Article

Highland Wisdom: A Study on the Acceptance and Application of Generative AI in Teaching Among Primary and Secondary School Teachers in a Western Highland Region of China

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Abstract: As generative artificial intelligence (GenAI) rapidly penetrates the field of education, the extent to which primary and secondary school teachers accept and use it in instructional practice has become an issue of growing scholarly and policy concern. Given the relative scarcity of empirical research on this topic in frontier ethnic minority regions of western China, this study focuses on primary and secondary school teachers in a western highland region and employs a questionnaire survey to conduct an exploratory investigation. A total of 40 valid questionnaires were collected. Using reliability analysis, descriptive statistics, and Pearson correlation analysis, the study examines teachers' responses across the following dimensions: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, technology anxiety, technology trust, behavioral intention, relative advantage/task fit, and compatibility. The findings indicate that teachers in this region generally hold positive attitudes toward the use of GenAI in teaching. Scores for performance expectancy, hedonic motivation, and relative advantage/task fit are comparatively high, and behavioral intention remains at a moderately high level overall. Correlation analysis reveals that behavioral intention is significantly and positively correlated with performance expectancy, social influence, compatibility, hedonic motivation, and relative advantage/task fit, with the relationship between relative advantage/task fit and behavioral intention being the most pronounced. By contrast, technology anxiety does not exhibit a significant correlation with behavioral intention. These results suggest that teachers' continued intention to use GenAI is more substantially grounded in perceived instructional value, task alignment, and organizational support than in technology-related anxiety, offering preliminary insights for designing teacher support frameworks for intelligent technology adoption in ethnic minority regions.

Keywords: generative artificial intelligence; technology acceptance; primary and secondary education; western highland region of china; teacher attitudes; instructional innovation; educational digitalization

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1 Research Background: Generative Artificial Intelligence Reshaping the Ecosystem of Basic Education

Generative artificial intelligence (GenAI), represented by advanced systems like ChatGPT, is driving a significant transformation in educational technology, advancing education from digitalization to comprehensive intelligentization [1]. GenAI is defined by its ability to generate original content across various formats, including text, images, and other multimodal media, through algorithms trained on extensive datasets. This positions it as a groundbreaking tool in education, combining content creation with cognitive support functions.

In the field of basic education, GenAI has shown substantial potential for application. Specifically, it can greatly enhance the efficiency of creating instructional materials, such as lesson plans, quizzes, and other teaching resources, allowing educators to focus more on direct student engagement. Additionally, by tailoring content in terms of tone, length,

difficulty, and style, GenAI can meet the diverse needs of mixed-age groups and students with varying abilities, thereby supporting personalized learning on a large scale. In the short term, as an integrated cognitive partner and instructional support tool, GenAI has the capacity to empower various educational scenarios, including teaching, learning, assessment, research, and administration, significantly improving instructional efficiency and quality. In the long term, it signals a new era of education characterized by multidirectional interaction among teachers, students, and machines, fostering the large-scale development of individualized talent [2].

Nevertheless, this technological advancement also presents structural challenges for key educational stakeholders [3]. The digital transformation of education involves more than the adoption of new technologies; it fundamentally requires the redefinition of teachers' professional competencies. Intelligent educational environments necessitate a shift in teachers' roles from traditional "knowledge transmitters" to "learning facilitators" and "human-machine collaborators" focused on student-centered learning. In this context, teachers act as the pivotal link through which GenAI is translated into practical instructional productivity. Their acceptance and effective use of these technologies are crucial in determining the success of educational transformation. As schools integrate this transformative technology, understanding its impact on teachers and their willingness to adopt it has become essential for navigating the increasingly complex and evolving educational landscape.

2 Practical Challenges: Barriers to Technology Acceptance, Role Anxiety, and the Digital Divide

Despite the considerable potential of generative artificial intelligence, its practical implementation at the frontline of primary and secondary school instruction continues to encounter multiple real-world challenges [4]. Teachers frequently find themselves caught between the impulse toward innovative transformation and a pervasive lack of confidence when confronted with generative AI.

