all available teachers from the identified schools. In total, 121 elementary school teachers participated in the study. These respondents were selected due to their direct involvement in classroom teaching and their exposure to technological tools, making them suitable participants for exploring perceptions toward AI integration in education.

Instrument

The study utilized a self-modified questionnaire as the primary data-gathering instrument. The second part of the instrument was partially adapted from the "Opinion Scale on Artificial Intelligence" developed by Dulger and Koklu (2003), which was originally designed to determine teachers' views on AI in educational settings. The questionnaire was divided into two sections: the first gathered demographic information such as age, sex, educational attainment, years of service, and position; the second included modified items that specifically assessed teachers' perceptions and awareness of AI. The instrument employed a Likert scale ranging from 1.00 (Strongly Disagree) to 5.00 (Strongly Agree) to measure levels of agreement with each statement.

Procedure

Prior to data collection, a formal letter of request, endorsed by the Dean of the School of Graduate Studies at Valencia Colleges, Inc., was submitted to the Schools Division Superintendent of Valencia City to secure approval for conducting the study. Upon receiving approval, additional letters were sent to the District II Schools Focus Supervisor and the principals of the identified schools to request permission to administer the questionnaire to the teachers. Once authorized, the researcher personally distributed the questionnaires to the target respondents and ensured their proper retrieval for analysis.

Data Analysis

The gathered data were encoded and analyzed using descriptive and inferential statistical techniques. Frequencies and percentages were computed to describe the demographic profile of the respondents. The weighted mean was used to determine the overall level of teachers' perception of artificial intelligence. To examine whether significant differences existed in teachers' perceptions when grouped by variables such as educational attainment, years of service, and position, t-tests and Analysis of Variance (ANOVA) were employed. These statistical tools facilitated the identification of trends and patterns in the data relevant to the study objectives.

Ethical Considerations

Ethical standards were strictly followed throughout the research process. The researcher ensured voluntary participation and obtained informed consent from all respondents before data collection. Participants were informed of the study's purpose, their right to withdraw at any point, and the confidentiality of their responses. All information gathered was treated with strict confidentiality, and data were used solely for academic purposes. The study was conducted with transparency, and no coercion or undue influence was applied during data collection.

Results and Discussion

Problem 1. On the demographic profile of respondents in terms of age, sex, Educational Attainment, length of service, and position

The data relative to the demographic profile of respondents is presented in Table 1.

Table 1. *Demographic Profile of the Respondents*

Age	*Frequency*	*Percent*
20-30 years	26	21.5%
31-40 years	42	34.7%
41-50 years	38	31.4%
51 and above	15	12.4%
Total	121	100%
Sex	Frequency	Percent
Male	13	10.7
Female	108	89.3
Total	121	100.0
BEED/BSED	40	33.1
BEED/BSED with MA Units	69	57.0
BEED/BSED with PhD Units	12	9.9
Total	121	100.0
Position	Frequency	Percent
Teacher I	80	66.1
Teacher II	8	6.6
Teacher III	32	26.4
Master Teacher	1	.8
Total	121	100
Years	Frequency	Percent
1-20 Years	104	86.0
21-37 Years	17	14.0
Total	121	100.0

Table 1 shows the demographic profile of the respondents. Most respondents are 31-40 or 42, or 34.7%. The age group 31-40, often considered mid-career professionals, plays a crucial role in adopting Artificial Intelligence in education. This group typically possesses a balance of technological familiarity and professional experience, making them more adaptable to incorporating AI tools into their teaching practices. A study by Hwang et al. (2021) found that teachers in this age range are generally enthusiastic about the potential of AI to enhance learning outcomes, citing their familiarity with digital technologies and their desire to improve student engagement. Teachers aged 31-40 are seen as more open to adopting AI-driven educational tools such as intelligent tutoring systems, personalized learning platforms, and adaptive learning technologies. Their ability to leverage traditional and innovative methods allows them to integrate AI effectively to complement existing teaching strategies (Hwang et al., 2021).

Furthermore, teachers in the 31-40 age group are often in positions where they have gained enough professional experience to understand the educational challenges faced by students while also being able to embrace the opportunities AI presents. Research by Liu et al. (2020) shows that this demographic is keen to explore AI in administrative and pedagogical roles, appreciating AI's ability to automate administrative tasks like grading and data analysis, thus freeing up time for more personalized teaching. Teachers in this age group often seek tools to help them better manage classroom dynamics, track student progress in real-time, and provide tailored interventions, making AI a valuable resource for improving educational efficiency and effectiveness. Their support for AI reflects a professional need and a personal willingness to experiment with new technologies that can enhance their teaching practices (Liu et al., 2020).

