ASSESSING THE ROLE OF ARTIFICIAL INTELLIGENCE AS A TOOL FOR ENHANCING LEARNING OUTCOMES AT MINDANAO STATE UNIVERSITY-SULU: TEACHERS' PERSPECTIVES

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ABSTRACT. This study used a descriptive-correlational approach with 100 teachers to assess how artificial intelligence (AI) affected learning outcomes at Mindanao State University-Sulu. Numerous statistical techniques, such as frequency, percentage scores, and correlations, were used to analyze the data. While taking into account demographic factors like age, gender, civil status, tenure, and educational qualifications, the study concentrated on AI's role in teaching practices, improving learning outcomes, and overcoming educational challenges. The demographic analysis showed that the majority of respondents were under 30 years old, mostly female, single, had less than five years of service, and held master's degrees. Teachers' opinions of AI were largely favorable, with ratings that leaned toward "Agree" and "Undecided" when it came to how well it improved learning outcomes in all of the areas under investigation. A significant positive correlation was found between AI's role in addressing learning challenges and improving learning outcomes, while the correlation between teaching practices and overall contributions to learning outcomes was found to be moderate to weak. However, there were no significant differences in perceptions based on demographic categories, although teachers with 11–15 years of experience had a more positive view of AI in teaching practices. These results show that faculty members strongly acknowledge the advantages of AI, which is consistent with the Technology Acceptance Model (TAM). However, a low correlation indicated deficiencies in the TPACK framework's technical pedagogical understanding. The study's conclusion emphasizes how crucial it is to include AI into teaching in order to help students develop critical 21st-century abilities.

KEYWORDS*: Artificial Intelligence, Learning outcome, Technology Acceptance Model, Learning challenges, AI-Integrated Instruction*

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INTRODUCTION

Artificial Intelligence (AI) is changing how teachers instruct and students learn, which is changing the face of education worldwide. To improve learning effectiveness and student engagement, AI-driven solutions like chatbots, generative AI models, intelligent tutoring systems, and adaptive learning platforms are being incorporated into classrooms all around the world.

According to studies, these technologies help teachers meet the varied needs of their students, automate administrative work, and enable personalized learning (Bond et al., 2023).Global data, however, also highlighted issues with algorithmic bias, data privacy, academic integrity, and unequal access, particularly in developing nations with inadequate digital infrastructure (UNESCO, 2023). According to Duhaylungsod and Chavez's (2023) findings, some students acknowledged that depending too much on AI models could jeopardize their autonomy and ability to make decisions. Therefore, even if AI has enormous potential to change education, its success primarily rests on contextualized deployment and instructors' readiness to successfully incorporate these tools into their pedagogy.

AI integration in higher education was still in its infancy in the Philippines. While Filipino instructors generally view AI favorably and acknowledge its potential to enhance teaching and learning outcomes, there is still a gap in preparedness, policy support, and professional training, according to recent research conducted in local universities (Dizon, 2023). According to Sison and Domingo (2024), a number of instructors acknowledged having little experience with AI applications and being unsure about the ethical ramifications of things like plagiarism and the dependability of content produced by AI.Due to problems with scarce resources, uneven internet access, and infrastructure limitations, these difficulties are much more severe in Mindanao. In this regard, Mindanao State University–Sulu (MSU-Sulu) provided a crucial example for investigating how AI may be applied sensibly and successfully to improve learning results, especially in underprivileged and culturally diverse educational settings.

MSU-Sulu, situated in a location with rich cultural legacy yet socio-economic issues, encountered particular barriers in the integration of educational technologies. The university has demonstrated a growing interest in digital innovation despite these obstacles, including the application of AI-assisted teaching, evaluation, and communication tools. Nonetheless, there is also a dearth of empirical data regarding how educators view AI in this setting, how they incorporate it into their teaching methods, and how much these incorporations enhance student learning results. There is a knowledge gap about the experiences of educators in rural, conflict-affected, or marginalized contexts like Sulu because the majority of previous research on AI in education in the Philippines has been on theoretical discussions or urban institutions.