Psychological barriers to technology acceptance and competency anxiety. Educators' acceptance of generative AI is shaped by a constellation of factors, including their cognitive awareness, familiarity with the technology, and the degree of institutional support available. Educators with a solid understanding of generative AI tools are more likely to deploy these tools effectively in their instructional practice. Conversely, a lack of knowledge or training impedes acceptance, leaving some teachers feeling overwhelmed or ill-equipped to integrate AI into their existing curricula. In specific contexts, teachers' effort expectancy and technological confidence constitute critical obstacles to generative AI adoption; many teachers report difficulty in acquiring the skills required to use generative AI effectively, giving rise to feelings of technological anxiety and apprehension. Teachers' self-efficacy exerts a decisive positive influence on their intention to use such technologies, and a lack of technological confidence can severely constrain the normalization of technology use in practice.

Perceived ethical risks and role alienation anxiety [5]. Concerns related to quality, accuracy, bias, academic integrity, and data security have increasingly surfaced as generative AI becomes more prevalent in classroom settings. Apprehensions regarding the authenticity of AI-generated content, as well as the risk of students relying on AI tools to complete assignments without adequate critical evaluation, are widespread among teachers and have given rise to concerns about declining academic rigor and rising rates of plagiarism. Ethical concerns also extend to issues of privacy protection and data bias, as well as the potential for AI to supplant human roles in education. The black-box nature of the technology and algorithmic bias contribute to heightened levels of perceived risk among teachers toward generative AI. Furthermore, the powerful knowledge-generation capacity of generative AI has, to some extent, eroded teachers' epistemic authority; some teachers express concern that excessive reliance on technology may lead to a diminishment of emotional interaction between teachers and students and to the

alienation of the educational process itself, thereby fostering resistance and guardedness toward the technology.

Deficient external facilitating conditions and the risk of an exacerbated digital divide. Supportive policies and training programs can bolster teachers' confidence in using AI tools and foster a culture of innovation and adaptability within institutions. Conversely, institutional-level obstacles—such as insufficient professional development opportunities and unclear guidelines on academic integrity—may impede the integration of generative AI into instructional practice. Inadequate training tends to engender negative attitudes toward the adoption of new technologies, while ensuring reliable technological access and network connectivity to address infrastructure constraints is equally a critical prerequisite for the successful deployment of AI tools in schools. Teachers' acceptance of technology is highly contingent upon external facilitating conditions and community influence; however, the absence of corresponding policy frameworks, the shortage of high-quality training resources, and hardware limitations collectively constitute significant external constraints. More alarming still, the application of generative AI in education carries the potential risk of exacerbating existing inequalities. Emerging AI educational applications tend to concentrate in regions with well-developed infrastructure and stronger economic foundations, which is highly likely to widen the digital divide between urban and rural areas and between eastern and western regions, thereby further compounding educational inequity [4].

3 Limitations of Existing Research and the Purpose of the Present Study

In recent years, scholars have utilized theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore the factors influencing primary and secondary school teachers' acceptance of artificial intelligence and generative AI [6]. At the international level, researchers have emphasized the need for longitudinal studies to gather evidence-based data on the effects of generative AI on student learning outcomes and have highlighted the importance of examining its indirect and long-term impacts on creativity and critical thinking across diverse educational contexts. However, the samples used in existing empirical studies are predominantly drawn from developed regions in eastern and central China or from designated pilot areas, leaving a significant gap in research focused on western frontier ethnic minority regions, particularly in a western highland region of China.

