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Exploring the use of Meta AI in the Effective Pedagogical Strategies and Leadership Practices of Teachers

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Abstract

The purpose of this study is to explore the use of Meta AI and GAI by teachers and their role in developing the pedagogical knowledge and leadership practices among them. In this quantitative study, positivist paradigm is followed along with the survey questionnaire as data collection tool from the teachers of private and public school of Sukkur to see the impact of Meta AI and GAI on teacher pedagogy and leadership skills. The findings of this study reveals that Meta AI and GAI has significant impact on teachers' pedagogical knowledge development and leadership practices though there are some challenges but AI has become more of useful tool for reducing the burden of teachers and provide them space to learn from GAI. The result of this study are beneficial for the teachers, prospective teachers and school administration to organize professional development on the use of AI in education and spread the awareness of Meta AI and GAI. This is the unique study because there is slight research done in Pakistan and in Sindh on the impact of Meta AI and GAI in teacher pedagogical strategy and leadership practices.

Keywords: Meta AI, Generative AI, Pedagogical Strategies, Leadership Practices

Introduction

There are emerging technologies in educational over the time and now there is artificial intelligence (Bonk & Wiley, 2020). AI models and chatbots which are very fluent in conversation are producing the responses like humans. The research shows that educators and industrialists and researchers observe potential in Generative AI in transforming the education (Fuentes et al., 2024). Artificial intelligence is making its way in our lives in different ways (Sánchez-Prieto et al., 2020) and its implication can be seen in every field and in education as well. Education sectors have access to digital resources and tools, and are increasingly adopting the Artificial Intelligence.

It is gradually transforming and reconstructing education system and stakeholders (Deckker & Sumanasekara., 2025; Baidoo-Anu et al., 2023; Zawacki-Richter et al., 2019). Teachers are the one who can take advantage of making use of AI and Meta AI to enhance their pedagogical strategies and learning outcomes of students (Moundridou et al., 2024). It is benefiting the education leaders in evolving, changing the traditional method of teaching and moving towards more interactive classrooms (Aguilar-Cruz & Salas-Pilco., 2025). It is encouraging teacher to enhance decision making, problem solving skills (Osegbue et al., 2025) and improve the students learning outcomes through effective pedagogy (Xu., 2024). AI has potential of restructuring the process of acquiring new knowledge and new strategic teaching in education field (Moreno-Guerrero et al., 2020). It fosters the teaching practices and promotes the use of technology in integrating it in education (okokoyo et al., 2024; Qudrat Ullah, 2024). Thus, many investment has been taking place in integrating the AI in educational processes (Cope et al., 2020). Moreover, currently more in trending these days is Meta AI heading towards the new era of intelligence system that has potential of processing large number of data and comprehends the context and update itself with the continuous interaction with user (Namdass, 2024). Meta AI is going beyond the traditional AI application by allowing machine to understand the complicated concepts and reasons (Oladokun et al., 2024). These advancement has radical impact in shaping the system of education and its practices. AI advancement can save teachers' time to focus on other class related tasks, for instance, individual assistance to students which provide a space to develop relationship with students (Alwaqdani, 2024). Further, Teaching is most demanded profession but it is creating extremely tiredness and sickness of work load as compared to other professionals working in different field (Saloviita & Pakarinen, 2021). Teaching profession is surrounded by many things which alone teacher have to complete such as coping with number of students, school tasks, outnumbered task that cause workload, school environment and behavior challenges posed by students (Granziera et al., 2021). The increased workload that is coming from administrative tasks, designing lesson plans of challenging subjects and some non-teaching task assigned to teachers such as demands of integrating new technology based classrooms and assessment are leading to tiredness and workload (Agyapong et al., 2022; Arvidsson et al., 2019). But now that there are sources available such as AI and meta AI which are at forefront to help individuals and teachers are frequently engaging themselves in taking assistance from Meta AI from discussing strategies and techniques for class to designing the lesson plan as this is most time consuming task for the teachers. Also, there are six categories identified by Finley (2023) of tasks which teacher can take assistance from Meta AI or generative AI. These categories are planning strategies, creating materials, developing assessment rubrics, getting feedback on writing, differentiating curriculum and in writing personal and professional writing. Meta and AI tools assist teachers in making rubrics deciding on suitable assessment activities and method to teach the particular topic, it assist teachers in brainstorming the ideas for designing the lesson plan using relevant material and resources, generating explanations and outline, presentation and creating quizzes (Rahman & Watanobe, 2023). The impact of Meta AI and Generative AI continues to grow on education as it evolves and becomes advanced with time. Therefore, AI in education holds significant role in revolutionizing the education it teaching and learning process (xu, 2023).

