

Artificial Intelligence Technologies in Teaching and Learning Activities: University Teachers' Perceptions and Experiences

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Abstract

With evolving times, the field of education is undergoing a major transformation with the help of Artificial Intelligence, which aids in the personalization of learning, instructional design, evaluation, and administration. The successful integration of AI depends on teachers' perceptions, experiences and openness. In this study, the convergent parallel mixed-method design was used to identify teachers' perceptions, experiences and challenges with the use of AI technologies in learning activities including eight teachers as respondents by using the purposive sampling method. The data was collected using items that were reported on a Likert scale and processed qualitatively by themes. Results showed that teachers had positive attitudes toward use of AI, with a specific emphasis on its utility in lesson planning, boosting engagement, and streamlining administration. The study found that the main challenges to implementing AI are insufficient institutional support, ambiguous policy guidance, plagiarism, data privacy, and overreliance on AI. Teachers perceived AI as a teaching assistant not a teacher. Thus, the study emphasizes the importance of professional development, institutional preparedness, and ethical guidelines to ensure responsible and effective integration of AI in education.

Keywords: AI in education, educational technology, teacher Perceptions, technology integration model, educational technology adoption

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Introduction

Artificial Intelligence (AI) has rapidly become one of the most important technologies of the modern education system around the world (Chen et al., 2020). These emerging technologies have allowed individualized learning, adaptive instruction, automatic assessment, and data-driven decision making in educational sector in recent years (Holmes et al., 2019; Zawacki-Richter et al., 2019). The use of AI-powered tools such as intelligent tutoring systems, adaptive learning systems, automated feedback systems, and generative AI systems like ChatGPT, google studio AI, Gemini, Claude are starting to impact teachers' course development, designing instruction, engaging with students and managing their classrooms (Roll & Wylie, 2016; Woolf, 2010).

AI technologies has become more prevalent in education, as they are part of a larger narrative of digital transformation and smart learning ecosystems in the field. AI presents great potential to help facilitate the creation of personalized learning paths by tailoring the instructional content to students' needs, preferences, and learning progress (Kulik & Fletcher, 2016; Pane et al., 2017). Moreover, AI-based technologies have been shown to have potential in transforming formative assessment practices, offering timely feedback for students, enhancing student engagement, and minimizing teacher administrative tasks thereby freeing up educators' time for higher-order pedagogical tasks (Baker & Inventado, 2014; D'Mello & Graesser, 2013; Luckin et al., 2016).

There are also some pedagogical, ethical and institutional challenges in the introduction of AI in the educational landscape, despite the several potential benefits of it. The broad use of generative AI technology concerns about academic integrity, plagiarism, over-reliance on AI-generated content, algorithmic bias, data privacy, and transparency have been increasingly focal points (Cotton et al., 2023; Selwyn, 2019; Williamson & Eynon, 2020). In addition, educational researchers have also questioned whether there are equitable access issues with AI technologies, as in environments with poor infrastructure and access to digital resources, the use of AI could exacerbate the educational inequalities that already exist (Selwyn et al., 2020; Zawacki-Richter et al., 2019).

Technology is changing quickly and the effectiveness of AI in the classroom will depend on teachers who will act as the go-betweens between technology and pedagogy. Teachers' beliefs, experiences, attitudes, and preparation for technology use are all factors that can affect the successful and meaningful integration of innovative technologies into classroom practice (Ertmer & Ottenbreit-Leftwich, 2010; Ertmer et al., 2012). Again, teachers who are more digitally competent and confident about technology tend to use new technologies and experiment with new pedagogical approaches (Instefjord & Munthe, 2017; Tondeur et al., 2017). On the other hand, if teachers lack training or support from their

institutions, if the policies are unclear or ambiguous, or if there are concerns about the ethical implications, then their uptake of AI may be hindered.