Primary and secondary education in a western highland region of China differs significantly from that in more developed inland regions in terms of teacher workforce composition, information and communication technology (ICT) infrastructure development, bilingual teaching environments, and the foundational level of teachers' digital literacy [7]. Within the context of the national strategy for advancing educational digitalization, primary and secondary school teachers in this region face considerably more complex constraints related to facilitating conditions and experience substantially greater pressure to achieve rapid development compared to their counterparts in inland regions. Given that ongoing stakeholder dialogue and strategic planning have yet to adequately address the needs of frontier regions, addressing this research gap is of particular importance.

In response to these challenges, this study focuses on primary and secondary school teachers in a western highland region of China, aiming to investigate the current state of, and the factors influencing, their acceptance of generative AI in instructional contexts. Due to the limited scale of data available at this stage, the study is positioned as an exploratory survey. Through an initial small-sample investigation, it seeks to construct a preliminary profile of teachers' current use of AI-generated content (AIGC), capturing the basic characteristics, practical challenges, and actual needs associated with its instructional application, while providing preliminary empirical support and policy recommendations for the digital transformation of education in highland regions [8].

4 Research Design

4.1 Theoretical Framework

The present study draws primarily on a theoretical framework that identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as key determinants of individuals' technology acceptance and use behavior [9]. Given that the educational application of generative AI involves additional concerns specific to this context—such as content authenticity, privacy and data security, and technological dependency—this study incorporates perceived risk as an additional analytical dimension to develop a more comprehensive understanding of primary and secondary school teachers' acceptance attitudes toward and reservations about generative AI in a western highland region of China.

In addition, this study utilizes a theoretical perspective to illuminate the processes of dissemination and adoption of generative AI within the teacher population. The adoption of an innovation is understood as a dynamic process unfolding through a series of sequential stages: knowledge, persuasion, decision, implementation, and confirmation. As an emerging educational technology, the application of generative AI in school settings is shaped not only by individual teachers' subjective intentions but also by factors such as peer modeling, organizational support, and the prevailing climate of technology use. In other words, whether teachers are willing to try and sustain their use of generative AI is, to a considerable degree, a process through which a new technology gradually diffuses and gains acceptance within a professional community.

Furthermore, in recognition of the study's focus on primary and secondary school teachers in a western highland region of China, a cultural adaptability perspective is also introduced. The enhancement of information literacy, the degree of engagement with educational digitalization, and the technology application capabilities of teachers in ethnic minority regions are shaped by a range of factors, including resource availability, training support, school environment, multicultural orientations, and regional development conditions [10]. This implies that whether a technology is genuinely accepted and sustainably used does not depend solely on the tool itself but is closely tied to whether it can be embedded within local educational practice. The region exhibits distinctive characteristics with respect to educational resource conditions, teacher training opportunities, school support environments, and regional cultural contexts. Accordingly, teachers' acceptance and use of generative AI is not merely a question of technology adoption at the instrumental level but also involves the process of adaptation between new technologies and local educational practice. This study therefore endeavors, building upon the technology acceptance analysis, to further explore how teachers in the region understand, adapt to, and apply generative AI within their particular cultural and educational contexts.

In sum, the theoretical framework provides the foundation for analyzing teacher technology acceptance in this study; additional perspectives contribute to an understanding of the mechanisms through which generative AI spreads among the teacher population; and the cultural adaptability perspective offers a supplementary lens for interpreting the contextual characteristics of technology use among teachers in this western highland region of China. Given that this study is a small-sample exploratory investigation, these theoretical frameworks function primarily as reference guides for questionnaire design and discussion of findings, rather than as bases for complex model validation [11].

4.2 Research Methods and Participants

This study utilizes a questionnaire survey as its primary research method, targeting primary and secondary school teachers in a western highland region of China. The investigation examines teachers' acceptance of generative AI in instructional contexts, their current usage patterns, the practical challenges they face, and their perceived support requirements. Empirical research on the instructional application of generative AI among teachers in this region remains scarce, and the sample size obtained in this study is relatively small. Consequently, this study is explicitly framed as an exploratory

survey. Through an initial small-sample investigation, it aims to construct a preliminary profile of teachers' current use of generative AI in the region, thereby offering foundational insights and practical references for future research. Convenience sampling was employed for questionnaire distribution and collection, resulting in approximately 40 valid responses to date.

