

Exploring Pre-Service Teachers' Lived Experiences as Active AI Users or Passive Recipients through the Lens of TPACK: A Phenomenological Study

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Abstract: The education sector is rebooted with the integration of AI-assisted tools. Therefore, pre-service teachers should develop AI-assisted TPACK to improve the learning levels of Gen Z and Gen Alpha Kids. The researchers examined the awareness level of AI-assisted education tools and their use in pedagogical practices. In-depth Interviews of 21 pre-service teachers have been conducted. The majority of the respondents are passive recipients of AI-assisted tools for education. Their level of AI-assisted TPACK is very low. To cope with the existing situation, a revolutionary change is required at the level of the curriculum of teacher education programs, infrastructural features of teacher educational institutes, and last but not least, the attitude of Teacher Educators towards AI-assisted TPACK.

Keywords: Active AI Users, Passive Recipients, AI-Assisted TPACK, Adaptive Learning, Real-Time Feedback.

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I. INTRODUCTION

The use of Artificial Intelligence (AI) in education has transformed the way teachers teach and students learn. As AI technology develops, educators and learners encounter new opportunities and challenges. Pre-service teachers occupy a unique position where they interact with both traditional teaching methods and new AI tools. Some actively use AI tools in their teaching, while others may rely on AI-created content without fully engaging. It's essential to understand pre-service teachers' experiences as either active users of AI or passive recipients to enhance teacher training programs that develop technology skills and foster teaching flexibility.

The NEP-2020 states that education is fundamental to realizing human potential, developing an equitable and just society, and promoting national development. A large number of teachers are learning different approaches to pedagogy at various Teacher Education institutes. These pre-service teachers will handle Gen Z and Gen Alpha in their

prospective classrooms. A teacher's AI-specific TPACK is essential when working with digital learners. AI is the capacity of computers or other machines to think as intelligently as humans can, according to Wartman and Combs (2018). AI can be defined as the logical replication of human behaviour by tools/software. Mishra (2023) suggests that the present generation of mentors needs to be prepared for GenAI-assisted education.

This study examines these experiences through the Technological Pedagogical Content Knowledge (TPACK) framework. TPACK helps analyze how technology, teaching methods, and subject knowledge work together in education. The research employs this framework to examine how pre-service teachers integrate AI into their teaching and whether they are more engaged or passive users. Therefore, this study aims to investigate if our pre-service teachers are active AI users or passive recipients in TPACK.

➤ *Active AI Users and Passive AI Recipients*

Inbar and Tractinsky (2009) proposed the concept of accidental users of AI-assisted tools, who may become either Active AI Users or Passive AI recipients. Active AI users possess control and command over technology, and they explain and demonstrate how AI can be integrated with education. These Active AI users have developed a level of AI-assisted TPACK. On the other hand, Passive AI recipients are just aware of the facts communicated to them through active AI users and possess a low level of AI-assisted TPACK.

II. REVIEW OF LITERATURE

Celik (2023) evaluates the process of developing the Intelligent-TPACK and implementing AI technology among teachers. The study's population consists of 439 Turkish teachers who employed AI-assisted teaching aids during the COVID-19 pandemic. The implementation process required extensive literature reviews, empirical studies, and surveys. For the scale's reliability, exploratory and confirmatory factor analyses are carried out. The main findings indicate that teachers' TPACK is positively influenced by ethical knowledge, specifically that educators' understanding places more emphasis on pedagogical affordances than on the ethical applications of AI in educational settings.

Ng et al. (2023) conducted a study of AI-assisted systems for the personalization of learning for the heterogeneous students of a high school cohort. The mixed-method design used quantitative data from standardized tests and qualitative information from student interviews. The large-scale findings reveal the positive impacts of AI-assisted personalization-based learning regarding achievement and participation; on the other hand, issues related to privacy and bias have arisen. Problems and questions also arise due to the argument that AI may alter the way education is conducted, with a bright light shed on the development of robust ethical frameworks in response to emerging issues.

Maier and Christian (2022) reviewed the adoption and impact of tailored feedback in distance learning environments, focusing on higher education, specifically in STEM fields and included results from 39 studies. The research design involves a systematic literature search, which is then constrained to papers that meet the specified criteria. The primary outcomes showed that personalised feedback generally led to increased student engagement and improved student performance; however, most could not provide sufficient reasons for adopting the methods. Only one-fourth of the applied systems utilised AI-assisted techniques, while most employed rule-based algorithms. The review highlights several significant research gaps, notably in K-12 education and the integration of emotional and personality traits with the design of feedback systems.

Fitria (2021) examined the role of AI in education, focusing on its impact on teaching and learning. They applied the library research methodology, considering all the current theories and literature regarding AI applications in education. These findings tentatively suggest possibilities ranging from

providing voice assistants and intelligent content to facilitate the free distribution of learning materials or educational resources to support learning to automatic grading of the assessment process. This article explains how Artificial Intelligence is revolutionising teaching methods in the classroom, moving towards strategies that promote efficiency and personalisation of learning.

Montague and Xu (2012) investigated operator workload and trust in using technology in an automated process control environment. The population consisted of undergraduate students from the engineering and consumer science programs (n=70). Performance under different user roles and conditions, as measured by trust and task performance, was analysed using repeated measures ANOVA. Key findings indicate that trust in technology has a significant impact on performance outcomes, highlighting the role of user engagement in automated systems. Further studies are therefore recommended to increase the sample size and establish causal relationships between the various variables involved.

This study addresses existing research gaps by examining pre-service teachers' experiences through the lens of TPACK. The findings will offer valuable implications for teacher educators, policymakers, and AI developers seeking to enhance the use of AI in teaching. This research emphasizes the need to equip future teachers with the knowledge and skills to navigate the changing education landscape effectively.