By evaluating AI's potential as a tool for improving learning outcomes at MSU-Sulu from the viewpoint of its instructors, this study closed these research gaps. It specifically looked at faculty members' perceptions of the pedagogical usefulness of AI, their implementation readiness and difficulties, and the observed effects of AI integration on student learning. In order to create evidence-based institutional policies, capacity-building initiatives, and technology adoption plans that are suited to regional requirements, it was imperative to close this gap. This concept is consistent with the findings of Adalia, Rodríguezo, Eustaquio, et al. (2025). Humor can be a useful teaching tool, but when used improperly, it can alienate students and reinforce power disparities, which inhibits effective language. Additionally, it added to the larger conversation on how AI may support the objectives of inclusive and egalitarian education in underdeveloped nations.

This study supported the goal of guaranteeing inclusive and equitable education and encouraging opportunities for lifelong learning for everyone. It was based on the United Nations Sustainable Development Goal (SDG) 4: Quality Education. By fostering digital skills for employability (Target 4.4), increasing educational inclusion through adaptive technologies that accommodate varied student requirements (Targets 4.a and 4.5), and improving learning quality (Target 4.1), AI has the potential to advance SDG 4.However, AI might inadvertently exacerbate already-existing educational inequities in the absence of sufficient teacher preparedness,

legislative support, and equitable access. Therefore, comprehending the viewpoints of MSU-Sulu's instructors not only aided in institutional growth but also bolstered the country's and the world's dedication to attaining inclusive and high-quality education through responsible technological innovation.

LITERATURE

The review paper on Artificial Intelligence in Education (AIED) examines a comprehensive body of literature, addressing three main questions: the primary areas where AI applications have been explored in education, the most prevalent research topics and key findings, and the main components of research design including guiding theories, study contexts, and methodologies. A bibliometric analysis of 2,223 research articles, complemented by a content analysis of 125 selected publications, reveals a rich conceptual framework within AIED. Key applications identified include adaptive learning, tailored tutoring, intelligent evaluation and management, profiling and prediction, and product development. The research themes focus on the adoption, impacts, challenges of AIED, and the technical design of educational systems. Additionally, the paper highlights the multidisciplinary nature of publication sources, the diverse theories employed within the AIED field, and identifies unexplored research areas. Overall, this study offers valuable insights to aid researchers in understanding the contemporary state of AIED and identifying future research directions in this dynamic field (Wang, 2024).

Higher education (HE) is currently experiencing significant changes due to artificial intelligence (AI). A study at a major Australian university surveyed 30 teaching staff and conducted interviews with eight, employing Inductive Thematic Analysis to evaluate the responses. The findings revealed a lack of consensus on AI's role in HE and considerable uncertainty about best practices. Although concerns about academic integrity were noted, they may be overstated. The most common adaptation reported by nearly half of participants was redesigning assessments using AI. Over 75% expressed a desire for more support, yet only a quarter felt adequately prepared by their institution. Despite this, there is a unanimous belief that technology can enhance education. It is essential for the HE sector to remain informed about AI advancements and commit to ongoing research and discussions about best practices, particularly in fulfilling educational responsibilities to students. This perspective challenges conclusions by Chavez et al. (2026), which suggest that leadership practices rooted in positive psychology are more beneficial than mere policy changes. They emphasize the importance of leaders demonstrating inclusive behaviors. Additionally, findings from Chavez et al. (2026) align with the view that while AI can serve as a tool, it cannot replicate the empathy and cultural understanding inherent in human teaching, highlighting the unpredictability of AI developments moving forward (Lee, 2024).