Due to the relatively small sample size, the findings of this study are primarily intended for descriptive purposes and preliminary trend identification rather than broad generalization [4]. Nonetheless, the study holds significant practical value in enhancing understanding of primary and secondary school teachers' current use of generative AI in this western highland region. It also contributes to the accumulation of first-hand evidence regarding the digital transformation of education in frontier ethnic minority areas.

4.3 Research Instrument

This study employs a questionnaire survey as its primary research instrument. The questionnaire items were adapted from an academic survey instrument and translated into Chinese, followed by adaptive revisions to align with the research population and context of the present study. As the original instrument was designed for undergraduate student learning, the relevant items were screened, adjusted, and localized to reflect the actual context in which primary and secondary school teachers in a western highland region of China use generative artificial intelligence in their instructional practice. Items focusing on technology acceptance, current usage patterns, application challenges, and support requirements were prioritized for inclusion [12].

Given that this study constitutes a small-sample exploratory investigation, the adapted questionnaire is primarily intended for preliminary needs assessment and problem identification, rather than for rigorous scale development or complex model validation.

4.4 Data Processing and Analytical Methods

Following questionnaire collection, the raw data were organized, screened, and coded for entry. Checks were conducted on item configuration, consistency of variable coding, and the extent of missing values to ensure the accuracy of subsequent analyses. For scale items, variables were coded according to the corresponding questionnaire dimensions; where necessary, reverse-scored items were recoded prior to the computation of mean scores for each dimension, which served as the basis for subsequent statistical analyses. Items applicable only to a subset of respondents, such as those constituting the price value dimension, were handled as supplementary data based on the available valid sample and were not incorporated into the main analytical framework.

With respect to analytical methods, this study employed statistical software for all analyses. Frequency statistics were first used to organize basic demographic and background information for the surveyed teachers, including gender, age, ethnicity, educational attainment, years of teaching experience, school level taught, school geographic location, and usage of relevant tools, thereby presenting an overview of the sample's general composition. Cronbach's α coefficients were calculated for each scale dimension to assess the internal consistency of the questionnaire. Descriptive statistics, including means, standard deviations, minimum values, and maximum values, were computed for all core variables to characterize the overall level and distributional patterns of teachers' acceptance of such tools in instructional contexts. Pearson correlation analysis was conducted to examine the relationships among core variables, aiming to identify the factors most strongly associated with teachers' behavioral intention [13].

Overall, given the constraints of sample size and the exploratory nature of the study, the analytical focus of this paper lies in the preliminary characterization of primary and secondary school teachers' current use of relevant tools in instruction in a western highland region of China, as well as the exploratory identification of relationships among relevant variables, rather than in drawing stronger causal inferences.

5 Findings and Analysis

5.1 Description of Sample Characteristics

A total of 40 valid questionnaires were collected in this study. The sample comprised 27 female teachers (67.5%) and 13 male teachers (32.5%). In terms of age distribution, the majority of respondents fell within the 26–35 age range, accounting for 26 individuals (65.0%). Regarding ethnic composition, 20 teachers (50.0%) belonged to the local ethnic group, 14 (35.0%) were Han Chinese, and 6 (15.0%) were from other ethnic groups. Concerning educational attainment, the overwhelming majority held a bachelor's degree, totaling 34 respondents (85.0%). In terms of years of teaching experience, teachers with fewer than five years of experience constituted the largest group, with 21 individuals (52.5%), indicating that the sample was predominantly composed of early-career teachers. With respect to school level, 34 respondents taught at the middle school level (85.0%) and 6 at the primary school level (15.0%). The majority of respondents were affiliated with schools located in urban or township areas, totaling 35 individuals (87.5%). Regarding generative AI tool usage, 22 respondents reported using such tools frequently (55.0%), while 16 reported occasional use (40.0%), suggesting that the majority of surveyed teachers already possessed a certain degree of exposure to and experience with generative AI.