Problem statement

Generative AI and meta AI in education field has created a road map for teachers to take guidelines in designing the lesson plan taking assistance in resolving the classroom challenges effectively. Despite the growing presence and availability of Meta AI and Generative AI tools

Teachers are struggling to manage the classroom management challenges, discipline making and assessment strategies (Bano et al, 2025) and are burdened with pressure of lesson planning and administrative tasks (SHOWUNMI & JIMOH, 2025). To resolve these challenges Generative AI and Meta AI are emerging to manage such issues and produce fresh content based on learners and generate new learning instructions that are more personalized as per the need and requirement of students and teachers (Pesovski et al., 2024). Further, to reduce that burden, Meta AI is frequently used by teachers but there is lack of study conducted that how these innovative technologies are resolving the problem of teachers. Also, multiple researches have been conducted on how ChatGPT is used in education whereas there is limited research on Generative AI and Meta AI linked with multiple apps in our mobile phones which are frequently used due to easy access. Moreover, there is a lack of understanding that how teachers are using Meta AI and giving command to generative AI to generate the answer of their choice. And how the teachers can effectively select and implement AI suggested techniques and strategies in the class and how it is supporting them in developing pedagogical strategies and leadership skills by providing the relevant feedback. Thus, this study aims to examine the use of AI and Meta AI by teachers in finding the effective pedagogical strategies and their role in developing the leadership skills in them. Also, it will explore the challenges teachers resolved using Meta AI and generative AI how it reduced the burden of teachers.

Research objectives:

1. To examine the use Meta AI and GAI in effective pedagogical strategies.
2. To explore the use Meta AI and GAI in developing the teachers' leadership skills.
3. To identify the challenges of teachers resolved by Meta AI and GAI.

Research question:

1. How Meta AI helps teachers in designing the pedagogical strategies?
2. How Meta AI develops teachers' leadership skills and practices?
3. How Meta AI resolve the challenges faced by teacher?

Hypothesis:

Ho1: There is no significant impact of integrating Meta AI and generative AI in teachers' teaching and pedagogical strategies, development of leadership practices and resolving the challenges faced by them.

Ha 1: There is significant impact of integrating Meta AI and generative AI in teachers' teaching and pedagogical strategies, development of leadership practices and resolving the challenges faced by them.

Literature review

The integration of Meta AI in education has gained its importance in recent times. The teachers' pedagogical strategies are enhancing and along with that leadership skills are also refined. The literature review section presents the use of Meta AI by teachers in their teaching practices and designing the strategies and reducing stress and burden and moving towards efficiency and enhancement of teachers leadership skills.

Integration of Meta AI in Teacher's Pedagogical Strategies

Meta AI has been readily used by in services teachers and prospective teachers in the education. Before Meta AI, Chatgpt was used and according to the research impact (2023) findings shows that the one third of teachers are involved in designing AI generated lesson plans and are coming up with the innovative ideas for class along with constructing the background knowledge of making lesson and understanding the classroom. But now that there are more easy accesses available for the searching something on AI application such Meta AI available on daily use application like Whatsapp Facebook and Instagram and it's easy to research something immediate then browsing. (Rehman et al., 2024; Suarez et al., 2022; Thomas, 2022). Annus (2023) highlights that AI provides the personalized assistance to teachers by providing the solution to their questions and deeply explains them. Meta AI can perform very well in designing the lesson plans on different topic on various subject for multiple grades accordingly (Hong, 2023; van den Berg & Du Plessis, 2023) Teachers can use these AI tools to deal with students with disabilities and multilingual learners by designing activities using differentiating strategies and addressing the needs of leaners by adapting the content according to the class population. Also, Teachers can generate the specific objectives different models according to the content with in seconds with the help of Meta AI. It can even explain the implementation of those strategies step by step for more clear understanding of teacher to implement in the class (Alexandrowicz, 2024). According to the lukcin et al. (2016) study, AI can significantly improve the lesson planning with the efficiency value less than 0.05. Similarly, from the report of Hwang et al. (2020) teachers' personalized instruction has been improved and increased, with the frequent use of AI with the p value less than 0.01. These pedagogical strategies can be generated according to the cognitive levels of students and grades to the classroom setting and environment (Van den Berg & Du Plessis, 2023). Further, Jamal (2023) states that Meta AI improves the quality education of teacher as provide them learning access and helps them in identifying their knowledge gaps provides them valuable feedback to improve their teaching skills. A survey was conducted including 500 teacher revealed that the professional development driven from the AI has improved the pedagogical knowledge of teachers with the significant value less than 0.001 $t=4.32$ and $df=499$ (molenaar, 2021). Teacher is a source of learning which can bring the creativity and new ways of implementing the strategies in the classroom through experience Mhlanga, (2023). At last, Meta AI and generative AI is used by teachers in generating lesson plans activities of different subject to make class interactive and engaging. Also, learn from the knowledge and creative ideas shared by AI and implement those in real life setting of class.