Artificial intelligence (AI) greatly improves learning results when included into higher education teaching procedures, according to a number of worldwide research. Holmes, Bialik, and Fadel (2019) discovered that AI-powered learning systems enhanced students' academic performance by facilitating adaptive training and real-time feedback in a comprehensive study carried out across European universities. According to the study's teachers, AI tools enabled them to more effectively identify students' strengths and weaknesses and tailor lessons, facilitating differentiated instruction and better learning outcomes.

According to a study done in the US by Zawacki-Richter et al. (2019), instructors saw AI as a helpful teaching tool rather than a substitute for human instruction when it came to higher education. According to the study, teachers who employed AI-assisted analytics and tutoring tools saw increases in academic performance and student engagement. Teachers stressed that by offering

data-driven insights into students' learning practices, AI improved their ability to make instructional decisions.

Teachers' awareness, use, and perceptions of artificial intelligence (AI) in educational contexts, as well as its possible effects on teaching and learning outcomes, have been the subject of several local Philippine research. Learner engagement was rated as very high in a quantitative descriptive study conducted among public secondary Technology and Livelihood Education (TLE) teachers in Iloilo. Additionally, there was a statistically significant positive relationship between the degree of AI use and student participation, indicating that AI integration can support active engagement in classrooms.

In addition, a study conducted in Laguna on basic education teachers' awareness of AI and digital competence revealed a significant correlation between the two. This suggests that teachers' ability to successfully incorporate AI into their lessons depends on their readiness and familiarity with AI tools (Manaig, Yazon, Buama, & Bonganciso, 2025). This concept is consistent with Chavez's (2023) conclusions that the most notable aspect of humanized instruction is cognitive presence. It differs statistically from course kinds, computer literacy, and impoverished status.Research Synergy Press Journals A related study on junior high school science teachers in Bataan found that while cognitive awareness of AI was high, actual use of AI tools (such as Grammarly and ChatGPT) remained low. This suggests a gap between awareness and practical classroom application that could impact learning outcomes if it is not addressed through focused training and support.

Artificial intelligence (AI) is significantly reshaping the education landscape by enhancing curriculum design, optimizing administrative tasks, and providing tailored learning experiences. This study investigated the readiness of 72 pre-service teachers to integrate AI into their teaching. Employing a mixed-methods approach, including structured surveys and focus group discussions, the research evaluated participants' expectations for AI in education, the challenges they faced, their understanding of AI, and their confidence in utilizing AI technologies. Results indicated a notable concern about AI potentially replacing educators; while 65% acknowledged AI's presence in education, 85% believed teachers would always be essential. Participants identified lesson preparation and curriculum development as the areas with the greatest potential for AI integration (72%). However, significant barriers such as inadequate formal training (55%) and concerns over data security and job loss were also raised. To enhance their preparedness and confidence, respondents emphasized the need for accessible training and hands-on experience with AI tools such as Google Classroom and DepEd platforms. The findings suggest that while AI could promote personalized learning, boost productivity, and streamline administrative functions, its adoption necessitates ethical considerations and training support. Teacher education programs are advised to incorporate AI-focused curricula to foster digital literacy and adaptability. Future research should explore AI's long-term impact on teaching methods and strategies to address ethical issues while maintaining human interaction in the classroom (Lacuna, 2025).

METHODS

1. Research Design

In the study "Assessing the Role of Artificial Intelligence as a Tool for Enhancing Learning Outcomes at Mindanao State University–Sulu: Teachers' Perspectives," a descriptive-exploratory research design using a quantitative method was used to establish a thorough data collection layout. This strategy was selected because it makes it possible to gather, examine, and verify data using descriptive methods. After imaginative investigation, facts were organized to fit hypotheses and then tested or verified (Krathwohl, 1993). Furthermore, by interpreting and

disclosing situations that were either present or nonexistent, this research approach provided the knowledge and experiences needed to support more thorough investigations (Venson, 2004).