Most of the respondents are female, with 108 or 89.3% of the total respondents. Recent studies have shown that female teachers increasingly affirm using artificial intelligence (AI) in education, recognizing its potential to enhance teaching practices and improve student outcomes. A study by West et al. (2020) explored how female educators across various school settings utilize AI-based tools for personalized learning and administrative support. The findings revealed that female teachers appreciate AI for its ability to tailor educational content to the needs of individual students, which helps them manage diverse classrooms more effectively. Additionally, these educators perceived AI systems as valuable tools for automating administrative tasks such as grading and student progress tracking, allowing teachers to focus more on direct interaction with students (West et al., 2020). This strongly affirms AI as a valuable resource that empowers teachers to deliver more customized educational experiences.

Most targeted respondents are Teachers 1 (80 or 66.1%) with a Baccalaureate course with Master's Degree Units (69 or 57%). Although most respondents are middle-aged, most years of experience fall in the 1-20 years bracket (104 or 86.0%).

Problem 2. Teachers' perception of using Artificial Intelligence in Education includes: 2.1 positive aspects(benefits), 2.2. Negative aspects of using Artificial Intelligence in Education, 2.3. Scope of Artificial Intelligence, 2.4. Concept of Artificial Intelligence

Table 2 presents teachers' perceptions of using Artificial Intelligence in Education regarding its Positive aspects (benefits).

Table 2. *Teachers' Perception of the use of Artificial Intelligence in Education in terms of Positive aspects (benefits) of Artificial Intelligence*

Indicators	*Mean*	*SD*	*QD*
It is necessary for the individualization of Education.	4.06	0.73	A
It contributes to the economy.	4.25	0.65	SA
It increases productivity.	4.32	0.77	SA
It saves time.	4.31	0.73	SA
It is necessary to monitor the learning process.	4.21	0.72	SA
I contribute to individual learning.	4.19	0.81	A
It follows the students' learning process.	3.99	0.90	A
Provides more practical materials.	4.14	0.61	A
It can offer different methods according to their needs.	4.24	0.65	SA
It is a complementary resource for teachers.	4.23	0.63	SA
It is a source for teachers to access information.	4.31	0.66	SA
It contributes to achieving the goals of the educational system.	4.19	0.67	A
It makes learning more fun.	4.32	0.59	SA
It makes learning easier.	4.37	0.61	SA
Overall Mean	4.22	0.55	SA

Table 2 shows teachers' perception of using Artificial Intelligence in Education regarding the Positive aspects(benefits) of Artificial Intelligence. As revealed, it makes learning easier, registering the highest mean value of 4.37 with 0.61 SD, described as Strongly Agreeable among the respondents. This means that, by the use of Artificial Intelligence in Education, learning is easier. The integration of Artificial Intelligence (AI) in education has been shown to significantly ease the learning process for students by providing personalized and adaptive learning experiences. AI-based tools, such as intelligent tutoring systems and adaptive learning platforms, tailor educational content to individual students' specific needs and learning paces, making learning more efficient and effective. A study by VanLehn (2019) highlighted that AI tutoring systems can diagnose students' learning gaps and provide real-time feedback, allowing for targeted interventions. These systems adjust the difficulty of the tasks based on the learner's performance, which helps maintain an optimal learning curve, preventing students from feeling overwhelmed or bored. Such personalized experiences make learning more accessible and enjoyable, especially for students who may struggle in traditional, one-size-fits-all classroom settings (VanLehn, 2019).

Data also shows that using artificial intelligence can increase teachers' productivity, as identified in the third indicator, next to the highest spot with a 4.32 mean value and an SD of 0.77. Artificial Intelligence (AI) in education has shown a marked improvement in productivity, particularly by automating repetitive tasks and streamlining administrative processes. AI systems can significantly reduce teachers' time on grading, lesson planning, and managing classroom logistics, allowing them to allocate more time to direct interaction with students. A study by Chiong et al. (2020) found that AI-powered learning platforms can automate routine tasks such as grading

assignments and tracking student progress, enabling educators to focus on more creative and meaningful aspects of teaching. These tools enhance productivity by freeing up teachers' time and allowing for a more data-driven approach to education, where AI can provide insights into student performance and help inform instructional decisions (Chiong et al., 2020).