The Technology Acceptance Model (TAM) is used to help understand the process of adopting Educational Technologies (ETs) by teachers, and is considered to be useful. Perceived usefulness and perceived ease of use are two main factors that influence technology adoption, according to TAM (Davis, 1989; Venkatesh & Davis, 2000). Perceived usefulness is the teachers' confidence that the AI will aid his or her students, and perceived ease of use is the teachers' confidence in the use and complexity of the AI. These constructs have also been found to be pertinent in understanding why educators are willing to use educational technologies (Scherer et al., 2019; Teo, 2011) and how they integrate these technologies into their learning and teaching activities. Nevertheless, other elements like training possibilities, technical assistance, policies and infrastructure have an impact on the technology acceptance (Tondeur et al., 2017).

Holmes and Tuomi (2022) and McGrath et al. (2023) have recently reviewed teacher attitudes toward AI; they tended to be positive with respect to the pedagogical possibilities of AI technologies, especially when it comes to lesson planning, content creation, individual support in learning, and administrative tasks. Yet, there is a significant number of teachers who continue to be worried about professional preparedness, ethical aspects, data management, teachers' use of AI or AI tools in the classroom, and other topics (Petrucchio et al., 2024; Viberg et al., 2023). Notably, there is often a disconnect between the teachers' perception of good intentions for using AI and implementing them in class for practices the teachers support.

The gap may be larger in less developed countries, such as Nepal, where educational institutions still face challenges in providing access to new technologies, providing teachers with training in their use, and ensuring policies are followed. While there are several studies available in the international literature on the adoption of AI in education, there is relatively fewer empirical studies which have discussed the experience and perception of teachers on the use of AI in education in South Asian countries and developing countries. Furthermore, most of the existing studies use a quantitative or qualitative method that might not capture the contextual dimensions and quantifiable patterns in teachers' lived experience with AI technologies (Creswell & Plano Clark, 2018; Zawacki-Richter et al., 2019).

This is a mixed methods study that explores the perception, experience and challenges of teachers while implementing the Artificial Intelligence technologies in learning activities in context of Nepalese education. The study is designed to draw insights from the quantitative and qualitative data to provide an overall understanding of teacher experiences of using AI and provide contextually rich findings to the growing body of literature of AI in education. So, this study aims to explore teachers' perceptions,

experiences, and challenges regarding the use of Artificial Intelligence technologies in learning activities is the objective of this study.

Literature Review

AI is one of the most impactful technologies affecting the modern education system. AI is a type of computer system that can reason, learn, solve problems, process language and make decisions, which is the same description used for describing human intelligence (Luckin et al., 2016). Within the educational field, AI includes a variety of technologies, including machine learning algorithms, natural language processing systems, intelligent tutoring systems, adaptive learning platforms, educational chatbots, automated assessment systems, and, most recently, generative AI applications like ChatGPT and other large language models (Chen et al., 2020; Holmes et al., 2019; Woolf, 2010).

AI's presence in education is just a part of the larger trend of digital transformation and data-driven decision-making in the field of education. AI systems can gain insight into learner behavior, recognize gaps in knowledge, give feedback to the learner, and adapt the learning experience to the needs and learning progress of each student, which is not the case with traditional learning technologies, which are mainly used for delivering content (Holmes et al., 2019; Zawacki-Richter et al., 2019). This has made AI a promising solution for enhancing the effectiveness of instruction and students' engagement.

With the advent of generative AI, this change has been further catalysed. The use of AI-based applications has helped teachers and educators plan lessons, create content, summarize, translate languages, design assessments, and deliver personalized, automated tutoring more efficiently (Cotton et al., 2023). As such, AI is no longer being seen as just a piece of technology, but as an educational ally that can support and enhance the work of a teacher, not replace it.

To grasp teachers' use of AI technologies, the proper theoretical lens is necessary. Davis' (1989) Technology Acceptance Model (TAM) is one of the most popular models explaining adoption and use of new technologies among individuals. TAM has identified two beliefs that will impact users' attitudes and intentions towards technology adoption: perceived usefulness and perceived ease of use.

Perceived usefulness is the perceived benefit that a technology will enhance job performance and perceived ease of use is the perceived ease with which a technology can be used (Davis, 1989). These attitudes, then, influence users' behavioral intentions and their actual technology use behavior (Venkatesh & Davis, 2000). Perceived usefulness in education can relate to teachers' expectations of how these AI productivity tools can improve lesson planning efficiency and outcomes, enhance student engagement, personalize learning, and reduce workload.