2. Research Locale

The College of Education, College of Arts and Sciences, College of Science and Mathematics, College of Fisheries, College of Agriculture, College of Computer Science, College of Health and Science, College of Business and Accountancy Management, and College of Public Administration were among the colleges at Mindanao State University–Sulu where the study was carried out.

3. Participants of the Study

Faculty members from several Mindanao State University-Sulu colleges participated in the study, particularly those who taught and integrated instructional technologies, especially AI tools. One hundred instructors from the College of Education, College of Arts and Sciences, College of Science and Mathematics, College of Fisheries, College of Agriculture, College of Computer Science, College of Health and Science, College of Business and Accountancy Management, and College of Public Administration took part. Their observations sought to represent the viewpoints of instructors in the academic setting and investigate how AI might improve learning results.

4. Sampling Procedure

Due to constraints related to access, availability, and time, the study employed purposive sampling, a non-probability sampling technique. This approach involved selecting representative samples from various colleges, including the College of Education, College of Arts and Sciences, College of Science and Mathematics, College of Fisheries, College of Agriculture, College of Computer Science, College of Health and Science, College of Business and Accountancy Management, and College of Public Administration. This method ensures the collection of relevant and high-quality data. As noted by Croswell and Guetteman (2019), such purposive sampling allows for the selection of participants with specific knowledge or experiences related to the research objectives, thereby generating rich and contextually relevant data.

5. Research Instrument

A modified standardized questionnaire from the study of Li, Y., & Ma, L. served as the research tool for producing the primary empirical data. (2023). Opportunities, applications, and problems of artificial intelligence in education, Luckin, R., Holmes, Griffiths, M., & Forcier, L. B. (2016). Holmes, W., Bialik, M., & Fedel, C. Intelligence Unleashed: A Case for AI in Education. Artificial Intelligence in Education: Prospects and Consequences for Instruction and Learning (2019).

6. Data Gathering Procedure

The dean of Sulu State College's School of Graduate Studies, the Chancellor, and the ten (9) corresponding college deans were asked for permission to administer the questionnaire in order to gather data. The questionnaire was launched, administered, and retrieved by the researcher herself.

7. Ethical Considerations

Respecting ethical norms is crucial for maintaining the validity and integrity of research. Informed consent was obtained from participants to ensure their awareness of the study's goals and methods, with signed documentation confirming voluntary participation. The study prioritized confidentiality by omitting identifying information from reports and emphasized voluntary

involvement without coercion. Data integrity was upheld by avoiding fabrication or misrepresentation during collection. Participants' rights and dignity were maintained throughout, guided by the principles of beneficence and non-maleficence, aimed at providing benefit without harm. Compliance with institutional guidelines ensured adherence to national and international educational research standards, alongside the ethical rules of Sulu State College's School of Graduate Studies.

RESULTS

1. What is the extent of the role of artificial intelligence as a tool for enhancing learning outcomes at Mindanao State University-Sulu in the context of: Usage in teaching practices, Contribution to enhancing learning outcomes, and addressing learning challenges?

Table 1.1 In terms of Usage in teaching practices

No	Statements	Mean	S.D.	Description
1	I use AI tools to help in designing lesson plans	3.77	.78951	Agree
2	I utilize AI applications for creating classroom presentations and teaching materials	3.64	.85894	Agree
3	I integrate AI-powered platforms to provide timely feedback to my students	3.41	.95447	Undecided
4	I use AI for grading and assessment tasks to lessen my workload	2.98	1.08227	Undecided
5	I apply AI in generating interactive learning activities	3.55	.96792	Agree
6	I use AI for checking accuracy and reliability of learning resources	3.38	1.01285	Undecided
7	I rely on AI to support classroom management (e.g., attendance, participation tracking)	2.79	1.01797	Undecided
8	I maximize AI tools for collaborative and project-based learning	3.43	.93479	Undecided
9	I use AI-powered translation or language tools when teaching students with diverse linguistic backgrounds	3.42	.94474	Undecided
10	I ensure responsible and ethical use of AI in classroom instruction	3.81	.91778	Agree
	Weighted Mean	**3.418**	**.65665**	**Undecided**