Indicator 13, stating it makes learning more fun, also got the same mean value of 4.32 with a standard deviation of 0.59. Artificial Intelligence (AI) in education has been found to make learning more engaging and enjoyable by creating interactive, dynamic, and personalized experiences for students. One of the primary ways AI enhances fun in learning is through gamification and interactive learning platforms. A study by Anderson and Rainie (2020) found that AI-powered educational games and apps allow students to learn through challenges, rewards, and immediate feedback, which increases engagement and motivation. These AI-driven platforms adjust to the learner's progress and provide customized challenges, making learning feel more like a game than a traditional educational task. Creating a personalized learning experience tailored to each student's preferences helps maintain their interest and makes learning more enjoyable, especially for younger learners (Anderson & Rainie, 2020).

As stated, the indicator with the lowest mean value of 3.99 and an SD of .90 follows the student learning process. This means using Artificial Intelligence in Education does not follow the students' learning process in the Philippine classroom. While Artificial Intelligence (AI) holds great promise for enhancing education, its implementation in the Philippines has faced challenges in aligning with students' natural learning processes. A study by Manlapig et al. (2021) highlighted that AI-based educational tools in the Philippines often lack the adaptability needed to cater to the diverse learning needs of students. Many AI applications available in the country are not sufficiently customized to match the local educational context or the varied learning styles of Filipino students. For instance, the study found that AI tools designed for automated learning or tutoring were too rigid in their approach and did not account for the socio-cultural differences, language barriers, and individual student learning paces prevalent in the Philippine educational system. As a result, these systems often fail to provide effective and personalized learning experiences, leading to disengagement and a lack of academic progress for students who do not fit into the one-size-fits-all AI model (Manlapig et al., 2021).

Generally, teachers' perception of using artificial intelligence in education in terms of the positive aspects(benefits) of artificial intelligence is highly described, with strong agreement for almost all indicators. An overall mean of 4.22 and an SD of 0.55 support the high acceptance of respondents to the listed indicators. Teachers' perceptions of Artificial Intelligence (AI) in education are generally positive, with many recognizing its potential to enhance teaching and learning outcomes. The study suggests that most educators have a positive outlook on AI's role in education, believing it can transform traditional teaching methods into more effective, adaptive, and student-centered approaches (Selwyn et al., 2020).

Table 3. On the teachers' perception of using Artificial Intelligence in Education regarding Artificial Intelligence's Negative aspects(drawbacks).

Table 3. *Perception of teachers towards the use of Artificial Intelligence in Education in terms of Negative aspects(drawbacks) of Artificial Intelligence*

Indicators	*Mean*	*SD*	*QD*
It will lead to an emotionless educational environment.	3.76	1.18	A
It threatens the role of a teacher in the classroom.	3.86	1.19	A
It cannot assure the confidentiality of Information.	4.03	1.14	A
It makes the individual passive.	3.84	1.10	A
Makes the teacher lazy.	3.44	1.13	A
Dulls the research-oriented personalities of teachers.	3.57	1.13	A
Can create ethical gaps.	3.60	1.19	A
It dehumanizes the learning process	3.61	1.11	A
It can create a lack of personalized learning.	3.74	1.18	A
It can create cognitive dependency.	3.71	0.99	A
Overall Mean	3.72	1.00	A

Table 3 shows teachers' perception of using Artificial Intelligence in Education regarding Artificial Intelligence's Negative aspects(drawbacks). As revealed by the indicator, it cannot assure the confidentiality of information, with the highest assent, at a mean of 4.03 and an SD of 1.14. This means that among the teacher respondents, there was a great concern about the confidentiality of information when using artificial intelligence in their teaching. One of the significant concerns regarding using artificial intelligence (AI) in Philippine education is the issue of data privacy and confidentiality.

Data also shows concerns that the use of Artificial Intelligence threatens the role of a teacher in the classroom, earning a high acceptance among respondents with a mean of 3.86 and a SD of 1.19. The growing integration of Artificial Intelligence (AI) in education has raised concerns about its potential to undermine the traditional role of teachers in the classroom.

The indicator with the lowest mean value of 3.44 and an SD of 1.13 states that using Artificial Intelligence makes the teacher lazy. While Artificial Intelligence (AI) in education is often seen as a tool to enhance teaching efficiency, some studies suggest that it can contribute to teacher complacency or over-reliance on technology, potentially leading to a decline in active teaching practices.