➤ *AI in Curriculum and NEP-2020*

Considering the goals of NEP 2020, NCTE and NCERT are collaborating to support digital learners studying in Indian Schools. One of the goals of NEP 2020 is to incorporate Artificial Intelligence (AI) into everyday school education in Resurgent Bharat.

➤ *Assumption*

As the role of the teacher shifts towards that of a facilitator, specifically to support Gen Z and Gen Alpha children, it becomes crucial for teachers to be specific in AI-assisted TPACK. In the current scenario, learners are digital natives. To cater to them, a teacher must be well-versed in AI-assisted TPACK. An overhaul of the teacher education curriculum and teacher training institutes is required.

➤ *Research Question*

- How much do our pre-service teachers know and use AI-assisted TPACK?

➤ *Objective of the Study*

- To explore diverse AI-assisted tools for the following purposes-

- ✓ Adaptive feedback
- ✓ Personalized learning
- ✓ Real-time feedback
- ✓ Diverse teaching strategies
- ✓ Lesson planning

- ✓ Monitoring students' learning.
- To examine the leadership role of pre-service teachers in integrating AI-assisted tools with teaching strategies among their colleagues.

III. RESEARCH METHODOLOGY

The present study is a phenomenological investigation employing a qualitative research approach. In this type of research, we summarise, categorise, and interpret the words of the respondents obtained through open-ended questions in a semi-structured Interview. Here, the respondents' opinion on AI-assisted TPACK was obtained.

The study employs a qualitative approach to gain insight into the actual experiences of pre-service teachers. It highlights their thoughts, challenges, and strategies in environments where AI is integrated into the education system. This research contributes to the discussion on AI literacy in teacher education, aiming to provide insights that can enhance training and curriculum for future teachers.

➤ Sampling Method and Sample

The sample for the present study was selected using purposive sampling. The sample consisted of B.Ed. Students in the third semester (Batch 2023 -2025) of BHU, Varanasi. The interviews were conducted in person with 21 B.Ed. Students of the third semester (BHU, Varanasi).

➤ Instrument of the Study

The responses of the sample were collected through a semi-structured interview schedule. The researchers developed this instrument. Items for the Interview schedule were prepared to keep in view the objectives:

- How do you use diverse AI-assisted tools for adaptive feedback?
- How do you use diverse AI-assisted tools for personalized learning?
- How and which AI-assisted tools do you use for real-time feedback?

- What attracts you to using AI-assisted tools with different teaching strategies, and how do you integrate these tools into your pedagogy?
- How do you teach appropriately, combining content with AI-assisted tools and teaching strategies?
- Do you take a leadership role among your colleagues in integrating AI-assisted tools in your teaching area? If so, how?
- Do you use diverse AI-assisted tools to monitor student learning in your teaching process? (If so, please explain.)

The inter-rater reliability of the research instrument was established with the assistance of Professors, Associate Professors, and Assistant Professors from Banaras Hindu University.

➤ Data Collection and Analysis

According to their availability, the researchers interviewed 21 B.Ed. Students of the third semester using Interview schedule during internship hours. This helped the researcher analyse the participants' AI-assisted TPACK. The interview was carried out in person. Their reply was documented. First, coding was done, and themes were identified. These codes and themes were finalized further for reporting with the help of an expert's opinion from BHU.

➤ Credibility of the Study

The study's credibility was assured during its conduct. Triangulation was used to obtain relevant themes for the survey, AI-assisted TPACK. The two investigators of the study were on duty to supervise the internship of B.Ed. students of the Faculty of Education, BHU at O' Groove Public School, Kamachha, Varanasi. The data was collected during this internship.

➤ Findings

The collected responses were tabulated to achieve the study's objectives.

• Finding No.-1

Themes are based on responses to achieve objective no. 1 (a).

Table 1 Themes are Based on Responses to Achieve Objective No. 1 (a).

Objective no. 1(a)	Theme-1	Theme-2	Theme-3
	Chat GPT, Gemini, Co-Pilot + Photos & Videos + Google Bands & YouTube (This helps to deliver effective content with satisfying examples in the stipulated time.)	AI-assisted tools help in the following: New ideas with creative content + Creative questions to engage learners + Optimise learning outcomes + AI-assisted feedback + Helps in data collection and constant guidance.	No response, and it was never used.
Frequency	6	12	3
Percentage	29%	57%	14%