Legend: (5) 4.50 – 5.00=Strongly Agree; (4) 3.50 – 4.49= Agree; (3) 2.50 – 3.49=Undecided; (2)1.50 – 2.49=Disagree; (1)1.00 – 1.49=Strongly Disagree

Table 1.1 presents the views of Mindanao State University-Sulu instructors on the potential of AI to enhance student learning. The overall average score is 3.418 (SD = .65665), indicating an "undecided" stance on AI usage in education. The highest rated item was statement ten, with a mean score of 3.81 (SD = .91778), showing consensus on the importance of ethical AI in classroom settings. Additionally, statement 1 (mean 3.77, SD = .78951) on using AI for lesson plans and statement 2 (mean 3.64, SD = .85894) on AI in presentations and materials also received notable scores.

Table 1.2 In terms of Contribution to enhancing learning outcomes

No	Statements	Mean	S.D.	Description
1	Promotes deeper understanding of concepts among students	4.06	.63277	Agree
2	Contributes to improved students' academic performance	3.94	.70811	Agree
3	Helps create more engaging and motivating learning experiences	4.05	.67232	Agree
4	Enhances students' critical thinking and problem-solving skills	3.78	.83581	Agree
5	Enables personalized and adaptive learning for students with different needs	3.92	.66180	Agree
6	Improves communication and interaction between teachers and learners	3.81	.78746	Agree
7	Supports lifelong learning and independent study skills among students	3.82	.74373	Agree
8	Strengthens the integration of technology and pedagogy for quality education	3.97	.68836	Agree

9	Helps make learning more inclusive for students with disabilities or special needs	4.03	.70288	Agree
10	Contributes to the development of 21st century skills such as creativity, collaboration, and digital literacy	4.11	.60126	Agree
	Weighted Mean	**3.949**	**.58853**	**Agree**

Legend: (5) 4.50 – 5.00=Strongly Agree; (4) 3.50 – 4.49= Agree; (3) 2.50 – 3.49=Undecided; (2)1.50 – 2.49=Disagree; (1)1.00 – 1.49=Strongly Disagree

Table 1.2 presents teachers' views at Mindanao State University-Sulu on AI's potential to enhance learning. The highest-rated aspect is AI's role in fostering 21st-century skills like creativity and digital literacy, with a mean score of 4.11. The overall composite mean is 3.949, categorized as "Agree." Additionally, improving engaging learning experiences and promoting deeper understanding received mean scores of 4.05 and 4.06, respectively, also classified as "Agree."

Table 1.3 In terms of Addressing learning challenges

No	Statements	Mean	S.D.	Description
1	Helps identify students who need additional support	3.90	.65905	Agree
2	Provides adaptive learning pathways to accommodate individual student differences	3.97	.62692	Agree
3	Tools assist in bridging gaps in students' foundational knowledge	3.90	.70353	Agree
4	Promotes inclusivity by providing accessible learning resources for all learners	4.01	.67412	Agree
5	Offers real-time feedback that helps address misconceptions in learning	3.75	.71598	Agree
6	Assists teachers in managing large and diverse classes effectively	3.91	.71202	Agree
7	Helps in reducing barriers for students with special educational needs	3.91	.62109	Agree
8	Supports differentiated instruction to cater to multiple learning styles	3.95	.71598	Agree
9	Minimizes the effects of limited resources by providing digital alternatives	3.88	.68579	Agree
10	Assists in addressing learning disruptions (e.g., during online or hybrid classes)	3.96	.66545	Agree
	Weighted Mean	**3.914**	**.57067**	**Agree**

Legend: (5) 4.50 – 5.00=Strongly Agree; (4) 3.50 – 4.49= Agree; (3) 2.50 – 3.49=Undecided; (2)1.50 – 2.49=Disagree; (1)1.00 – 1.49=Strongly Disagree

Table 1.3 illustrates teachers at Mindanao State University-Sulu's views on the potential of artificial intelligence to enhance learning outcomes. They expressed agreement in overcoming learning challenges, with a composite mean score of 3.914 (SD: 0.57067). Notably, the highest-rated item was resource accessibility (4.01), followed by adaptable learning pathways (3.97) and AI's role in minimizing learning disruptions during online or hybrid classes (3.96).