5.2 Scale Reliability and Descriptive Statistics for Each Dimension

The data analysis reveals that, with the exception of the price value dimension, Cronbach's α coefficients for all remaining core dimensions exceed 0.90, indicating that the questionnaire as a whole demonstrates satisfactory internal consistency. As the price value dimension was administered exclusively to teachers who had used paid versions of generative AI tools, and the corresponding valid sample size was small, its reliability coefficient was only 0.533. This dimension is therefore treated as a supplementary result and excluded from the primary analyses.

Examination of the descriptive statistics for each core dimension indicates that the surveyed teachers hold a generally positive acceptance attitude toward the use of generative AI in teaching, with mean scores for all variables at a moderately high level overall. Performance expectancy yielded the highest mean score, suggesting that teachers place significant value on the role of generative AI in enhancing instructional and research efficiency. Hedonic motivation and relative advantage/task fit also registered at comparatively high levels, indicating that teachers not only recognize the instrumental value of generative AI but also perceive a meaningful degree of alignment between the technology and their instructional tasks. The mean score for behavioral intention reflects a generally positive orientation among the majority of teachers toward continued use of generative AI in the future [14].

By contrast, technology anxiety yielded the lowest mean score, suggesting that while teachers do harbor some reservations about using generative AI, these remain at a moderate level overall and have not crystallized into a pronounced pattern of rejection [15]. With respect to standard deviations, values across all dimensions indicate that responses were relatively concentrated within each dimension while still reflecting a degree of individual variation. Taken together, these findings suggest that primary and secondary school teachers in a western highland region of China have already demonstrated a meaningful degree of positive cognitive orientation toward, and behavioral inclination to use, generative AI in instructional contexts (As shown in Table 1).

Table 1. Descriptive Statistics for Core Dimensions (N = 40)

Variable	Cronbach's α	Min	Max	M	SD
Performance Expectancy	>0.90	1.670	5.000	4.025	0.786
Effort Expectancy	>0.90	2.000	5.000	3.713	0.697
Social Influence	>0.90	2.330	5.000	3.717	0.710

Facilitating Conditions	>0.90	2.000	5.000	3.675	0.775
Hedonic Motivation	>0.90	3.000	5.000	3.942	0.683
Technology Anxiety	>0.90	1.750	5.000	3.063	0.871
Technology Trust	>0.90	2.200	5.000	3.595	0.654
Behavioral Intention	>0.90	3.000	5.000	3.794	0.670
Relative Advantage	>0.90	3.000	5.000	3.881	0.707
Compatibility	>0.90	2.670	5.000	3.733	0.701

The Cronbach's α coefficient for the price value dimension was 0.533; due to the small valid sample size, this dimension is excluded from the primary analyses.

5.3 Correlation Analysis Among Core Variables

The core variables exhibit a generally pronounced pattern of positive intercorrelations. Behavioral intention is significantly and positively associated with the majority of antecedent variables. Among these, relative advantage/task fit demonstrates the strongest association with behavioral intention, followed by social influence, compatibility, hedonic motivation, and performance expectancy. These findings suggest that the stronger teachers perceive generative AI as aligned with their instructional tasks, as offering clear advantages, and as supported by their external environment, the greater their intention to continue using it.

Effort expectancy, facilitating conditions, and technology trust also show significant positive associations with behavioral intention, indicating that teachers' perceptions of the technology's ease of use, the availability of school-level support, and their trust in the technology itself each play a meaningful role in influencing their intention to use it. Interestingly, technology anxiety does not display a significant linear association with behavioral intention, suggesting that, within the present sample, it does not serve as a critical determinant of teachers' continued use intention. Additionally, relatively high associations are observed among certain pairs of predictor variables, such as between social influence and hedonic motivation, between social influence and facilitating conditions, and between relative advantage/task fit and compatibility [12]. This indicates that teachers' positive perceptions of generative AI are interconnected and exhibit a notable pattern of co-variation (As shown in Table 2).