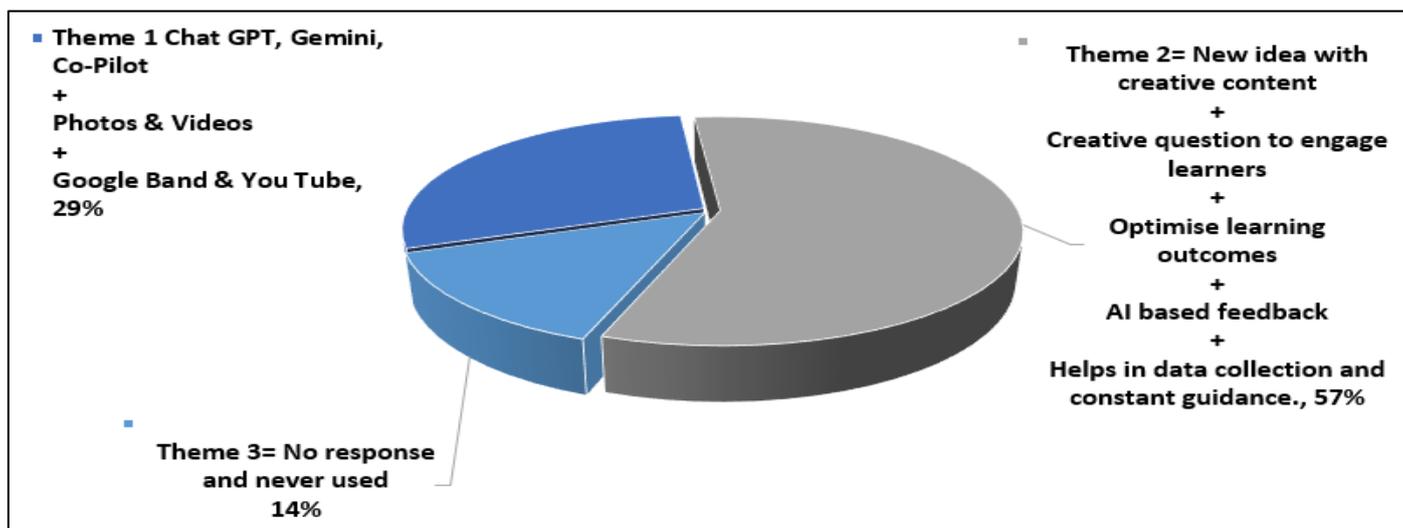


Fig 1 Themes are Based on Responses to Achieve Objective No. 1 (a).

From Table 1, it can be inferred that 29% of the respondents actively use AI-assisted tools, such as Chat GPT, Gemini, Co-Pilot, Google Band, YouTube, and AI-generated photos and videos, in their pedagogical process. These AI-assisted tools help pre-service teachers deliver the content effectively, using appropriate examples within the stipulated time. 57% of the respondents know the advantages of AI-assisted adaptive feedback tools, including generating fresh concepts, producing engaging and creative content,

optimizing learning outcomes, collecting data, and providing ongoing guidance. However, they lack hands-on experience. Fourteen per cent of respondents have never used these AI-assisted adaptive feedback tools.

• *Finding No.-2*

Themes based on responses to achieve objective no. 1 (b).

Table 2 Themes Based on Responses to Achieve Objective No. 1 (b).

Objective no. 1(b)	Theme-1 User of Chat GPT, Google, Gemini, YouTube, Khan Academy, and Analysis-based dashboards.	Theme-2 Awareness of the advantages of AI-assisted tools for personalized learning, which includes: Used to solve problems + Build question papers + Write assignments + Manage diverse kinds of learners.	Theme-3 Never used
Frequency	8	12	1
Percentage	38%	57%	5%

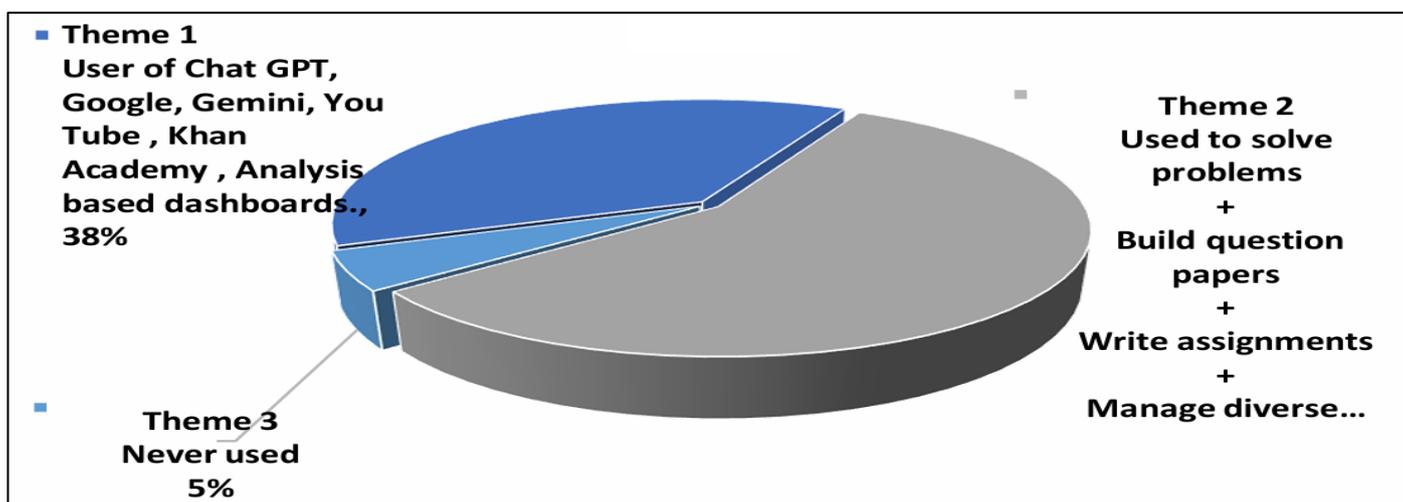


Fig 2 Themes Based on Responses to Achieve Objective No. 1 (b).

Table No. 2 shows that 38% of the study sample are aware of tools for personalized learning that use AI assistance and use them to a limited extent. Chat GPT, Google, Gemini, YouTube, Khan Academy, and analysis-assisted dashboards are tools in their knowledge. 57% of the sample know the advantages of AI-assisted tools but are not active users. 5%

of respondents have never used such tools for personalized learning.

• *Finding No.- 3*

Themes are based on responses to achieve objective no. 1 (c).

Table 3 Themes are Based on Responses to Achieve Objective No. 1 (c).