Meta AI for Time Efficiency and Productivity

Meta AI is continuously enhancing education aspects, learning, administration (Xia et al., 2022). According to the Grissini (2023) Meta AI can reduce the daily routine task and provide the educational resource ideas, planning of lessons to teachers and can even assist the teacher in reflecting their teaching, improving, providing help in what sort of learning material to be given to students, bringing innovative ideas in the class. It can enhance teacher's practices and skills by providing the access to the wide range of resourceful ideas and tools which can help teachers in generating the assessment powered by AI and can help teacher in meeting the needs of students and provide them feedback on their performance (Jamal, 2023). Further Yeh, (2025) states that teachers' reflection on their teaching show case the transformation from traditional to innovative technology based instruction classroom that enhance the engagement and interaction. Also, Meta AI is making learning more interactive with enjoyable unique suggested

techniques and strategies. Resourceful activities and strategy tasks can lessen the teacher's workload and save time and energy which they can neutralize in the classroom tasks and implementing those strategies. But, the abilities of Meta AI are beyond just generating the lesson plan for teachers. It helps teacher in generating the course material, assessments activities and provide valuable suggestion. It also suggests what motivating activities and images can be followed for the warm up of class (C. K, 2023). These suggestions of Meta AI accelerate the tasks of teachers and enhance the productivity and promote efficient work (Chubb et al., 2022). Overall, educators' efficiency of work has increased, AI has lowered the teachers' burden and provide them space to explore themselves their ideas and bring more interactive and engaging ideas into the classroom with the help of AI.

Meta AI in Developing the Teachers Leadership Skills

Teachers' leadership plays an important role in educational setting because every class and its students stand out because of teacher leadership responsibilities and roles in influencing the students (Ghamrawi et al., 2023). And, now that education is transforming with the use of Meta AI. Education stakeholders like teachers are also influenced by its role. Moreover, Meta AI plays its crucial role in enhancing the leadership skills of teacher by increasing the decision making skills, monitoring students' performance (George, 2023), and staying up to date with the current trends and policies and making decisions accordingly (Ghamrazi et al., 2024; Hwang et al., 2020). Teachers' leadership includes various tasks such as organizing activities assessment activities, designing effective strategies, implementing the professional development programs, participating in curriculum development activities and making it up to date with help of innovation and research (Bond, 2022). Teacher incorporating AI in their teaching and learning are becoming better at reflecting and learning from reflection that improves their teaching and progress. Eventually that continuous reflection and growth plays an important in developing the effective leadership (kalyanin et al., 2025). Artificial intelligence also supports the collaboration among the teacher and discussion on lesson formation and best practices for class discussed in virtual classrooms and discussions forums that encourage the culture of shared leadership among the teacher that develops the team work and peer mentoring and also growing the professional learning communities. It can personalized learning and provide feedback on the spot to make learning more interested shifting it from traditional to learner centered class (Mah et al., 2024) (Fernández-Batanero et al., 2022). Students' performance can be analyzed in real time through personalized learning environment and guide teacher in designing the content, learning parameter and feedback. It provides space to teachers to better understand the student's performance to design effective learning plans (Wadhwa, 2025). Lastly, teachers enhancing the their practices of leadership with the use of Meta AI, improving their decision making, reflection writing, staying connected with the trends and monitoring students overall performance and dealing with the heads and stakeholder confidently.

Challenges Faced by Teachers While Using Meta AI

Integration of Meta AI shows many benefits yet there are some challenges faced by teachers. such as Meta AI system being powerful but produces biased responses which leads to raising ethical concerns and integrity of generating data (Qadir, 2023). Currently, education system and their leaders are attempting to figure out how to implement AI in schools in logical manner, recognizing the potential this offers while also being acutely aware of the threats that it may pose to teaching and learning (Fullan et al., 2024). According to van den berg and du Plessis