Table 2. Correlation Analysis Results for Core Variables (N = 40)

Variable	1	2	3	4	5	6	7	8	9	10
1. PU_MEAN	1									
2. PEOU_MEAN	.591	1								
3. SI_MEAN	.661	.712	1							
4. FC_MEAN	.470	.740	.811	1						
5. HM_MEAN	.693	.664	.828	.718	1					
6. ANX_MEAN	0.094	0.236	0.264	0.268	0.136	1				
7. TR_MEAN	.323*	.514	.578	.634	.573	.435	1			
8. BI_MEAN	.729	.622	.781	.683	.753	0.086	.563	1		
9. RA_MEAN	.678	.488	.616	.478	.698	0.038	.476	.874	1	
10. COM_MEAN	.638	.552	.623	.600	.705	0.238	.702	.763	.780	1

Note. * $p < 0.05$, $p < 0.01$. 1 = Performance Expectancy, 2 = Effort Expectancy, 3 = Social Influence, 4 = Facilitating Conditions, 5 = Hedonic Motivation, 6 = Technology Anxiety, 7 = Technology Trust, 8 = Behavioral Intention, 9 = Relative Advantage/Task Fit, 10 = Compatibility.

6 Discussion and Recommendations

The findings of this study indicate that primary and secondary school teachers in a western highland region of China hold a generally positive attitude toward the use of

generative AI in teaching, with mean scores for all core variables remaining at a moderately high level overall. Performance expectancy, hedonic motivation, and relative advantage/task fit, in particular, received comparatively high scores [2]. This suggests that, against the backdrop of the ongoing advancement of educational digitalization, primary and secondary school teachers in the region do not broadly resist generative AI; on the contrary, the majority have already come to perceive its practical value in terms of enhanced instructional efficiency, optimized resource integration, and pedagogical support. In other words, the application of generative AI in the basic education context of the region does not represent an entry into entirely unfamiliar territory, but rather one for which a certain degree of readiness for understanding and acceptance has already been established within the teacher population.

First, the highest mean score for performance expectancy indicates that what teachers remain most concerned with is whether generative AI is genuinely useful. For primary and secondary school teachers, tasks such as lesson preparation, lesson plan writing, exercise generation, instructional resource integration, and pedagogical research are inherently administrative and practice-oriented in nature. Accordingly, whether the technology can tangibly reduce workload and improve work efficiency constitutes the primary determinant of acceptance. This finding also suggests that teachers' attitudes toward generative AI are not grounded in abstract judgments about whether the technology is advanced, but are more fundamentally expressed as a question of whether it can practically serve their instructional work. It follows that, in the course of promoting generative AI adoption, an exclusive emphasis on technological sophistication at the expense of attention to its applied value in specific instructional contexts is unlikely to meaningfully enhance teachers' continued use intention [4].

Second, behavioral intention is significantly and positively correlated with relative advantage/task fit, social influence, compatibility, hedonic motivation, and performance expectancy, with the relationship between relative advantage/task fit and behavioral intention being the most pronounced. This indicates that teachers' willingness to sustain their use of generative AI is largely contingent upon the extent to which the technology can form a strong alignment with their instructional tasks. That is to say, what teachers value is not the novelty of the technology per se, but rather whether it can be embedded into existing instructional workflows, whether it can demonstrate its advantages in real classroom settings and daily professional practice, and whether it can be adapted to subject-specific teaching, student characteristics, and individual teachers' working styles. This finding also suggests that, in promoting the use of generative AI in primary and secondary schools in a western highland region of China, the technology should not be reduced to the status of an externally imposed tool, but should instead be understood and promoted within a framework centered on how instructional tasks can be optimized [6, 7].