Objective No. 1(c)	Theme-1 Chat GPT, Gemini, Aria AI, Google Bard, Canva, Doc Scanner, Grade Scope, Chatbot, Python, Grammarly, and Google Form.	Theme-2 AI is useful. + Prepare Questions accordingly. + Speech /Text analysis software. + Pre-trained model. + Social media survey tools, etc.	Theme-3 Not responded
Frequency	7	10	4
Percentage	33%	48%	19%

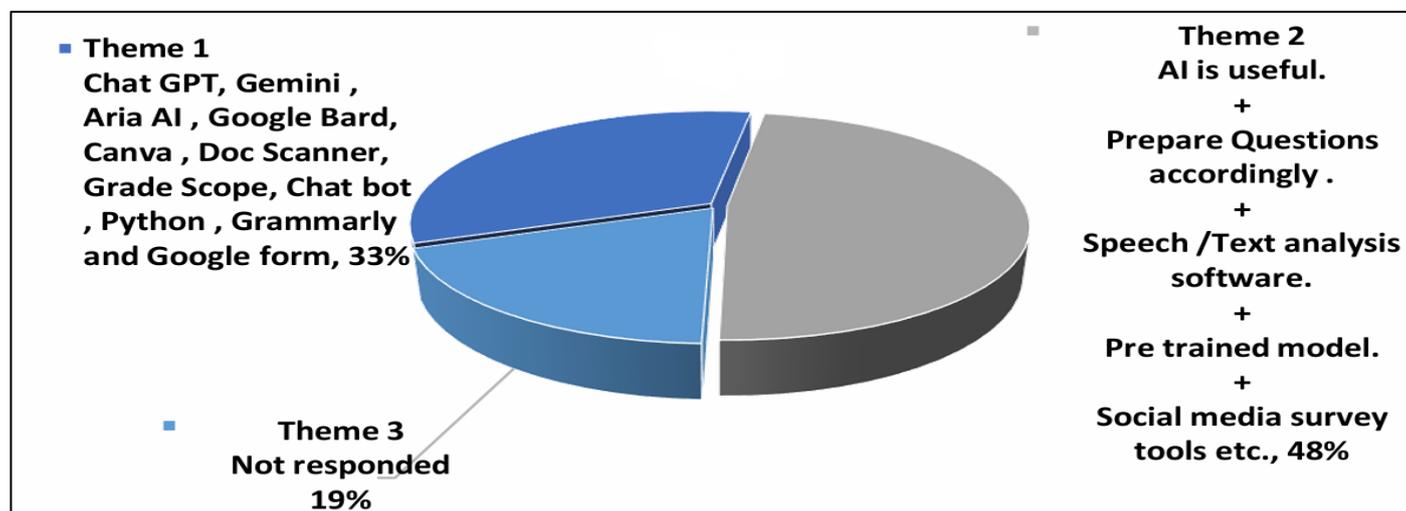


Fig 3 Themes are Based on Responses to Achieve Objective No. 1 (c).

Table No.- 3 shows that 33% of respondents are conscious of the various AI-assisted tools that can be used for real-time feedback. However, 48% of the respondents lacked the necessary knowledge about these AI-assisted tools and were unable to mention their benefits. Nineteen per cent of respondents left this part blank.

• *Finding No.-4*

Themes are based on responses to achieve objective no. 1 (d).

Table 4 Themes are Based on Responses to Achieve Objective No. 1 (d).

Objective No. 1(d).	Theme-1 Refined answers with quick and accurate content. + Broader knowledge	Theme-2 Diversity in teaching. + Provides structure and performance of any assignment. + Activities with lecture cum demonstration + More engaging learning experience + Lesson planning	Theme-3 No response
Frequency	4	15	2
Percentage	19%	71%	10%

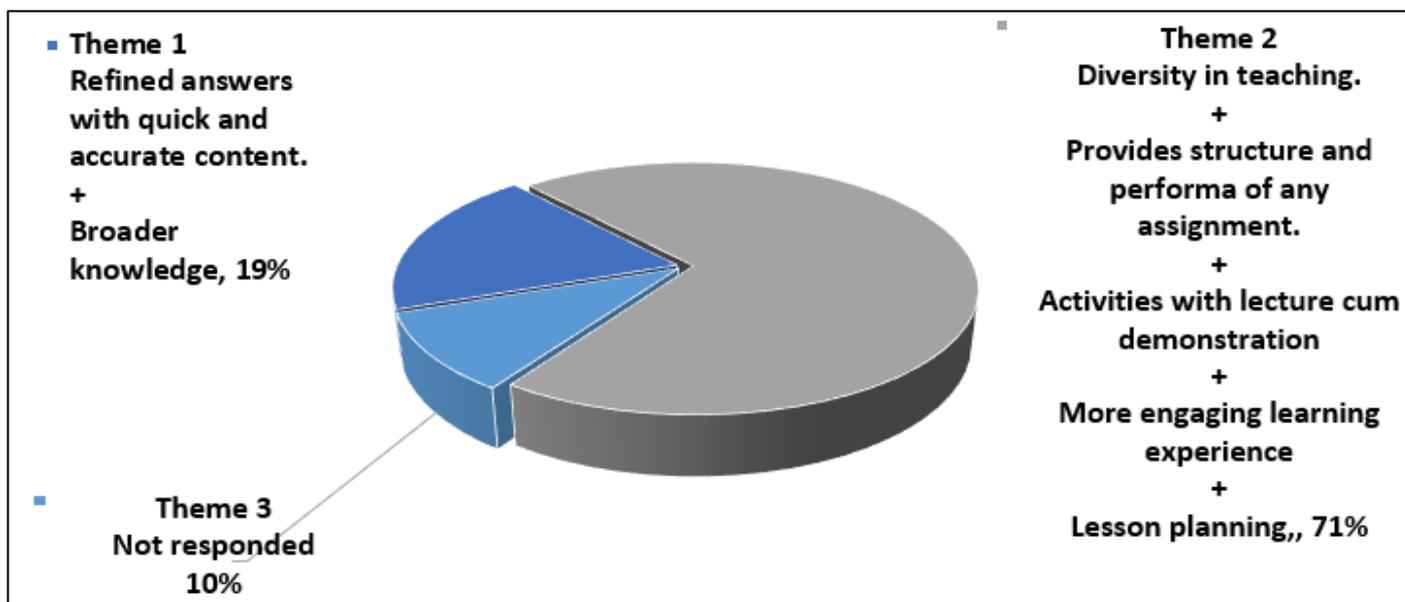


Fig 4 Themes are Based on Responses to Achieve Objective No. 1 (d).