(2023) such risks requires continues checking and oversight of human for assuring the quality and reliability of Meta generated output. To protect learner, it is important to check Meta AI generated content before it is presented to students. It requires constant human engagement in educational situation to reduce the risk factors of ethical standards. As a result it is critical that teacher acquire experience in pedagogy (Finley, 2023). According to Prabhakaran et al. (2022) Meta AI may face cultural challenge in education system, because some institute may resist in using Meta AI in education because they believes that it threaten the their professional autonomy (Nisar et al., 2023). Moreover, teacher in Pakistan face different challenges in incorporating Meta AI and generative AI in classrooms. Teachers face challenges in giving proper command to AI to produce the unbiased result and with references, and some teachers from suffer from lack of internet connection due to which they are unable to produce results from AI on time (Ahmed, 2024). Whereas there are some experienced teachers who don't even know that Meta AI and generative AI can be used for the purpose of designing resources for teaching and lesson plan (Haque, 2024). Moreover, there is lack of professional development training regarding use of AI in schools that could promote use of AI in education and reduce the burden of teacher (Ahmed et al., 2024). Overall, there are many challenges faced by teachers while incorporaitng AI in teaching such as raise in ethical concern, biased information and lack of professional training on the use of Meta AI.

Research Gap

Knowledge Gap: Extensive research has been done on technology and AI integration in educational, but limited studies have explored the impact of integration of AI and Meta AI in pedagogical knowledge and leadership skill development. Also, Meta AI is a recent development which needs to be research in the context of education.

Methodology Gap: There is less research done using quantitative research method in researching the impact of AI and Meta AI in enhancing pedagogical knowledge and leadership development.

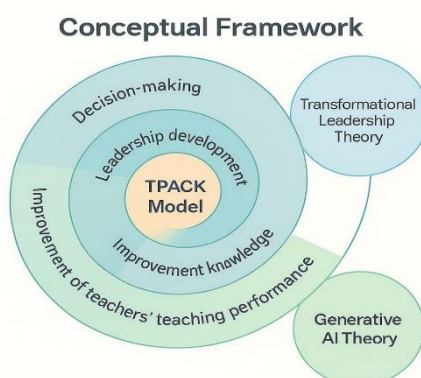
Contextual Gap: The study on the impact of Meta AI in teachers' pedagogical knowledge and leadership skills has not been conducted in the context of Sukkur, Pakistan; therefore, this research will contribute to filling the contextual gap.

Conceptual Framework:

The integration of Meta AI and generative AI in the field of education has profound effect on pedagogical knowledge of teachers and in enhancing the leadership practices and skills of teacher. Due to the easy access to the generative AI and Meta AI sources it is easy for teacher to access resources and their instructional method through which they can teach. It is necessary to evolve with the time and advancement of technology (Timotheou et al., 2023). Moreover, this research employs the Technological pedagogical content knowledge (Mishra & Koehler, 2006), transformational leadership theory (Bass & Riggio, 2006) and generative AI theory an emerging theory which don't have unified author based on 2020s research trends. It explores that how Meta AI and Generative AI reshapes the instructional strategies, assessment methodologies, administrative decision making and professional development according to the needs and requirement of class and teachers command. TPACK and transformational leadership theory provides lens to teachers to blend technology like AI and Meta AI into their pedagogical expertise

and lesson planning and designing activities for effective classroom practices. Meanwhile these pedagogical expertise develop confident and motivation in teacher to perform well and do the best for classroom environment. Teachers' with so many responsibilities such students assessment task, paper checking copy checking book checking, lesson planning, weekly planners, providing feedback to students, communicating with parents and many other things create burden on teacher and to handle has got only one solution to lower the burden and that is

Meta AI and generative AI. According to the research conducted by langove & khan, 2024 a teacher works 15 hours per week after incorporating the AI it reuced by 9.75 hours and 35 % reduction in grading time. Meta AI and GAI is easy to access in Whatsapp no other app is required to download (Aswir et al., 2025) and find the solution to the different challenges faced by teachers. A teacher acquires pedagogical knowledge from the daily chatbots designed methodology for teaching and lesson plans, designing formative and summative assessment, quizzes and tests papers for students. These communication and generating ideas from chatbots slowly improve the pedagogical knowledge of teacher when they come to know about the different strategic method to teach students (Mollo, 2025). This overall enhance the teacher leadership practices, teacher becomes confident when his/her planned strategy works and students actively participate and learning outcomes are achieved. It increases teacher decision making skills and enhance teacher performance in the class and out of the class while communicating and maintaining good connection with the parents and administration. At the level of pedagogical knowledge, Meta AI and generative AI enhances the instructional strategies and provides new ideas for smooth interactive class (Ghamrawi et al., 2024; luckin et al., 2016). Different available tutoring system like duolingo, khan academy guides teachers in real time, suggest differentiated instruction strategies, it also transforms the assessment strategies for teacher, make tests and quizzed and provide valuable feedback to students with the help of generative AI and reduce burden for teacher while providing instant insights to teacher (zawack-Ruicchter et al., 2019).