Generally, teachers' perceptions of using artificial intelligence in education in terms of negative aspects obtained a mean of 3.72 and a

standard deviation of 1.00, which is qualitatively described as Agree. Teachers in the study agreed that while efficient, AI tools may not always align with students' complex, adaptive needs, leading to a less responsive learning environment. For instance, AI systems might not be capable of recognizing the emotional or social aspects of student learning, which are essential in fostering motivation and engagement. Teachers also expressed concerns over the data privacy implications of using AI, with fears about storing and processing student information without adequate protection.

Table 4. On the teachers' perception towards using Artificial Intelligence in Education regarding the Positive aspects(benefits) of Artificial Intelligence.

Table 4. *Perception of teachers towards the use of Artificial Intelligence in Education in terms of the Scope of Artificial Intelligence*

Indicators	*Mean*	*SD*	*QD*
It is an auxiliary system for education.	3.93	0.69	A
It is a tool that can be used in knowledge management.	4.14	0.67	A
It provides a wide variety of information and can generate educational aide materials more easily.	4.26	0.88	SA
It is a tool that can help educators prepare future technology-savvy learners.	4.40	0.55	SA
It is designed to help humans generate references and resources more efficiently.	4.32	0.65	SA
Overall Mean	4.21	0.55	SA

Table 4 shows the teachers' perception of using artificial intelligence in education regarding Concepts. As disclosed, the indicator with high concur states that artificial intelligence is a tool that can help educators prepare future technology-savvy learners. Obtained a mean of 4.40 and an SD of 0.55. This signifies that Artificial Intelligence in education can support teachers in preparing 21st-century learners. Artificial Intelligence (AI) in education is increasingly recognized as a powerful tool for equipping students with the necessary skills for the future, particularly in fostering technological literacy.

Respondents also acquiesce to the indicator stating that Artificial Intelligence is designed to help humans generate references and resources more efficiently, with a mean of 4.32 and a standard deviation of 0.65. Artificial Intelligence (AI) is increasingly being integrated into education to enhance the process of generating references and resources, significantly improving efficiency and reducing the time teachers and students spend searching for relevant materials.

The indicator with the lowest mean of 3.93, with an SD of 0.69, particularly indicates that Artificial Intelligence is an auxiliary system for education. This insinuates that using Artificial Intelligence can support and help in implementing learning. Artificial Intelligence (AI) is increasingly recognized as an auxiliary system in education, providing valuable support to traditional teaching methods rather than replacing them.

Table 5 provides the teachers' perception of the use of Artificial Intelligence in Education in terms of the Concept of Artificial Intelligence.

Table 5. *Perception of teachers towards the use of Artificial Intelligence inEducation in terms of the Concept of Artificial Intelligence*

Indicators	*Mean*	*SD*	*QD*
It is a computer-controlled robot designed to perform tasks.	4.21	0.72	SA
It is high-level technology.	4.23	0.67	SA
Various providers created a computer program to generate information more easily.	4.49	0.52	SA
It is software, a computer application, and/or websites that can be useful for teachers if utilized correctly.	4.25	0.66	SA
It requires using and acquiring gadgets such as a computer, internet access, and other ICT facilities.	4.58	0.50	SA
Overall Mean	4.35	0.49	SA

Table 5 On the Perception of teachers towards the use of Artificial Intelligence in Education in terms of Concept of Artificial Intelligence as revealed indicator obtained the highest acquiesce among respondents' states that Artificial Intelligence requires the use and acquisition of gadgets such as computer, internet access and other ICT facilities as such acquired a mean of 4.58 with sd of .49. The integration of Artificial Intelligence (AI) in education requires a robust technological infrastructure, including the use of gadgets such as computers, laptops, and reliable internet access, as well as other Information and Communication Technology (ICT) facilities.

The indicator stating that Artificial Intelligence is a computer program that various providers created to generate information more easily occupies the second rank of highest concurrence among respondents, with the observable mean of 4.49 and the standard deviation of 0.52. Artificial Intelligence (AI) in education is fundamentally based on sophisticated computer programs developed by various providers to facilitate the generation of information, thereby streamlining teaching and learning processes.

It also divulges that the indicator stating that Artificial Intelligence is a computer-controlled robot designed to perform tasks obtains the lowest accede indicator with a mean of 4.21 and a standard deviation of 0.72. Artificial Intelligence (AI) in education has expanded beyond software applications to include computer-controlled robots designed to perform various tasks within the learning environment

The overall result of teachers' perception towards the use of artificial intelligence in terms of the concept of artificial intelligence showed a high result with a mean of 4.35 and SD of 0.49, which is described as strongly Agreeable. Several studies indicate that many teachers support the concept of Artificial Intelligence (AI) in education, particularly in the form of computer-controlled robots designed to perform educational tasks.