2. Is there a significant difference in the extent of the role of artificial intelligence as a tool for enhancing learning outcomes as perceived by the teachers at Mindanao State University-Sulu when the data are grouped according to the demographic profile of the teacher-respondents in terms of: Age; Gender; Civil Status; Length of Service; and Educational Attainment?

Table 2.1 According to Age

SOURCES OF VARIATION		Sum of Squares	df	Mean Square	F	Sig.	Description
Usage in teaching practices	Between Groups	1.229	3	.410	.949	.420	Not Significant
	Within Groups	41.458	96	.432			
	Total	42.688	99				
	Between Groups	.455	3	.152	.430	.732	Not Significant
	Within Groups	33.835	96	.352			

Contribution to enhancing learning outcomes	Total	34.290	99				
Addressing learning challenges	Between Groups	.414	3	.138	.416	.742	Not Significant
	Within Groups	31.826	96	.332			
	Total	32.240	99				

Significance at alpha 0.05

Table 2.1 shows that different age groups' perceptions of artificial intelligence's contribution to improving learning outcomes at Mindanao State University-Sulu do not differ much. The idea that age has little bearing on this image has been accepted because both younger and older teachers have comparable opinions.

Table 2.2 According to Gender

VARIABLES	**Grouping Gender**	**Mean**	**S. D.**	**Mean Difference**	**t**	**Sig.**	**Description**
Usage in teaching practices	Male	3.375	.64824	-.06719	-.489	.626	Not Significant
	Female	3.442	.66519				
Contribution to enhancing learning outcomes	Male	3.997	.65921	.07535	.613	.542	Not Significant
	Female	3.921	.54844				
Addressing learning challenges	Male	3.983	.61015	.10833	.910	.365	Not Significant
	Female	3.875	.54830				

Significance at alpha 0.05

Table 2.2 shows that opinions about how artificial intelligence might improve learning outcomes at Mindanao State University-Sulu differ significantly, but both male and female instructor respondents had a similar viewpoint. As a result, the idea that there is no discernible gender difference is accepted.

Table 2.3 According to Civil Status

SOURCES OF VARIATION		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Description**
Usage in teaching practices	Between Groups	.928	2	.464	1.078	.344	Not Significant
	Within Groups	41.759	97	.431			
	Total	42.688	99				
Contribution to enhancing learning outcomes	Between Groups	.433	2	.217	.621	.540	Not Significant
	Within Groups	33.857	97	.349			
	Total	34.290	99				
Addressing learning challenges	Between Groups	.097	2	.049	.147	.864	Not Significant
	Within Groups	32.143	97	.331			
	Total	32.240	99				

Significance at alpha 0.05

Table 2.3 shows that there are notable variations between civil status groups in the use of AI to improve learning outcomes at Mindanao State University-Sulu. Despite these variations, single, married, and separated/widowed instructors all had similar opinions about the role of AI. As a result, the notion that there is no discernible difference based on civil status is accepted.