Table No. 4 suggests that 19% of respondents believe AI-assisted tools help them obtain refined answers with quick and accurate content, as well as broader knowledge. Meanwhile, 71% of respondents said in which way AI-assisted tools can help in diverse teaching strategies without having the appropriate knowledge of such tools. Ten per cent of the respondents were unable to reply to this item.

- *Finding No.-5*
 Themes are based on responses to achieve the fifth objective no. 1 (e).

Table 5 Themes are Based on Responses to Achieve the Fifth Objective No. 1 (e).

Objective No. 1(e).	Theme-1	Theme-2	Theme-3
	Photos, videos, graphs, GIF animation, flashcards (TLM), Patcham GPT, etc., are used to understand the concept.	To prepare a question paper. + Tips for dealing with troublesome students. + To prepare assignments, notes, and lesson planning.	No response.
Frequency	9	8	4
Percentage	43%	38%	19%

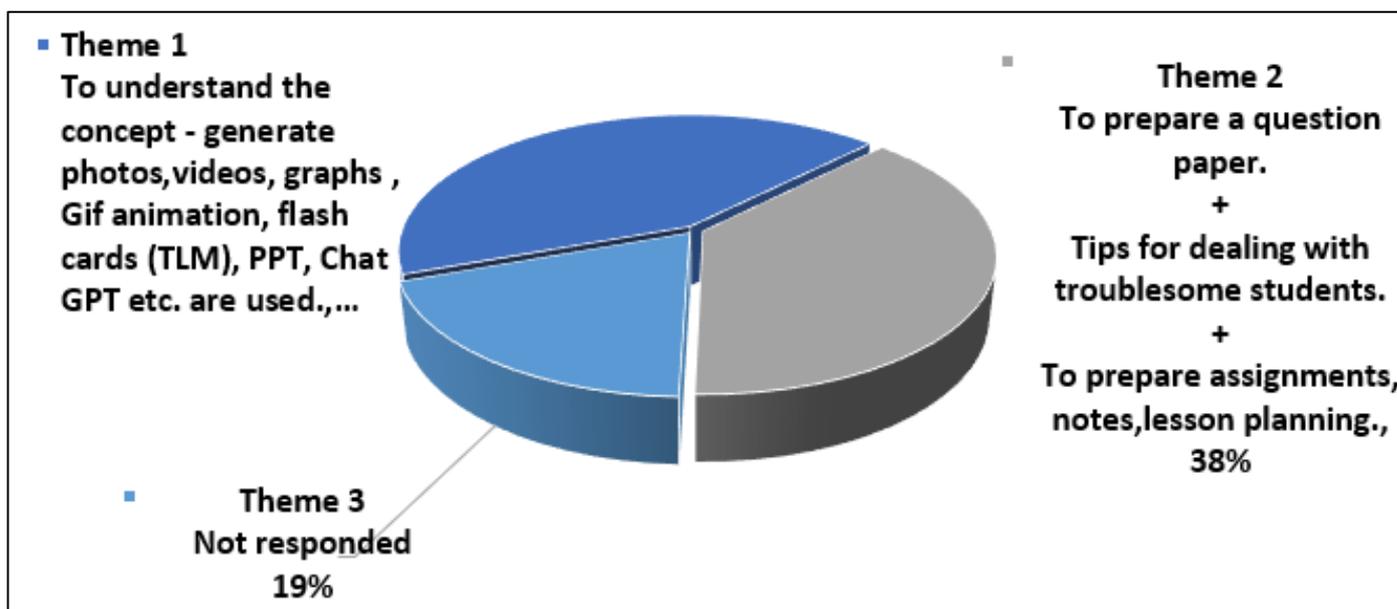


Fig 5 Themes are Based on Responses to Achieve the Fifth Objective No. 1 (e).

Table 5 suggests that 43% of respondents are utilising AI to develop photos, videos, graphs, GIF animations, flashcards (TLM), and other content, making their teaching more effective. Meanwhile, 38% of the respondents merely know that AI can be combined with their education to make their work easier. 19% of them have not responded to this item.

• *Finding No.- 6*

Themes are based on responses to achieve objective no. 1 (f).

Table 6 Themes are Based on Responses to Achieve Objective No. 1 (f).

Objective No. 1(f)	Theme 1 TLM for special students (Refreshable Braille Display)	Theme 2 Chat GPT, PPT, Duolingo app, Group Assignment.	Theme 3 No response
Frequency	3	3	15
Percentage	14%	14%	72%