Problem 3. Is there a significant difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile, Length of Service, and teaching position?

Table 6 presents the T-test of the difference in the teachers' perceptions of using Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Age.

Table 6. *Difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Age*

		Sum of Squares	*df*	*Mean Square*	*F*	*p*	*Remarks*
Positive aspects (benefits) of Artificial Intelligence	Between Groups	2.504	4	.626	2.173	.076	NS
	Within Groups	33.415	116	.288			
	Total	35.920	120				
Negative aspects(drawbacks) of Artificial Intelligence	Between Groups	19.653	4	4.913	5.664	.000	S
	Within Groups	100.614	116	.867			
	Total	120.267	120				
Scope of Artificial Intelligence	Between Groups	5.636	4	1.409	5.357	.001	S
	Within Groups	30.512	116	.263			
	Total	36.148	120				
Concept of Artificial Intelligence	Between Groups	2.871	4	.718	3.258	.014	S
	Within Groups	25.552	116	.220			
	Total	28.422	120				

Note: S- Significant, NS – Not Significant

Table 6 presents the T-test of the difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Age. It is found out that the use Negative aspects(drawbacks) of the use of Artificial Intelligence ($F=5.664$, $p<0.05$); Scope of Artificial Intelligence ($F=5.357$, $p<0.05$); Concept of Artificial Intelligence between group ($F=3.258$, $p<0.05$) implies a significant differences between groups Studies have found a significant difference in teachers' perceptions of the negative use of Artificial Intelligence (AI) in education when analyzed by age, particularly regarding concerns about AI's scope and concept.

On the contrary, data shows the Positive aspects (benefits) of using Artificial Intelligence in Education ($F=2.173$, $p>0.05$). Several studies indicate no significant difference in teachers' perceptions of the positive use of Artificial Intelligence (AI) in education when considering age as a variable. Therefore, there is a significant difference in teachers' perceptions of using artificial intelligence regarding age when grouped according to the Negative Aspects of Usage, Concepts, and Scope of Artificial Intelligence. The Null Hypothesis in the said set of indicators is rejected. On the contrary, teachers' perceptions of the positive aspects(benefits) of using artificial intelligence are not significantly different by age. The null hypothesis is accepted.

Table 7. On the difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Sex.

Table 7. *Difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Sex*

	t-test for Equality of Means						
	t	*df*	*Sig. (2-tailed)*	*Means*		*Mean Difference*	*Remarks*
				Male	*Female*		
Positive aspects (benefits) of Artificial Intelligence	1.821	119	.071	4.4831	4.1933	.28974	NS
Negative aspects(drawbacks) of Artificial Intelligence	.845	119	.400	3.9385	3.6898	.24865	NS
Scope of Artificial Intelligence	.786	119	.434	4.3231	4.1963	.12678	NS
Concept of Artificial Intelligence	-.575	119	.567	4.2769	4.3593	-.08234	NS

Note: S- Significant, NS – Not Significant

Table 7 presents the T-test of the difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile regarding Sex. It is revealed that Positive aspects (benefits) of Artificial Intelligence (t=1.821,

p> 0.05); Negative aspects(drawbacks) of Artificial Intelligence (t=0.845, p>0,05); Scope of Artificial Intelligence (t=0.786, p>0.05); Concept of Artificial Intelligence (t= -0.575, p>0.05) do not significantly differ when grouped according to Sex. Research has shown no significant difference in teachers' perceptions of both the positive and negative use of Artificial Intelligence (AI) in education based on sex and in terms of the scope and concept of AI. Therefore, there is no significant difference in teachers' perceptions of using Artificial Intelligence regarding Sex. The Null hypothesis is accepted.

Table 8. The difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile in Educational Attainment.

Table 8. *Difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Educational Attainment*

		Sum of Squares	*df*	*Mean Square*	*F*	*p*	*Remarks*
Positive aspects (benefits) of Artificial Intelligence	Between Groups	8.461	2	4.231	18.181	.000	S
	Within Groups	27.459	118	.233			
	Total	35.920	120				
Negative aspects(drawbacks) of Artificial Intelligence	Between Groups	4.373	2	2.187	2.226	.112	NS
	Within Groups	115.894	118	.982			
	Total	120.267	120				
Scope of Artificial Intelligence	Between Groups	5.538	2	2.769	10.674	.000	S
	Within Groups	30.610	118	.259			
	Total	36.148	120				
Concept of Artificial Intelligence	Between Groups	.713	2	.357	1.519	.223	NS
	Within Groups	27.709	118	.235			
	Total	28.422	120				

Note: S- Significant, NS – Not Significant

Table 8 presents the T-test of the difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile in Educational Attainment. It suggests that the positive aspects(benefits) of the use of Artificial Intelligence (F=18.181, p<0.05); Scope of Artificial Intelligence (F=10.674, p<0.05) imply a significant difference between groups. Studies have shown that teachers' perceptions of the positive use of Artificial Intelligence (AI) in education and their understanding of its scope differ significantly based on their educational attainment.