Likewise, the perceived ease of use indicates teachers' confidence in using AI tools and their ability to incorporate them into their teaching practices (Teo, 2011). Previous research on educational technology has revealed that teachers who feel technologies are useful and easily usable are much more likely to implement and maintain their use in education (Scherer et al., 2019).

The teachers are central in educational innovation and they are universally regarded as one of the most important factors in effective integration of technology in the classroom. Their beliefs, attitudes, experiences and readiness to teach can have a significant impact on meaningful use of emerging technologies for learning and teaching (Ertmer & Ottenbreit-Leftwich, 2010). Therefore, it is critical to gain insight into teachers' perceptions of AI to foresee its future course in education.

Previous studies suggest that teachers have positive attitudes towards AI tools, as they can be used for generating personalized learning experiences, handling repetitive tasks, and planning lessons (Holmes & Tuomi, 2022). The teachers' view of AI is typically not that it will replace their professional knowledge and decision-making, but that it will help them to become more effective in their teaching (McGrath et al., 2023). This distinction is relevant, since the worry about replacement still remains a topic of public debate on the use of AI in education, notably.

Recent empirical evidence suggests that teachers' attitudes towards generative AI applications are shifting from fear and uncertainty to hope and optimism, with them seeing generative AI tools as helpful co-workers that can assist them in brainstorming, content development, assessment design, and differentiated instruction (Petrucchio et al., 2024). In the same way, AI tools have been shown to save educators time on tedious administrative duties, freeing up more time for teaching and learning and engaging with students at higher levels (Roll & Wylie, 2016).

However, the concept of AI is still multifaceted and nuanced in the eyes of teachers. There is no guarantee that adoption of AI tools would be an active part of the classroom. There are several studies that reveal that there are major differences between teachers' awareness of the potential of AI and their use of AI technologies in teaching (Viberg et al., 2023). The results underscore the need to consider the perceptions as well as teachers' lived experiences and context when exploring the integration of AI.

One of the most sought-after advantages of AI in the education industry is personalized learning. AI can tailor the program for a student based on their past learning experience, learning style, and performance to improve learning effectiveness and engagement (Pane et al., 2017). One-size-fits-all (OSFA) teaching can be improved by adaptive features to become more learner-centred education.

AI tools can also be utilized for formative assessment, providing feedback in real-time and identifying learning difficulties. Educational data mining techniques help teachers track pupils' progress more effectively, and make a timely adjustment to teaching when needed (Baker & Inventado, 2014). Moreover, there is evidence of high efficacy in a range of subject areas using intelligent tutoring systems that offer individualized instruction that mimics one to one tutoring experiences (Kulik & Fletcher, 2016).

In addition to the student-centric benefits, AI has a great amount of potential to benefit teachers. Lessons support and planning applications, content creation programs, and automated grading systems can help reduce workload and enhance instructional efficiency (Luckin et al., 2016). Generative AI technologies have now extended these possibilities by helping the teachers in summarizing, translating, creating questions, and generating instructional resources (Cotton et al., 2023). These capabilities suggest that AI could play a role in enhancing the effectiveness of education, as well as equity and accessibility.

While AI has promising applications in education, there are also some key ethical and practical questions that need to be addressed. Academic honesty is perhaps one of the most talked about topics, especially with respect to generating AI applications that can write essays, assignments, and other academic works with little to no human involvement (Cotton et al., 2023). The increasing prevalence of plagiarism and students' overreliance on AI-generated content, along with the potential deconstruction of students' critical thinking and problem-solving abilities, is an increasing concern among teachers.

Algorithmic bias is a strong hurdle, too. AI systems can perpetuate social, cultural, racial or gender inequities that are found in the data used to train them and in their design (Selwyn, 2019). These biases can lead to inequitable education, and to the continuation of social inequities, unless they are addressed.