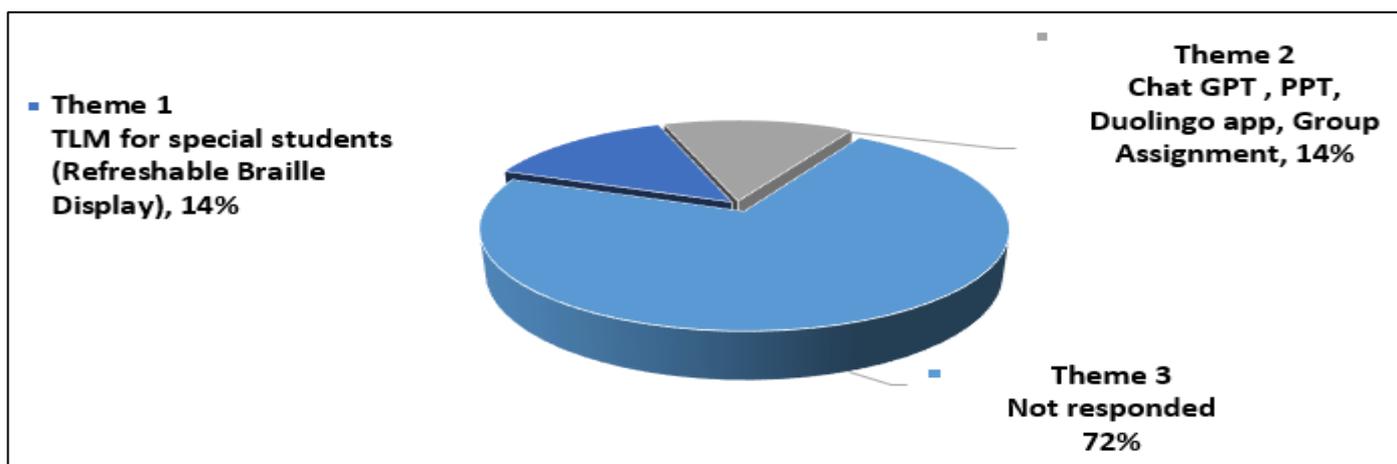


Fig 6 Themes are Based on Responses to Achieve Objective No. 1 (f).

Table No. 6 shows that 14% of the respondents monitored their students' learning through a refreshable braille display board developed with the help of AI; the remaining 86% mentioned the name of AI-assisted tools again. 72% did not answer this question.

• *Finding No.-7*

Themes are based on responses to achieve the second objective.

Table 7 Themes are Based on Responses to Achieve the Second Objective.

Objective No. 2	Theme 1 Motivates and encourages their friends.	Theme 2 It is not easy, which is why it is not done.	Theme 3 No response
Frequency	7	9	5
Percentage	33%	43%	24%

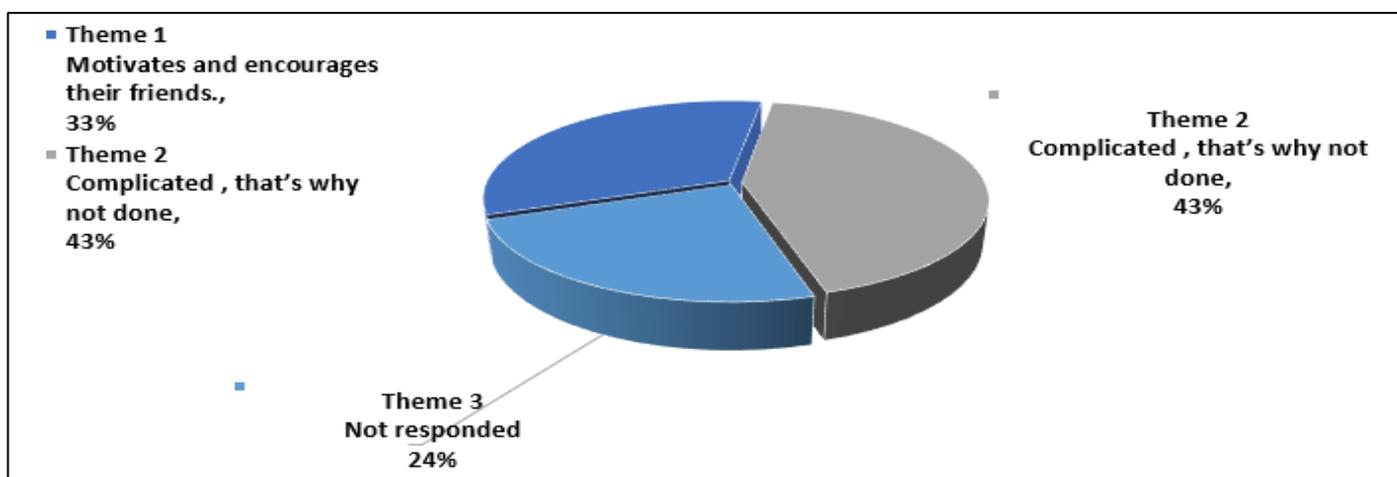


Fig 7 Themes are Based on Responses to Achieve the Second Objective.

Table 7 indicates that only 33% of the respondents have motivated and encouraged their friends to integrate AI into the teaching field. 43% have not encouraged their friends because it is complicated, and 24% have not responded.

IV. RESULT AND DISCUSSION

NEP-2020 has suggested that teachers of Digital Native Learners must be well-equipped to integrate technology into teaching and learning. This integration will enhance their teaching, administration, evaluation, assessment, and feedback processes, making them more efficient and effective. For Gen Z or Gen Alpha, teachers are not only the source of knowledge, information, and learning.

29% of respondents actively use AI-assisted tools, such as ChatGPT, Gemini, Co-Pilot, Google Band, YouTube, and AI-generated photos and videos, in their pedagogical process. These AI-assisted tools help pre-service teachers deliver content effectively, using suitable examples within the stipulated time. 57% of participants know the advantages of AI-assisted adaptive feedback tools, including generating fresh concepts, producing engaging and creative content, optimizing learning outcomes, collecting data, and providing continuing support. However, they lack hands-on experience. Fourteen per cent of respondents have never used these AI-assisted adaptive feedback tools. A similar result was found by Lie, Tamah, and Gozali (2023) in their study, which showed that, regardless of their previous exposure to technology, some teachers had appropriated their TPACK within twenty months of ERT, while others were still in the process of transforming their role. Furthermore, teachers showed different readiness for hybrid learning and maintaining their TPACK skills. Adeshola, I., & Adepoju, A. P. (2023) also revealed that the majority of people have favourable things about ChatGPT. Their study has suggested that educational institutions can mitigate the disruptive effects of this technology and promote academic integrity by developing clear policies and guidelines, as well as designing assessments that incorporate limited AI-generated text.