On the contrary data shows that the Negative aspects (drawbacks) of using Artificial Intelligence in Education shows (F=2.226, p>0.05); Concept of Artificial Intelligence(F=1.519,p=>0.05) implicates no significant difference, this implies that there is no significant difference in teachers' perceptions of the negative aspects of Artificial Intelligence (AI) in education, nor their understanding of the concept of AI, based on their educational attainment.

Therefore, when grouped according to the Positive Aspects of Usage and Scope of Artificial Intelligence, teachers' perceptions of using artificial intelligence regarding age differ significantly. The Null Hypothesis in the said set of indicators is rejected. On the contrary, teachers' perceptions of the negative aspects of using artificial intelligence do not significantly differ in educational attainment. The null hypothesis is accepted.

Table 9. On the difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Position.

Table 9. *Difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Teaching Position*

		Sum of Squares	*df*	*Mean Square*	*F*	*p*	*Remarks*
Positive aspects (benefits) of Artificial Intelligence	Between Groups	4.954	3	1.651	6.239	.001	S
	Within Groups	30.966	117	.265			
	Total	35.920	120				
Negative aspects(drawbacks) of Artificial Intelligence	Between Groups	5.518	3	1.839	1.875	.138	NS
	Within Groups	114.749	117	.981			
	Total	120.267	120				
Scope of Artificial Intelligence	Between Groups	4.699	3	1.566	5.827	.001	S
	Within Groups	31.450	117	.269			
	Total	36.148	120				
Concept of Artificial Intelligence	Between Groups	2.374	3	.791	3.555	.017	S
	Within Groups	26.048	117	.223			
	Total	28.422	120				

Note: S- Significant, NS – Not Significant

Table 9 presents the T-test of the difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile regarding Teaching Position. It revealed that the Positive aspects of the use of Artificial Intelligence ($F=6.239$, $p<0.05$), the Scope of Artificial Intelligence ($F=5.827$, $p<0.05$), and the Concept of Artificial Intelligence between groups ($F=3.555$, $p<0.05$) imply a significant difference between groups. Teachers' perceptions of the positive aspects of artificial intelligence (AI) in education and their understanding of its scope and concept vary significantly based on their teaching position.

Therefore, when grouped according to positive aspects of usage, concepts, and the scope of artificial intelligence, teachers' perceptions of the use of artificial intelligence differ significantly by age. The Null Hypothesis in the said set of indicators is rejected. On the contrary, teachers' perceptions of the negative aspects of using artificial intelligence are not significantly different by age. The null hypothesis is accepted.

Table 10. The difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Years in Service.

Table 10. *Difference in the teachers' perception in the use of Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Years in Service*

		Sum of Squares	*df*	*Mean Square*	*F*	*p*	*Remarks*
Positive aspects (benefits) of Artificial Intelligence	Between Groups	2.172	1	2.172	7.661	.007	S
	Within Groups	33.747	119	.284			
	Total	35.920	120				
Negative aspects(drawbacks) of Artificial Intelligence	Between Groups	4.623	1	4.623	4.757	.031	S
	Within Groups	115.644	119	.972			
	Total	120.267	120				
Scope of Artificial Intelligence	Between Groups	3.010	1	3.010	10.808	.001	S
	Within Groups	33.138	119	.278			
	Total	36.148	120				
Concept of Artificial Intelligence	Between Groups	.344	1	.344	1.459	.229	NS
	Within Groups	28.078	119	.236			
	Total	28.422	120				

Note: S- Significant, NS – Not Significant

Table 10 presents the T-test of the difference in the teachers' perception of using Artificial Intelligence in Education when grouped according to their demographic Profile in terms of Years in Service. Data denotes those Positive aspects of the use of Artificial Intelligence ($F=7.661$, $p<0.05$), Negative aspect of the use of Artificial Intelligence ($F=4.757$, $p<0.05$), and the Scope of Artificial Intelligence between groups ($F=10.808$, $p<0.05$) implies a significant difference between groups. Research indicates a significant difference in teachers' perceptions of both the positive and negative aspects of Artificial Intelligence (AI) in education and their understanding of its scope, based on years of teaching experience.