Similarly, the concerns for adoption of AI are the access and equity. It also suggests that availability of more advanced AI technologies might vary based on institutional resources and infrastructure, and/or digital literacy in institutions, which may exacerbate existing inequalities between institutions and socio-economic groups (Selwyn et al., 2020). These concerns highlight the ethical governance structures and responsible approaches to the use of AI in educational contexts.

While AI technologies are evolving quickly, many contextual and institutional factors need to be in place to enable their successful implementation. Limited digital competencies, lack of institutional support, lack of professional development opportunities, and inadequate infrastructure are some of the common obstacles to the integration of technology identified in previous research (Ertmer et al., 2012; Tondeur et al., 2017).

Among the most critical factors for the successful implementation of AI, teacher preparation is certainly one of them. Teachers with higher technological skills and self-assurance in the use of digital technologies tend to try out new teaching methods and to use artificial intelligence in classroom activities (Instefjord & Munthe, 2017). Conversely, teachers often feel uncertain, lack knowledge, and lack confidence in using AI tools despite their potential educational value. On the other hand, uncertainty, limited knowledge, and lack of confidence are often obstacles for teachers to adopt AI tools, even when they see the potential of AI for education.

Implementation of AI further complicates the issue with policy and governance. Educational institutions often have an unclear policy on ethics of using AI, on IPRs, on assessment and on acceptable uses of AI in the classroom. This ambiguity leads to teachers' uncertainty and different implementation.

In developing nations, infrastructure, financial, and access to professional development opportunities can make it more difficult to effectively incorporate emerging technologies (Zawacki-Richter et al., 2019). Thus, any effective support and implementation strategies need to be grounded in understanding teachers' experiences in these contexts.

Methodology

Research Design

In this study, a method approach with convergent parallel design was used to find out how teachers perceive, experience, and face challenges when using AI in learning activities. The quantitative and qualitative data were simultaneously collected and analyzed, and then integrated during interpretation to give overall understanding about the phenomenon (Creswell & Plano Clark, 2018).

Participants and Sampling

The study included eight teachers from different subject area, who were familiar with and had experience with using digital technologies and basic knowledge of AI tools in the educational environment of Sanathimi campus. The subjects were selected using purposive sampling technique because the technique may enable the researcher to recruit subjects with relevant knowledge and experiences about the research objectives (Creswell & Plano Clark, 2018).

Data Collection Tools

A two-part structured Google Forms questionnaire was used to gather primary data, where the quantitative items were on Likert scale, which measured familiarity with AI, perceived usefulness, ease of use, current practices, and ethical concerns. The qualitative data included open-ended questions about teachers' experiences, obstacles, and expectations

for using AI in their teaching. The instrument was designed as a result of the literature search and was based upon the Technology Acceptance Model (Davis, 1989).

Data Analysis

The quantitative data was analyzed by using descriptive statistics of mean, median, mode and standard deviation and the qualitative responses were analyzed by applying Braun and Clarke's (2006) six-step process for thematic analysis. The application of a convergent parallel mixed-methods design involved combining quantitative and qualitative data in the interpretation of findings to look for convergence and complementarity in the findings of the numerical and teachers' experiences.

Ethical Considerations

Informed consent and voluntary participation were obtained. The participants were made anonymous by using theme like T1, T2,.....T8 and had their confidentiality protected, and all data collected were to be used for academic research only.

Results

In this section, finding was presented regarding objective of the study related to the use of AI in learning activities by following the mixed-methods design, where quantitative findings are presented and interpreted in first section, then followed by qualitative evidence which provides contextual explanations and deeper insights into teachers' experiences.