Methodology

Research Paradigm

This research study adopts the positivist paradigm and emphasize the empirical observation and measurable evidence to analysis impact of Meta AI and Generative AI (Weyant, 2022). This paradigm researcher believes that knowledge can be acquired through structured quantifiable data collection.

Research Design

A descriptive survey questionnaire is made to analysis the use of Meta AI and GAI in effective pedagogical strategies and development of leadership practices by teachers to gather the quantifiable information.

Research Methodology

Research method in this study uses quantitative method to investigate and explore the use of Meta AI in education by teacher in enhancing their pedagogical strategies and development of leadership skills.

Research design

A descriptive survey questionnaire was made to analysis the effective pedagogical strategies and techniques used by teachers and their own development of leadership practices to gather the quantifiable information from teachers. Also, it the challenges faced by teacher while using AI and Meta AI and solutions given by AI to teachers has also been recorded with the help of survey,

Research participants

The participants of this study are the teacher from primary and secondary school of public and private sector of Sukkur. A sample of 81 teachers are selected using simple random and convenience sampling. Criteria required the teacher with at least one year of teaching experience.

Data Collection and Analysis

The survey questionnaires in the Google form format was distributed electronically via email and online platforms. The survey consisted two sections one for demographic information to collect the information about the teachers' background, experience and education, age, gender through multiple choice questions. Then, the second section measure the teacher use of Meta AI and generative in influencing its teaching and leadership practices in education while also measure in the challenges faced by teacher and how Meta AI and generative AI resolved those issues and problems and challenges in daily life of teacher. Later, Data was collected through structured survey questionnaire to collect data from teachers. The survey questionnaire was adapted from the ElSayary, (2024) and kim & Wargo, (2024) to narrow down the teacher use of AI in developing pedagogical strategies and how it resolves the challenges faced by teacher in their day to day life. Questionnaire consisted the closed ended questions and the responses were measured by using 5 likert scale. The data collected from the questionnaire will be analyzed using SPSS.27 like Descriptive (Mean, Standard Deviation and Percentage) were used to summarize the use of Meta AI and GAI. Also, Pearson correlational coefficient has been used to check the extent at which Meta AI impacts the teachers' pedagogical knowledge and leadership practices.

Authenticity

Reliability and validity of this study has been checked through the piloting the study first, along with testing of Cronbach's alpha. Content and construct validity has been checked by the subject and language expert respectively. Chapter: 4 Findings

Table 1: Descriptive

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Years of Experience	81	1.00	3.00	1.2840	.59654	1.986	.267	2.772	.529
Participants' Age	81	1.00	4.00	1.6420	.72987	.873	.267	.152	.529
AIPS	81	10.00	25.00	20.5556	3.09839	-.941	.267	1.220	.529
AILP	81	12.00	25.00	20.0864	3.14324	-.639	.267	-.021	.529
AIC	81	10.00	24.00	17.2469	3.62812	-.137	.267	-.595	.529
AIS	81	10.00	25.00	19.5926	3.46691	-.734	.267	.096	.529
Valid N (listwise)	81								

The descriptive statistics table compiles important information from an 81-person sample. The data indicate that the participants' years of experience ranged from one to three years, with a mean of 1.28 and a standard deviation of 0.59, indicating that most of them were relatively new to their professional professions. The participants' ages, which varied from 1 to 4, showed a young group with some age variability, with a mean of 1.64 and a standard deviation of 0.72. The skewness and kurtosis values for both variables show that experience has a leptokurtic distribution with a positive skew, whereas age shows a near-normal kurtosis and moderate skewness. The means for the key variables were 20.56, 20.09, 17.25, and 19.59 for AIPS (Artificial intelligence and Pedagogical Skills), AILP (Artificial intelligence and leadership practices), AIC (Artificial intelligence challenges), and AIS (Artificial Intelligence solution, in that order. These averages imply that all four domains received largely positive answers. The moderate variety in participant responses is reflected in the standard deviations, which range from around 3.1 to 3.6. Significantly, AIPS and AILP displayed negative skewness, suggesting that a higher proportion of participants gave these factors high ratings. The lowest mean, AIC, indicated that individuals were somewhat face less challenges while using artificial intelligence. The data's dependability for additional analysis is confirmed by the distribution statistics, which show generally steady trends with minor asymmetries but no significant departures from normalcy.