38% of participants are aware of and occasionally use AI-assisted personalized learning tools. They are familiar with tools such as analysis-based dashboards, YouTube, Khan Academy, Google, Gemini, and ChatGPT. Although they are not current users, 57% of respondents are aware of the advantages of AI-assisted tools. Only 5% of participants have never utilized these individualized learning tools. AI is crucial for learning, according to 88% of respondents who strongly agreed with this statement (Pratama, Sampelelo & Lura, 2023). Romero (2025) has defined “Passive Consumers” as recipients of AI-generated content, exhibiting the least engagement with the material. They simply consume the information produced by AI without any active participation in its creation

Of those surveyed, 33% are aware of the various AI-assisted tools available for instantaneous feedback. However, 48% of respondents lacked the necessary knowledge about these AI-assisted tools and only mentioned their benefits. Nineteen per cent of the respondents left this part blank.

Hooda, Rana, Dahiya, Rizwan, and Hossain (2022) also concluded that with the help of AI, immediate and valid feedback can be given to students, improving their learning level. Furthermore, studies by Adekanmbi et al. (2024), AlGerafi et al. (2023), and Lampropoulos (2023) also revealed the benefits of AI technologies, which have been integrated into collaborative learning environments, facilitating communication and knowledge sharing among students. Virtual reality (VR) and augmented reality (AR) applications powered by AI have also revolutionized education, offering immersive and interactive learning experiences that engage students in new ways.

Nineteen per cent of the respondents say that AI-assisted tools help them obtain refined answers with quick and accurate content, as well as broader knowledge. 71% of respondents stated that AI-assisted tools can aid in diverse teaching strategies, even without the necessary knowledge of such tools. Ten per cent of the respondents were unable to reply to this item. Ng, Lee, Tan, Hu, Downie, and Chu (2022) concluded from their review study that the growth of AI education is helping them develop educational strategies and curricula that utilise appropriate technologies to better prepare students to become responsible, literate citizens in the emerging AI economy. Similarly, Artificial intelligence (AI) is rapidly transforming the landscape of education, offering new possibilities for enhancing learning experiences and promoting inclusive educational practices. As AI technologies become more sophisticated and accessible, educators are exploring innovative teaching methodologies that leverage AI to address diverse learning needs and create more inclusive learning environments (Alam, 2021; Pham & Sampson, 2022; Rane, Choudhary & Rane, 2023).

43% of respondents are using AI to develop photos, videos, graphs, GIF animations, flashcards (TLM), and other materials to enhance the effectiveness of their teaching. Whereas 38% of the respondents merely know that AI can be combined with their education to make their work easier. 19% of them have not responded to this item. A study by Fitria (2021) stated that as science and technology advance, teachers' tasks, including correction, student attendance, daily assessments, knowledge explanation, administrative report preparation, and other systemic labor, can be turned over to technological equipment for completion. When robotics is not an option, educators will use less energy and focus more on non-systemic work, creating a golden generation with higher natural intelligence, character, and quality standards.

Ng, D.T.K., Lee, M., Tan, R.J.Y. *et al.* (2023) in their research findings provide a research foundation to inform educators and researchers about the growth of AI literacy education that can help them to design pedagogical strategies and curricula that use suitable technologies to better prepare students to become responsible educated citizens for today's growing AI economy.

33% of the respondents have motivated and encouraged their friends to integrate AI into the teaching field. 43% have not encouraged their friends as it is complicated. 24% have not responded to this. AI in education is in its early

revolutionary stage, or we can say it is in the infancy stage. Therefore, it is difficult to draw a conclusion and suggest that others use it. (for example, Druga et al. 2019; Cheng et al.2020; DiPaola et al. 2020; Lee and Ali 2021; Long and Magerko 2020; Greenwald, Leitner & Wang 2021). The other reason for others to view it as complicated may be that higher GenAI valuing was linked to perceived autonomy-supportive leadership, professional growth aspirations, and stress related to change (Collie & Martin, 2024).

Fourteen per cent of the respondents monitored their students' learning through a refreshable braille display board developed with the help of AI. The remaining 14% simply repeated the names of the AI-assisted tools. 72% have not responded to this question. Hwang and Vrongistinos (2012) stated that the Quality Teachers for Quality Students initiative

created an electronic mentorship system between new and experienced teachers to help new teachers improve their instructional and classroom management skills in light of the special needs of English language learners (ELLs) in Southern California. The results of the data analysis revealed that combining the use of both Blackboard and Skype technologies was advantageous to starting instructors' ability to effectively educate ELLs. This finding is well supported by a study by McCarthy, T., Rosenblum, L. P., Johnson, B. G., Dittel, J., & Kearns, D. M. (2016) that there is strong evidence that advanced technologies are not suitable replacements for braille literacy instruction, technology can be used along with quality instruction by a teacher of visually impaired students to enhance proficiency in braille literacy.

➤ *Comparison Table: Active vs Passive AI Users*

Table 8 Comparison Table: Active vs Passive AI User

Objective	Active Users (%)	Passive Users (%)	No Response (%)
Adaptive Feedback Tools	29%	57%	14%
Personalised Learning	38%	57%	5%
Real-Time Feedback	33%	48%	19%
Diverse Teaching Strategies	19%	71%	10%
Lesson Planning with AI Tools	43%	38%	19%
Peer Leadership in AI Integration	33%	43%	24%
Monitoring Student Learning with AI	14%	14%	72%