Awareness of AI Technologies

As a teacher, knowledgeable about AI technologies is one of the most important requirement for successful integration in education. Awareness and exposure levels of teachers can guide their preparedness for teaching and learning with emerging technologies. This section includes exploration of teachers' self-reported familiarity with AI, and their experience of AI use in practice in the table below:

Table 1

Teachers' Familiarity and Awareness of AI Technologies

Item	Mean	Median	Mode	SD
Familiarity with AI technologies	2.75	3.00	3.00	1.26
Number of AI tools used	2.75	3.00	3.00	1.31

Source: Researcher's Calculation

Table 1 indicates a low level of familiarity with AI technologies among the respondent (M = 2.75). The median and mode values suggest that most participants perceived themselves as possessing average levels of knowledge about AI tools. However, the relatively high standard deviation indicates substantial variation in teachers' experiences and exposure to AI technologies. In another way, the average number of AI tools used was relatively low (M = 2.75), the value suggesting that most teachers were familiar with only a limited range of AI applications, particularly widely available tools such as ChatGPT. This finding indicates that AI adoption among teachers' remains at an early stage and that many educators have not yet explored the broader ecosystem of educational AI applications. The variability in responses further suggests unequal access to AI-related learning opportunities and professional development.

The qualitative responses strongly supported these findings. Most participants said that, becoming familiar with AI tools through self-learning and personal experimentation rather than formal institutional training. Where teacher T2 said that, *"I have heard about several AI tools, but my practical experience is mostly limited to ChatGPT."* and the teacher T6 said, *"I learned to use AI tools through YouTube videos and online tutorials rather than through formal training."* These narratives suggest that teachers' awareness of AI is growing, but structured professional learning opportunities remain limited.

Perceived Usefulness of AI in Teaching and Learning

Perceived usefulness is one of the most important influencing factor for teacher's willingness to adopt new technologies. Teachers' perceptions on the educational benefits of using AI to aid in instruction, student learning and teaching efficiency is shown below in the table.

Table 2

Perceived Usefulness of AI in Teaching and Learning

Statement	Mean	Median	Mode	SD
AI helps create lesson plans efficiently	4.38	4.50	5	0.74
AI provides personalized feedback	4.00	4.00	4	0.76
AI increases student engagement	4.50	5.00	5	0.76
AI reduces administrative workload	4.13	4.00	4	0.64

Source: Researcher's Calculation

The findings expose highly positive perceptions regarding the usefulness of these emerging technologies in educational settings. All indicators recorded mean scores above 4.0, which indicating strong agreement among participants regarding the educational value of AI. The highest score was observed for increasing student engagement ($M = 4.50$), suggesting that teachers believe AI has the potential to make learning more interactive, personalized, and motivating. Similarly, the high mean score for lesson planning ($M = 4.38$) indicates that teachers perceive AI as a valuable instructional support tool capable of reducing preparation time and improving instructional quality. The low standard deviation values across all items indicate a high degree of consensus among teachers regarding the usefulness of AI technologies. These findings suggest that teachers generally view AI not as a replacement for teachers but as a supportive technology that enhances professional practice and instructional effectiveness.

Teachers frequently described AI as an instructional assistant that could support creativity, efficiency, and differentiated instruction. Additionally the teacher T1 said that, "AI helps me generate lesson ideas quickly and provides examples that I can adapt to my classroom." and another teacher T4 said that, "Using AI reduces the time spent on routine tasks and allows me to focus more on student interaction." same as the teacher T3 express his view as "AI can help students learn at their own pace through personalized support." This strongly indicate highly positive perceptions regarding the usefulness of AI.

Ease of Use and Integration Challenges

The usability and fit into the current practices of teaching are also important factors. This section looks at teachers' perceptions about the usability of AI tools and the challenges in integration of AI tools in the classroom shown below in the table.

Table 3

Ease of Use and Integration Challenges

Item	Mean	Median	Mode	SD
AI tools are easy to navigate	4.25	4.00	4	0.46
AI integration into curriculum is clear	3.63	4.00	4	1.30
Becoming an AI expert is easy	3.63	4.00	4	1.19

Source: Researcher's Calculation

The results indicate that teachers generally perceive AI technologies as easy to use ($M = 4.25$). The low standard deviation demonstrates strong agreement among participants regarding the user-friendly nature of current AI applications.

However, considerably lower scores were reported regarding curriculum integration ($M = 3.63$) and developing expertise in AI ($M = 3.63$). The larger standard deviations associated with these items suggest substantial differences in confidence and experience among teachers. While some participants felt comfortable experimenting with AI, others expressed uncertainty regarding how AI could be aligned with curricular goals and classroom pedagogy. These findings indicate that technical usability alone does not guarantee successful educational implementation. Institutional support, pedagogical guidance, and professional development appear to be equally important for meaningful integration.