Construct 1: Meta AI and Generative AI in pedagogical strategy

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I use AI tools in lesson planning.	81	1.00	5.00	4.1975	.91405
It guides me to find Student centered strategies, and resources for teaching.	81	2.00	5.00	4.3210	.72158
I use it in designing Assessment activities, tests and rubrics.	81	2.00	5.00	4.1728	.81838

AI tools helps me in designing formative and summative assessment.	81	2.00	5.00	4.0617	.82683
I use AI for self-reflection and to provide feedback to students.	81	2.00	5.00	3.8025	1.01759
Valid N (list wise)	81				

Descriptive statistics show a strongly favorable reaction to the usage of Meta AI and generative AI technologies in the classroom. AI's crucial significance in instructional preparation was demonstrated by the highest mean score ($M = 4.32$) for its assistance in locating student-centered techniques and resources by teachers. Also, teachers showed the high agreement in using Meta AI GAI for assessment design ($M = 4.17$) such as quizzes tests and short questions. And the mean score of lesson preparation from AI shows high score ($M = 4.20$). Responses regarding AI's assistance in formative and summative evaluations ($M = 4.06$) and self-reflection and feedback ($M = 3.80$) were somewhat lower but still positive. All things considered, the findings imply that educators see AI tools as useful for a range of pedagogical activities, particularly for improving student-centered instruction and evaluation.

Construct 2: Meta AI and Generative AI in leadership Practices

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
It helps me in leading the innovation in my teaching strategy	81	2.00	5.00	4.2099	.70207
I become confident and motivated to teach in class because it reduces my burden.	81	1.00	5.00	4.2099	.91810
I share strategies suggested by Meta AI with my friends and colleague.	81	1.00	5.00	3.7284	1.04896
It helps me in on the spot decision making.	81	1.00	5.00	4.0988	.93012
It helps me in communicating with stakeholders (emails, announcements)	81	2.00	5.00	3.8395	.85815
Valid N (listwise)	81				

According to the descriptive data, Meta AI and generative AI technologies are typically seen favorably as a means of improving professional teaching techniques. Strong agreement was shown by the highest mean ratings ($M = 4.21$) for AI fostering creativity in teaching methods and increasing confidence in teachers by lowering effort. Additionally, AI was viewed as helpful for stakeholder communication ($M = 3.84$) as teachers' write their emails and informative message written to parents or school head with the help of Meta AI and AI. Teacher believe that their in-the-moment decision-making has been increased with the mean value ($M = 4.10$). Whereas, the mean for sharing AI-recommended techniques and strategies that can help fellow teachers and peers was somewhat lower ($M = 3.73$), indicating that collaborative utilization varies. Overall, it is considered that, the data shows positive opinions on AI's contribution to communication, motivation, and innovative teaching.

Construct 3: Meta AI and Generative AI challenges faced by teacher

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
It raises the ethical concerns	81	2.00	5.00	3.6543	.82402
I Struggle in giving right instruction.	81	1.00	5.00	3.2716	1.20429
It reduces my critical thinking skills	81	1.00	5.00	3.6667	1.18322
AI suggested assessment don't align with curriculum information.	81	1.00	5.00	3.1111	1.08397
It provide inaccurate information sometimes.	81	1.00	5.00	3.5432	1.10735
Valid N (listwise)	81				

The descriptive data from 81 participants indicates moderate concerns over the use of AI in education. The most common belief ($M = 3.67$) was that AI may impair critical thinking skills of teacher if they keep interacting and producing the information from Meta AI. This was followed by ethical concerns ($M = 3.65$) and the sporadic inaccuracy of information ($M = 3.54$). Participants also reported that it may be challenging to give the right instructions ($M = 3.27$) and that AI-suggested assessments may clash with curriculum objectives ($M = 3.11$). All things considered, these responses raise serious questions about how technology may impact critical thinking skills, accuracy, ethics, and adherence to academic standards, even in the face of AI's extensive use.