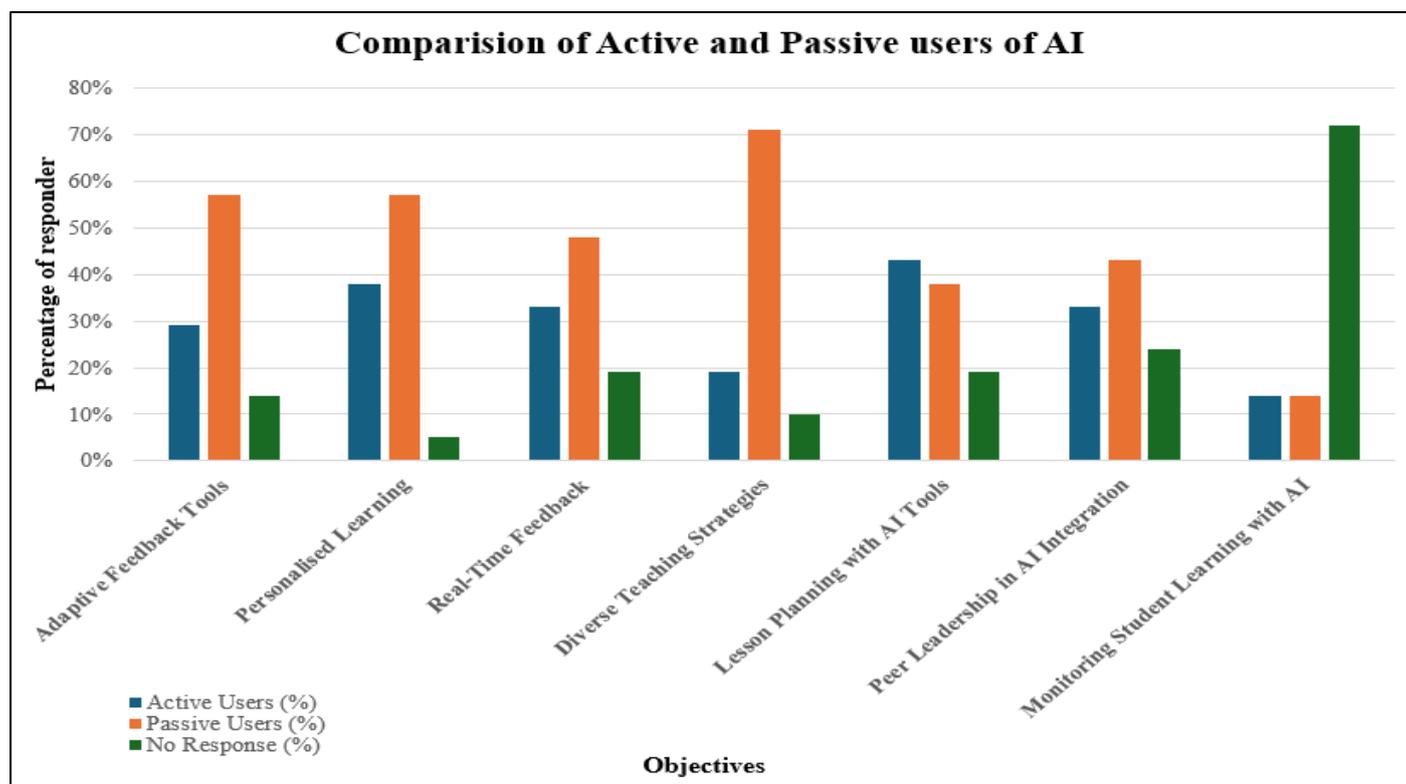


Fig 8 Comparison of Active and Passive users of AI

The study reveals that while many pre-service teachers are aware of AI tools and their educational benefits, only a minority actively use them. Active AI engagement is most evident in lesson planning (43%) and personalized learning (38%), whereas teaching strategies (71%) and adaptive feedback (57%) show high passive awareness but low

practical use. A significant gap exists in the application of AI for student monitoring, with 72% of respondents offering no response. Overall, the findings underscore a pressing need for curriculum reforms, hands-on training, and support systems to transition teachers from passive recipients to active integrators of AI in education (Chen, X., Tankelevitch, L.,

Vanukuru, R., Scott, A. E., Panda, P., & Rintel, S., (2025). revealed in their study that Active AI users have great potential to enhance intentionality and goal alignments with AI assisted tools whereas passive ones seems to get continuous benefits of AI assisted tools but they might not be able to use it in effect of real-time.

V. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

While this study offers insights into pre-service teachers' experiences as active versus passive AI users through the TPACK lens, several limitations should be acknowledged.

- **Sample Size and Generalizability:** The research employed a small, purposively selected sample (n=21) of B.Ed. students from a single institution (BHU, Varanasi), which limits the generalizability of findings to broader settings or other teacher education contexts.
- **Qualitative Design:** As a phenomenological, qualitative study, data relies on self-reported experiences, which may be influenced by social desirability or respondents' ability to articulate their engagement with AI tools.
- **Scope of Tools Examined:** The study focused primarily on well-known AI tools (e.g., ChatGPT, Gemini, YouTube) and may not have captured experiences with more specialized or emerging educational AI applications.
- **Short-Term Assessment:** The data reflect a snapshot during the internship but do not track changes over time or long-term effects of AI integration on teaching practices.

➤ *Future Research could Address these Limitations by*

- Using larger and more diverse samples across institutions and regions to strengthen generalizability.
- Incorporating quantitative or mixed-methods approaches to triangulate self-reported data with objective measures of AI use and impact.
- Examining longitudinal effects of AI-assisted TPACK development as teachers progress from pre-service to in-service roles.
- Expanding the range of AI technologies studied, including tools specifically designed for subject-specific or inclusive education.
- Investigating barriers to active AI use, such as technological infrastructure, institutional support, or cultural perceptions, to develop targeted professional development interventions.

VI. CONCLUSION

According to the study's findings, pre-service teachers use AI to integrate it into their TPACK. They are aware of its benefits and know about a few AI-assisted tools that can be used in the field of education. These respondents failed to answer "HOW" they integrate it with their Pedagogical practices. Among the respondents, the number of active users of AI is negligible, and they are developing creative content using AI. Kim's study (2024) envisions the development of

TAC (Teaching AI-Collaboration in Education) in three phases: (1) teachers as passive recipients of AI, (2) teachers as active users of AI, and (3) teachers and AI as constructive partners. In the current scenario, a redesign of the curriculum for teacher education and teacher training institutions is required to incorporate an AI-assisted tool for developing AI-assisted TPACK for pre-service teachers.

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