Another three teachers express their view as qualitative insights where T3 said, *"Using AI tools is not difficult, but integrating them effectively into lessons is still challenging."* similarly, the teacher T8 said, *"There are no clear guidelines explaining when and how AI should be used in classrooms."* with support the teacher T5 said that, *"Teachers need training not only on using AI tools but also on integrating them into teaching methods."*

Experiences of AI Use in Learning Activities

The teachers' experiences of AI offers some insights into use of them in educational practice in the teaching and learning activities. According to the respondent about the practical applications of AI and how AI can assist teachers in their daily work is discussed and shown below in the table.

Table 4

Teachers' Experiences of Using AI in Learning Activities

Experience Area	Evidence from Participants
Lesson planning	Frequently used
Content summarization	Frequently used
Question generation	Occasionally used
Language translation	Occasionally used
Personalized support	Emerging use

Source: Researcher's Calculation

The findings suggest that teachers primarily use AI technologies for preparatory and supportive tasks rather than direct classroom instruction. Lesson planning and content summarization emerged as the most common uses of AI, while applications such as personalized learning support and adaptive instruction remain relatively limited.

As qualitative findings, the teacher T1 express her view as *"I use AI mostly to prepare lesson materials and generate examples for classroom discussion."* and with support the teacher T6 said, *"AI helps me summarize long texts and prepare teaching notes more quickly."* and the T4 said, *"Sometimes I use AI to create quiz questions and classroom activities."* and T5 said that, *"AI is useful for translating difficult concepts into simpler language for students."* These findings indicate that AI currently functions more as a professional support tool for teachers than as a fully integrated classroom technology. The use of AI appears to be exploratory and experimental rather than systematic.

Current Practices of AI Use in Learning Activities

This section examines the teachers currently use AI technologies in teaching activities and assignments. The teachers expressed positive attitudes toward use of AI in actual classroom, implementation remains limited which is shown below in the table.

Table 5

Current Practices of AI Use

Item	Mean	Median	Mode	SD
Frequency of AI use in assignments	1.63	2.00	2	0.92

Source: Researcher's Calculation

The average score of 1.63 indicates that AI use currently falls between "rarely" and "sometimes." Although some teachers reported experimenting with AI tools for classroom activities and assignments, AI has not yet become a routine component of instructional practice.

The qualitative findings demonstrated the use of AI. The teacher T2 and T7 express their different view on it where, T7 said, *"I use AI occasionally, mainly for preparation rather than during actual classroom teaching."* and in support the T2 expressed, *"Although I see the benefits of AI, I still hesitate to use it regularly with students."* This finding highlights a clear gap between teachers' positive perceptions of AI and their actual classroom use. Such a gap suggests that favorable attitudes alone are insufficient for successful technology adoption without adequate training, institutional support, and implementation strategies.

Ethical Concerns and Challenges

Some ethical and professional issues associated with use of AI and the teachers expressed concerns about use of AI. This section examines these concerns and their implications for educational practices shown in table 6.

Table 6

Ethical Concerns Related to AI

Statement	Mean	Median	Mode	SD
Plagiarism	3.50	3.00	3	1.41
Overdependence on AI	3.38	3.50	3	1.41
Incorrect or misleading information	3.00	3.50	4	1.51
AI bias	2.75	3.00	3	1.39
Data privacy concerns	3.50	3.50	5	1.51

Source: Researcher's Calculation

The findings indicate moderate to high levels of concern regarding plagiarism, student dependence on AI, and data privacy. Teachers were particularly concerned that students might rely excessively on AI-generated responses without developing deeper conceptual understanding or critical thinking skills.

As a qualitative finding, the teacher T5 express his view as "*Students may use AI to complete assignments without understanding the content.*" Similarly, the teacher T2 said, "*I am concerned about where student information is stored and how it might be used.*" and the teacher T4 express view as "*Ethical guidelines are necessary if AI is going to be used widely in education.*" these findings revel that the privacy concerns also emerged as a major issue, reflecting uncertainty regarding how educational data are collected, stored, and used by AI service providers.