Table 2.4 According to Length of Service

SOURCES OF VARIATION		Sum of Squares	df	Mean Square	F	Sig.	Description
Usage in teaching practices	Between Groups	3.261	3	1.087	2.647	.053	Significant
	Within Groups	39.426	96	.411			
	Total	42.688	99				
Contribution to enhancing learning outcomes	Between Groups	1.408	3	.469	1.370	.257	Not Significant
	Within Groups	32.882	96	.343			
	Total	34.290	99				
Addressing learning challenges	Between Groups	.631	3	.210	.639	.592	Not Significant
	Within Groups	31.609	96	.329			
	Total	32.240	99				

Significance at alpha 0.05

Table 2.4 shows that teachers at Mindanao State University-Sulu, regardless of their tenure, see artificial intelligence's contribution to improving learning outcomes in a comparable way. The hypothesis that different lengths of service have no effect on the perceived role of AI in education is accepted because the data do not reveal any significant differences in perceptions.

Table 2.5 According to Educational Attainment

SOURCES OF VARIATION		Sum of Squares	df	Mean Square	F	Sig.	Description
Usage in teaching practices	Between Groups	.478	4	.120	.269	.897	Not Significant
	Within Groups	42.209	95	.444			
	Total	42.688	99				
Contribution to enhancing learning outcomes	Between Groups	2.307	4	.577	1.713	.153	Not Significant
	Within Groups	31.983	95	.337			
	Total	34.290	99				
Addressing learning challenges	Between Groups	.899	4	.225	.681	.607	Not Significant
	Within Groups	31.342	95	.330			
	Total	32.240	99				

Significance at alpha 0.05

Table 2.5 shows that regardless of educational attainment, artificial intelligence plays a same role in improving learning outcomes at Mindanao State University-Sulu. Teachers with advanced degrees and those with bachelor's degrees had comparable opinions. As a result, the premise that there is no discernible difference based on educational attainment is accepted.

3. Is there a significant correlation among the sub-categories subsumed under the extent of the role of artificial intelligence as a tool for enhancing learning outcomes as perceived by the teachers at Mindanao State University-Sulu in the context of usage in teaching practices, contribution to enhancing learning outcomes, and addressing learning challenges?

Variables	Pearson *r*	Sig.	N	Description
Usage in teaching practices				
Contribution to enhancing learning outcomes	.341**	.001	100	Moderate Correlation
Addressing learning challenges	.238*	.018	100	Low Correlation
Contribution to enhancing learning outcomes				
Addressing learning challenges	.753**	.000	100	High Correlation

Legend: ** *Correlation Coefficient is significant at alpha .01 level,*
**Correlation Coefficient is significant at alpha .05 level*
Correlation Coefficient Scales Adopted from Hopkins, Will (2002): 0.0-0.1=Nearly Zero; 0.1-0.30=Low; 0.3-0.5 0=Moderate; 0.5-0.7-0=High; 0.7-0.9= Very High; 0.9-1=Nearly Perfect

Table 3 reveals significant relationships among subcategories of teachers' beliefs at Mindanao State University-Sulu regarding AI's impact on learning outcomes. A strong correlation (r=.753; sig=.000) exists between managing contributions to learning outcomes and addressing obstacles. A moderate correlation (r=.431; sig=.001) is observed between instructional techniques and resolving problems, while a weaker association (r=.236; sig=.018) is noted between contributions and teaching strategies. The results dismiss the notion of insignificant connections among these subcategories.

DISCUSSION

1.) On the extent of the role of artificial intelligence as a tool for enhancing learning outcomes at Mindanao State University-Sulu

The research from Mindanao State University-Sulu indicates that faculty members perceive the benefits of artificial intelligence (AI) in enhancing learning outcomes, particularly in promoting inclusivity and developing 21st-century skills. Despite these positive views, a significant gap exists between their perceptions and actual AI application in classrooms, shown by low integration scores. Faculty members are open to using AI, but they exercise caution due to concerns about its practical implementation, influenced by its relevance and available support systems. Supporting research by Bergdahl (2025) and Sah (2025) acknowledges the favorable perspective on AI in education; active AI integration correlates with improved student outcomes, engagement, and learning experiences, as highlighted in studies by Ifenthaler & Schumacher (2016), Karsenti (2019), and Fukui et al. (2021). Nevertheless, challenges remain, with Sabado (2022) noting that AI can enhance educational decision-making, and Barrot et al. (2023) emphasizing the need for maintaining pedagogical control to unlock AI's instructional benefits. The primary barriers to AI adoption are linked to insufficient infrastructure and lack of expertise, rather than skepticism. Alvarez (2021) identifies constraints such as inadequate training, legislative gaps, and limited resources that hinder effective AI implementation. In response, Ganotisi et al. (2025) highlight the urgent requirement for tailored professional development programs to ensure effective AI integration in educational settings.