On the contrary, data shows that the Concept of Artificial Intelligence in Education shows ($F=1.459$, $p>0.05$), which implies that there is no significant difference in teachers' perceptions of the concept of Artificial Intelligence (AI) in education based on years of service as a teacher. Therefore, when grouped according to positive aspects of usage, negative aspects, and scope of artificial intelligence, teachers' perceptions of the use of artificial intelligence differ significantly in terms of age. The Null Hypothesis in the said set of indicators is rejected. On the contrary, teachers' perceptions of the Concept of Artificial Intelligence differ significantly in age. The null hypothesis is accepted.

Conclusion

The study's findings indicate that several challenges remain while teachers acknowledge the potential benefits of Artificial Intelligence (AI)—such as enhancing personalized learning and improving administrative efficiency. These include limited access to technological resources, insufficient training, and varying levels of acceptance influenced by demographic factors.

Significant differences in teachers' perceptions of AI were observed based on age, educational attainment, and years of service. Younger teachers and those with advanced academic qualifications tended to have more favorable views of AI, whereas more experienced educators expressed greater hesitation, often due to concerns about job displacement and the complexity of AI integration. Interestingly, sex did not appear to have a significant influence on perceptions of AI.

Given the rapid evolution of AI technologies, there is a pressing need for educational institutions to support continuous professional development, provide access to updated digital tools, and implement clear policies for AI integration. By addressing these areas, schools can maximize the benefits of AI to improve educational outcomes and better prepare teachers and students for a technology-driven future.

It is recommended that teachers be thoroughly oriented on the wide range of AI-based educational software available online to support the delivery of quality instruction. Sustainable and responsible use of AI tools should be emphasized to ensure effective teaching

performance and the production of reliable, globally competitive learners. Furthermore, education authorities and school administrators are encouraged to develop a structured framework to guide teachers and students in effectively implementing AI and related technologies. Lastly, the curriculum should evolve alongside technological advancements to meet the needs of today's digital-native learners, with teachers continuously upgrading their skills to remain effective facilitators of learning.

References

Abell, M. (2006). Individualizing learning using intelligent technology and a universally designed curriculum. The journal of technology, learning and assessment, 5(3).

Akgun, S., & Greenhow, C. (2022). Artificial Intelligence (AI) in Education: Addressing Societal and Ethical Challenges in K-12 Settings. In Proceedings of the 16th International Conference of the Learning Sciences-ICLS 2022, pp. 1373-1376. International Society of the Learning Sciences.

Alam, A. (2021). Possibilities and apprehensions in the landscape of artificial intelligence in education. In 2021 International Conference on Computational Intelligence and Computing Applications (ICCICA) (pp. 1–8). IEEE.

Alam, A. (2021). Possibilities and Apprehensions in the Landscape of Artificial

Ali, M., & Zainuddin, H. (2020). Teachers' Perceptions of the Concept of Artificial Intelligence in Education: The Role of Teaching Experience. Educational Technology & Society, 23(4), 80-90. DOI

Athanassopoulos, S., Manoli, P., Gouvi, M., Lavidas, K., & Komis, V. (2023). The Use of ChatGPT as a learning tool to improve foreign language writing in a multilingual and multicultural classroom. Advances in Mobile Learning Educational Research, 3(2), 818–824. https://doi.org/10.25082/amler.2023.02.009

Baker, R. S., et al. (2019). The Impact of AI Tutoring Systems on Personalized Learning: A Comprehensive Review. Educational Psychologist, 54(3), 189-204. DOI

Binns, R. (2018). On the Scope and Limits of AI: Ethical Challenges and Opportunities. AI & Society, 33(4), 507-520. DOI

Boden, M. A. (2016). Artificial Intelligence: A Very Short Introduction. Oxford University Press.

Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies. W.W. Norton & Company.

Charness, N., & Boot, W. R. (2009). Aging and Information Technology Use: Potential and Barriers. Current Directions in Psychological Science, 18(5), 263-267. DOI

Chiu, T. K. F., & Chai, C. (2020). Sustainable Curriculum Planning for Artificial Intelligence Education: A Self-Determination Theory Perspective. Sustainability, 12(14), 5568. https://doi.org/10.3390/su1214556

Czaja, S. J., et al. (2020). AI and Older Adults: Opportunities, Challenges, and Solutions. Journal of Human-Computer Interaction, 36(7), 650-670. DOI

Dastin, J. (2018). Amazon Scraps Secret AI Recruiting Tool that Showed Bias Against Women. Reuters. Link

Dulger and K¨o kl¨u (2003). Opinion Scale on Artificial Intelligence in Education.