Qualitative Themes

In this section, most of the important and common thematic analysis generalized into two main themes, they are explain teachers' experiences and perceptions of AI adoption.

AI as a Teaching Partner

According to the respondent, they consistently described AI as a supportive educational tools rather than a replacement for teachers. Teachers viewed AI as a tool capable of enhancing creativity, improving efficiency, and supporting personalized learning. From the teacher T7 we found as their view, "*AI should support teachers rather than replace*

them." and similarly the teacher T1 said, "AI acts as a creative partner during lesson preparation." Where the teacher T8 said that, "Teachers will remain essential because AI cannot replace empathy and human interaction." which is positive perception about the use of AI in teaching learning field.

Institutional and Professional Barriers

Six of the eight participants reported receiving no formal AI-related training, which reduced confidence and willingness to adopt AI in classroom practice. The two teacher express little bit different from them where, Teacher T6 said that, "Without training and institutional support, teachers cannot fully utilize AI technologies." and another teacher T8 said that, "Individual motivation alone is not enough; schools need clear policies and guidance." this theme focused on barriers to integration of AI, including limited training opportunities, lack of policy guidance, and insufficient institutional support.

Integration of Findings

The quantitative and qualitative results are integrated into one another, showing a consistent pattern in both datasets. Teacher attitudes towards AI are largely positive and they understand the educational value of AI usage. But it is not widely used in practice because of a lack of professional development, institutional support and ethical issues.

Table 7

Integration of Quantitative and Qualitative Findings

Quantitative Findings	Qualitative Findings	Integrated Interpretation
High perceived usefulness (M > 4.0)	AI described as a teaching assistant	Strong positive perceptions
High ease of use (M = 4.25)	AI tools considered easy to operate	Positive usability experiences
Limited classroom use (M = 1.63)	Lack of training and policy guidance	Adoption gap exists
Ethical concerns (M = 3.50)	Concerns regarding privacy and plagiarism	Need for ethical governance

Source: Researcher's Calculation

The results indicate that teachers are willing to accept emerging technologies like AI technologies and understand its potential role in teaching and learning. But, there will be a need for targeted professional development, institutional support, and ethical principles for

responsible use of AI in the education sector if the shift from positive perceptions to practical integration in the classroom is to be achieved.

Discussion

The study employed a mixed method approach to examine teachers' perception, experience, and challenge in the application of Artificial Intelligence (AI) technologies in learning activities. The results indicate that the overall attitudes of teachers towards AI are positive, and they understand the potential of using it to enhance learning and teaching, but its use in the classroom is still very limited, caused by inadequate training, institutional support, and ethical concerns. These findings are explained in the light of the Technology Acceptance Model (TAM) and the literature.

The results align with the previous studies which indicated that AI technologies can support instructional planning, automate repetitive tasks, and offer opportunities for personalized learning experiences (Holmes et al., 2019; Roll & Wylie, 2016). Likewise, Luckin et al. (2016) proposed that AI can help teachers to ease administrative workload and give more time to teachers for higher-order pedagogical tasks. The qualitative results of this study also support this interpretation, as AI is often portrayed by teachers as a "creative assistant" and a "teaching partner" that aids in the preparation and delivery of instruction, as well as in student engagement with the learning process.

This was not always the case with the positive attitudes and technological confidence. Teachers recognized the potential benefits of AI in teaching but there was limited and mostly experimental use of AI in teaching practices. This discovery is consistent with the documented "adoption gap" in educational technology (Zawacki-Richter et al., 2019) and highlights a significant gap in the successful implementation of EdTech. Ertmer et al. (2012) who stated that technology competence is not enough to effectively integrate technology into instruction have reported the same.