Construct 4: Meta AI and Generative AI Solutions to challenges faced by teacher

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
It helped me in saving Time	81	2.00	5.00	4.2840	.63707
It helped me in grading student's assessment and give feedback	81	1.00	5.00	3.4444	1.15109
It has improved my ability in managing student's need.	81	1.00	5.00	3.8889	1.00000
It has improved my teaching strategies.	81	2.00	5.00	4.0741	.84820
It helped me stay updated to current trend in education.	81	1.00	5.00	3.9012	.98241
Valid N (listwise)	81				

Descriptive data show a high degree of agreement about the benefits of AI in raising the efficacy of instruction. The highest mean score ($M = 4.28$) indicates that AI significantly decreased time. Participants also agreed that AI improved their teaching strategies ($M = 4.07$) and helped them stay up to date with the latest advancements in education ($M = 3.90$). Support for managing students' needs ($M = 3.89$) received a favorable evaluation, however AI's role in grading and feedback received a somewhat lower mean ($M = 3.44$), suggesting higher variability in its perceived usefulness in assessment-related tasks. AI is generally viewed by educators as a helpful tool for improving the efficiency and adaptability of instruction. Therefore, it is concluded that the null hypothesis is rejected and alternative hypothesis is accepted as it states that there is

significant impact of integrating Meta AI and generative AI in teachers' teaching and pedagogical strategies, development of leadership practices and resolving the challenges faced by them.

Correlation Table:

Correlations							
		Years of Experience	Participants' Age	AIPS	AILP	AIC	AIS
Years of Experience	Pearson Correlation	1	.724**	-.161	-.093	-.125	-.107
	Sig. (2-tailed)		.000	.152	.408	.265	.344
	N	81	81	81	81	81	81
Participants' Age	Pearson Correlation	.724**	1	-.348**	-.182	-.212	-.202
	Sig. (2-tailed)	.000		.001	.103	.058	.071
	N	81	81	81	81	81	81
AIPS	Pearson Correlation	-.161	-.348**	1	.719**	.259*	.770**
	Sig. (2-tailed)	.152	.001		.000	.020	.000
	N	81	81	81	81	81	81
AILP	Pearson Correlation	-.093	-.182	.719**	1	.202	.853**
	Sig. (2-tailed)	.408	.103	.000		.071	.000
	N	81	81	81	81	81	81
AIC	Pearson Correlation	-.125	-.212	.259*	.202	1	.300**
	Sig. (2-tailed)	.265	.058	.020	.071		.006
	N	81	81	81	81	81	81
AIS	Pearson Correlation	-.107	-.202	.770**	.853**	.300**	1
	Sig. (2-tailed)	.344	.071	.000	.000	.006	
	N	81	81	81	81	81	81
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

The correlation analysis reveals several significant relationships between the variables. There was a significant association between years of experience and age ($r = .724$, $p < .01$), indicating that older adults often had more experience. Both age and experience had weak and non-significant negative correlations with the important variables (AIPS, AILP, AIC, and AIS), suggesting that neither factor has a substantial impact on how individuals see Artificial intelligence integration. Nonetheless, the core variables exhibit significant and robust intercorrelations. AILP ($r = .719$, $p < .01$), AIS ($r = .770$, $p < .01$), and AIC ($r = .259$, $p < .05$) are strongly correlated with Artificial intelligence and pedagogical strategies. These connections demonstrate the close relationships among Meta AI and Artificial intelligence proficiency, learning strategies, self-assurance, and contentment. AILP shows a very significant link with AIS ($r = .853$, $p < .01$),

whereas AIC has a modest relationship with AIS ($r = .300$, $p < .01$). These findings suggest a high correlation between participants' perceived Artificial Intelligence competency and learning strategies and their level of confidence and enjoyment.

Normality Table:

Tests of Normality							
	Participants'	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Gender	Statistic	df	Sig.	Statistic	df	Sig.
Years of Experience	Male	.523	18	.000	.373	18	.000
	female	.459	63	.000	.556	63	.000
Participants' Age	Male	.376	18	.000	.699	18	.000
	female	.283	63	.000	.786	63	.000
AIPS	Male	.277	18	.001	.727	18	.000
	female	.109	63	.059	.951	63	.014
AILP	Male	.294	18	.000	.807	18	.002
	female	.122	63	.020	.960	63	.040
AIC	Male	.174	18	.155	.885	18	.032
	female	.097	63	.200*	.973	63	.180
AIS	Male	.242	18	.006	.840	18	.006
	female	.160	63	.000	.958	63	.031
*. This is a lower bound of the true significance.							
a. Lilliefors Significance Correction							

Both the Shapiro-Wilk and Kolmogorov-Smirnov tests of normality reveal that most variables deviate significantly from a normal distribution, especially when it comes to variables with male participants. Years of Experience and Participants' Age show significant p-values ($p < .05$) for both the male and female groups, indicating a non-normal distribution. P-values that are mostly below for the main variables (AIPS, AILP, AIC, and AIS) in both tests. In females, AIPS and AILP show little too significant deviation, AIC seems to be normally distributed ($p > .05$ in both tests), while AIS continues to deviate from normality. Overall, the results suggest that the data are not regularly distributed for most of the variables, particularly for male respondents. This implies that non-parametric tests might be more appropriate for further inferential investigation.