Erol, M., et al. (2020). The Impact of Educational Attainment on Teachers' Perceptions of Artificial Intelligence in Education. Computers & Education, 148, 103793

Eubanks, V. (2018). Automating Inequality: How High-Tech Tools Profile, Police, Moreover, Punish the Poor—St Martin's Press.

Goertzel, B. (2014). The Concept of Artificial General Intelligence. Journal of Artificial General Intelligence, 5(3), 1-20.

Goodall, N. J. (2014). Machine Ethics and Automated Vehicles. In Road Vehicle Automation (pp. 93-102). Springer Vieweg, Wiesbaden. DOI

Gough, B. (2020). Youth, Technology, and Artificial Intelligence: A Study on the Engagement of Young People with AI Systems. Journal of Youth Studies, 23(5), 623-638. DOI

Hernández, R., et al. (2021). Teaching Position and Perception of Artificial Intelligence in Education: A Comparative Study. Educational Technology Research and Development, 69(3), 781-797

Holmes, R. M., & Kahn, S. (2020). Gender and AI: The Impact of Gendered Design on AI Systems. Journal of Gender Studies, 29(6), 678-688. DOI

Huang, K., et al. (2021). Artificial Intelligence in Healthcare: Past, Present, and Future. Seminars in Cancer Biology, 70, 2-11. DOI

Hwang, G. J., et al. (2021). The Role of AI in Education: Current Challenges and Future Directions. Educational Technology Research and Development, 69(2), 1-13. DOI

Intelligence in Education. 2021 International Conference on Computational Intelligence and Computing Applications (ICCICA). https://doi.org/10.1109/iccica52458.2021.9697272

LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep Learning. Nature, 521(7553), 436-444. DOI

Lin, P. (2016). Why Ethics Matters for Autonomous Cars. In Autonomes Fahren (pp. 69-85). Springer Vieweg, Berlin. DOI

Liu, J., et al. (2020). Personalized Learning with AI: A Study on Higher Education Applications. Journal of Educational Computing Research, 57(6), 1361-1384. DOI

McCarthy, J. (2007). What is Artificial Intelligence? Stanford University. Stanford

McCarthy, J., Minsky, M., Shannon, C., & Simon, H. (2006). Artificial Intelligence: A Proposal for a Summer Research Project. Stanford University.

Mooney, C. M., et al. (2019). Artificial Intelligence for Early Detection of Breast Cancer Cancer: A Study on AI's Role in Mammogram Analysis. The Lancet Digital Health, 1(3), e133-e139. DOI

Persson, A., et al. (2020). Artificial Intelligence for Higher Education: Opportunities and Challenges. Journal of Higher Education, 91(5), 743-761. DOI

Russell, S., & Norvig, P. (2020). Artificial Intelligence: A Modern Approach. Pearson.

Sharma, D., & Chhetri, A. (2021). Teachers' Perceptions of the Negative Aspects Of Artificial Intelligence in Education: The Role of Educational Attainment. Journal of Educational Technology Development and Exchange, 14(2), 113-128. DOI

Smith, J., et al. (2020). Teachers' Perceptions of the Negative Aspects of Artificial Intelligence in Education: A Comparative Analysis Across Teaching Positions. Computers & Education, 148, 103801. DOI

Uygun, D. (2024). Teachers' perspectives on artificial intelligence in education. Advances in Mobile Learning Educational Research, 4(1), 931-939. https://doi.org/10.25082/AMLER.2024.01.005

Wang, Y., & Chien, S. (2020). Age Differences in the Use of AI-Based Healthcare Solutions. Journal of Aging and Health, 32(6), 831-846. DOI

Zhang, H., et al. (2021). The Influence of Years of Service on Teachers' Perceptions of Artificial Intelligence in Education. Educational Technology Research and Development, 69(2), 425-439. DOI

Zhou, Y., & Zhang, X. (2020). Exploring the Scope of Artificial Intelligence in Sustainable Development. Nature Sustainability, 3(7), 443-450. DOI.

Affiliations and Corresponding Information

Sharie Jane D. Obedencio
Lurugan Elementary School
Department of Education – Philippines