2.) On difference in the extent of the role of artificial intelligence as a tool for enhancing learning outcomes at Mindanao State University-Sulu as perceived by teachers

The study looked at how artificial intelligence (AI) might improve learning outcomes at Mindanao State University-Sulu. When teachers were categorized by age, gender, civil status, and level of education, there were no discernible changes in their opinions. This suggests that educators are aware of the potential advantages of AI in the classroom. Teachers with 11 to 15 years of teaching experience, however, showed higher favorable opinions of AI's contribution to better instruction, indicating that professional experience may affect confidence in incorporating AI into pedagogy. These results corroborate the findings of Wayne Wayne Holmes et al. (2019), who noted that most instructors saw AI as a potential tool for adaptive and individualized learning. In a similar vein, Rose Luckin (2018) observed that instructors' acceptance of AI in educational contexts is influenced by their expertise and familiarity with digital tools. Additionally, John Hattie (2009) pointed out that when teachers have enough professional experience and confidence in their ability to teach, technology integration becomes more successful.

3.) Correlation among the sub-categories subsumed under the extent of the role of artificial intelligence as a tool for enhancing learning outcomes at Mindanao State University-Sulu

The findings illustrate the significant potential of artificial intelligence (AI) to enhance educational outcomes at Mindanao State University-Sulu, particularly in addressing learning challenges. AI is primarily viewed as a supportive intervention tool, with a strong correlation identified between its effectiveness in solving learning issues and the resulting improvements in educational achievements. Despite its promise, the application of AI within instructional methods appears to be in a developmental stage, indicating that its full potential has not yet been realized. While educators recognize the benefits of AI, the evidence suggests that their use of it may not yet significantly impact student performance, which is reflected in the lower correlation between AI's integration in teaching strategies and direct educational results. This aligns with Rose Luckin's (2018) assertion that AI can enhance learning by catering to the individual needs of learners. In addition, Wayne Holmes et al. (2019) emphasize that effective implementation of AI technologies within teaching practices can lead to improved educational processes. Neil Selwyn (2019) notes, however, that despite the revolutionary potential of AI in education, actual integration often faces limitations due to insufficient institutional backing, varying readiness levels among teachers, and practical challenges in application.

CONCLUSION

According to a study at Mindanao State University-Sulu, the majority of teacher-respondents are married, early-career women under 30 who meet state college admission requirements. This demographic is indicative of readiness for professional development, as many hold master's degrees. While teachers acknowledge artificial intelligence (AI) as a potential resource for student assistance, skepticism persists regarding its effectiveness as a teaching aid, despite a general positive attitude toward research productivity. The study suggests an opportunity for more meaningful integration of AI into teaching strategies. Teachers with 11-15 years of experience view AI's role in enhancing research productivity more favorably. However, the survey revealed no significant difference in perceptions of AI based on demographic factors such as age, gender, civil status, experience length, or education level. The research aligns with the Technological Pedagogical Content Knowledge (TPACK) framework and the Technology Acceptance Model (TAM), highlighting a strong correlation between AI usage and improved learning outcomes. A gap in the TPACK framework regarding technical pedagogical knowledge (TPK) was identified, showing that while faculty possess substantial material and pedagogical knowledge, they struggle to integrate AI effectively into lesson plans. Consequently, AI use in classrooms tends to be superficial, with teachers primarily considering it a supplementary tool rather than a core element of instructional strategies.

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