Discussion

The results of this study supports that teacher are using Meta AI and Generative AI in their teaching and learning effectiveness. The study of van den berg & du Plessis (2023) also finds out that that generative AI helps teacher in designing the lesson plan create a space for teacher where they can lower their burden by taking help from meta AI. Also, Mollick & Mollick (2023) finds out that AI helps teacher is finding several classroom assessment techniques and strategies for students of different grades, as it provides immediate feedback to instructor which can help him in understanding the students' performance and their level of knowledge to plan accordingly the active learning activities (Celik et al., 2022).. Teacher can also find the information related to students risk factors such anxiety anger issues (Pehlam et al., 2020). Though, AI cannot compete with human intelligence but it can benefit many individuals and teachers in saving time and

searching resources related to education (fitria, 2021). Moreover, This study shows the highest mean score for the use of AI in assessment planning and designing rubrics by teacher and the study of Fernandez sanches et al (2025) results also shows the formation of rubric by teachers to assess the students' performance. Additionally, teachers' ability to use differentiated instruction in the class and provide feedback to the students aligns with the previous conducted studies that shows the Meta AI and AI personalize the environment for learning to take place (Zawacki-Richter et al., 2019). But where there are different benefits of AI there are some challenges highlighted by this study that is the ethical concern raised by AI, the concern of impairing the critical thinking of teacher interacting with AI, it may produce false information and it also showed that participants find it to be challenging to give the right instruction. The study conducted by Celik et al. (2023) states that AI may not be efficient in scoring graphs and texts. Further Jamal, (2023) reports the concerns raised by integration of Meta AI and AI in teaching, that is technical and cultural barrier hindering adoption of AI by teacher, lack of professional development in integrating the AI in teaching and pedagogy (Nazaretsky et al., 2022) and resistance to change coming in the form of increasing the teachers' burden. Furthermore, Meta AI and AI is becoming the part of our daily life (Topkaya et al., 2025) the study shows the highest mean score of raising the efficacy of instruction, improves teaching instruction strategy and keeps teacher up to date with the current trends likewise the study conducted by Su et al. (2022) reports that AI provide with the potential solutions to real world problems and xu et al., 2025 reports that AI effects the teaching efficiency of teachers that helps teachers in saving their time, overall, AI reduces teachers' burden especially in things like grading and lesson planning and allows teacher to focus more towards students engagement (Gupta et al., 2024).

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Appendix:**Link of Survey Questionnaire:**

https://docs.google.com/forms/d/1_f6O4pPQAKNkDcswCwcAHY5Ge8bkgApbwVZFZibEMEM/edit?usp=drivesdk

Survey Questions:

Demographic information

Gender: male, female, prefer not to say

Age: 20-25, 26-30, 30-40, Above 40

Teaching level: primary, secondary, tertiary

Year of teaching experience: 0-5, 6-10 or above 11

Subject taught -----

Do you use Generative AI or Meta AI in teaching?

Yes / NO

Construct and their items Meta AI and generative AI integration in pedagogical strategies.

S.No	Item	SA	A	Undecided	SD	D
1.	I use AI tools in lesson planning					
2.	It guides me to find Student centered strategies, and resources for teaching.					
3.	I use it in designing Assessment activities, tests and rubrics					
4.	AI tools helps me in designing formative and summative assessment.					
5.	I use AI for self-reflection and to provide feedback to students.					

Meta AI and generative AI in enhancing teacher leadership

S.no	Items	SA	A	undecided	SD	D
6.	It helps me in leading the innovation in my teaching strategy					
7.	I become confident and motivated to teach in class because it reduces my burden.					
8.	I share strategies suggested by Meta AI with my friends and colleague.					
9.	It helps me in on the spot decision making.					

10.	It helps me in communicating with stakeholders (emails, announcements).					
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Challenges faced by teacher in daily life and in using Meta AI and generative AI

S.no	Items	SA	A	Undecided	SD	D
11.	It raises the ethical concerns					
12.	I Struggle in giving right instruction.					
13.	It reduces my critical thinking skills.					
14.	AI suggested assessment don't align with curriculum information					
15.	It provide inaccurate information sometimes					

Meta AI as solution to challenges faced by teachers

S.NO	Items	SA	A	undecided	SD	D
16.	It helped me in saving Time					
17.	It helped me in grading student's assessment and give feedback					
18.	It has improved my ability in managing student's need.					
19.	It has improved my teaching strategies.					
20.	It helped me stay updated to current trend in education.					