There are a number of reasons given in qualitative results that explain this difference. The teachers indicated that they were not sure about their ability to integrate AI into their curriculum, lack of pedagogical support, and less institutional support to implement AI. The results indicate that there is a need for both personal motivation and organizational/policy support for successful uptake of AI. One of the greatest needs that were identified in the study was professional development. Remarkably, six out of the eight teachers interviewed stated they received no formal training in AI technologies; they have been learning about AI technologies on their own and through informal online resources. In terms of teacher technological competence, previous studies also have placed emphasis on the importance of teacher technological competence and institutional support for technology integration (Instefjord & Munthe, 2017; Tondeur et al., 2017). Teacher training and

organizational support has been shown to affect the integration of new technologies and teaching methods in the classroom (Ertmer & Ottenbreit-Leftwich, 2010).

By not having clear policies and implementation guidelines, the use of AI was limited. The discussion often included the importance of curriculum frameworks and institutional policies on the use of AI in schools, as well as ethical guidelines. The results highlight the need for more than just technological access in educational environments and for the creation of more holistic strategies for the responsible and pedagogically-appropriate use of AI.

Ethics issues also were a key theme in the study. AI generated content plagiarism, excessive dependency on AI generated content by students, misinformation, and data privacy were voiced concerns by the teachers. These are similar issues to those recently discussed about generative AI in education and academic integrity (Cotton et al., 2023). Likewise, privacy and data security issues are linked to the ethical issues with collecting and monitoring learners' data pointed out (Williamson et al., 2020). Interestingly, the participants said they were not overly concerned about algorithmic bias. This might be because of a lack of awareness or limited exposure/practice and not a lack of risk. As mentioned by Selwyn (2019), unregulated algorithmic systems can continue and exacerbate social and cultural inequalities. Therefore, the teaching of AI ethics needs to be integrated into teacher professional development.

Conclusion

The research employed a mixed method approach that involved a teacher's perception, experiences, and challenges related to the application of AI technologies in learning activities. The results suggest that teachers are in general positive about AI and see its use as a tool that can enhance the effectiveness of teaching, promote student engagement, enable personalized learning and ease administrative duties. In particular, teachers noted the potential of AI to aid their instruction, such as enhancing lesson planning and content production, and helping to create a more engaging classroom experience. The findings of this study indicated that there was a huge gap between teachers' awareness and utilization of AI in education. While all of this has yielded good attitudes, the study found the awareness and use of AI in education was still quite a distance from teachers. While participants were generally easy to use, the use of these tools in the classroom was somewhat limited and more of an experiment. The discovery suggests that access to technology alone does not have an impact on the process of educational integration. Instead, there are other institutional, pedagogical and professional conditions that are crucial in the successful adoption.

There were several challenges the study found with the use of AI in education identified. Lack of formal training, non-existence of institutional policies and

implementation guidelines, uncertainty on how best to include AI in the curriculum, and concerns on academic integrity were cited as the major hurdles to effective use of AI. Teachers also expressed serious concerns with plagiarism, overreliance on AI-generated content and data privacy and information security. The findings highlight the importance of ethical principles and governance mechanisms to ensure the proper and ethical application of AI in educational settings. Importantly, the qualitative findings showed that teachers are not concerned with the use of AI taking over teachers but rather see it as a partner and collaborator to improve their knowledge and teaching. They also pointed out that empathy, moral reasoning, creativity and social interaction soft skills remain critical to teaching and are not replaceable by technological solutions. The study adds to the body of literature on AI in education, offering empirical insights from the context of Nepal, where there is a scarcity of studies on teachers' experiences using AI in education. The results must be taken with a few reservations however, since the number of subjects in this study was relatively small and it was exploratory. Future research could include expanding and diversifying the sample size, comparative studies, and longitudinal studies examining how attitudes and the application of AI in teachers' practices may evolve over time.

AI Disclosure

The author use ChatGPT, OpenAI's generative artificial intelligence, for assisting with academic writing tasks done during the preparation of this manuscript, such as editing the language, refining the text, and organizing it. The AI tool did not produce research data, analyze data, interpret data, draw academic conclusions or draw conclusions. The author made all methodological decisions, analyzed, interpreted, and prepared the final manuscript which were critically reviewed and approved.

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