Third, the strong correlation between social influence and behavioral intention indicates that teachers' acceptance of generative AI is not merely an individual-level technological choice, but is also significantly shaped by the school environment, peer groups, and organizational climate. For primary and secondary school teachers, technology adoption tends to be characterized by a pronounced organizational and demonstrative dimension. When school administrators adopt a supportive stance, when teaching and research groups are able to facilitate the exchange of experience and the sharing of demonstration cases, and when a positive culture of technology use is cultivated among peers, teachers are more likely to integrate new technologies into their own instructional practice. Conversely, in the absence of external support, even teachers who hold no personal resistance to the technology may find it difficult to develop stable patterns of use due to a lack of modeling, resources, and institutional guidance. This point is of particular importance when considered in light of the educational realities of the region. Compared with certain inland regions where digital infrastructure is more well established, some schools in this western highland region continue to face inequities in terms of equipment availability, training opportunities, and application support;

accordingly, the driving role of school-level organizational effort is rendered all the more critical.

Furthermore, the strong correlation between compatibility and behavioral intention also carries significant practical implications. Primary and secondary school instructional activities possess their own rhythms, norms, and stable structures, and teachers have developed relatively established working patterns and instructional habits through years of sustained practice. For generative AI to genuinely penetrate classroom and pedagogical research contexts, it must be coordinated with these pre-existing practices. If teachers perceive the new technology as inconsistent with their instructional philosophies, disconnected from existing workflows, or difficult to align with the actual conditions of their school, class, or subject area, their willingness to use it will naturally be constrained. It is therefore essential, in advancing the educational application of generative AI, to place greater emphasis on scenario-based adaptation rather than requiring teachers to adopt the technology in a uniform, templated, and mechanistic manner.

It is worth noting that, although technology anxiety exists to a certain degree, it does not exhibit a significant correlation with behavioral intention [10]. This finding suggests that, within the present sample, teachers' reluctance to use generative AI is not primarily attributable to fear of technology. Rather, the more critical factors influencing teachers' continued use intention remain whether the technology is useful, whether it fits the task at hand, whether adequate support is available, and whether it is compatible with existing working practices. This also implies that, in practical promotion efforts, an approach centered solely on alleviating anxiety may prove insufficient. Of greater importance is enabling teachers to experience the operability and positive value of generative AI within their actual instructional work—through practice-oriented training, demonstration of real-world cases, and task-driven application support.

On the basis of the foregoing analysis, this study puts forward the following recommendations. First, schools should further strengthen school-based training oriented toward actual instructional practice, with a particular focus on high-frequency task scenarios such as lesson preparation, test item design, resource integration, classroom activity design, and individualized student tutoring. The aim should be to help teachers develop application competencies that can be directly transferred to practice, rather than remaining at the level of a general introduction to tool functions. Second, schools and educational administration authorities should place greater emphasis on the role of demonstration and exemplary leadership. Through open lessons, case-sharing sessions, and exchanges within teaching and research communities, a positive culture of technology use should be progressively cultivated, thereby strengthening teachers' sense of peer support and organizational belonging. Third, at the level of resource provision, external conditions—including network connectivity, equipment, platform access, and training opportunities—should be further improved. Particular attention should be paid to disparities across schools in different geographic areas, so as to prevent an unequal distribution of resources from further widening the educational digital divide. Fourth, in the course of promoting generative AI, efforts should be made to align technological application with subject-specific teaching, local educational environments, and teachers' established working habits in the concrete context of primary and secondary schools in the region, thereby facilitating a transition of generative AI from being merely accessible to being genuinely integrated and sustainably applied.

Overall, this study demonstrates that primary and secondary school teachers' acceptance of generative AI in this western highland region of China is not simply determined by their emotional responses to technology, but is more fundamentally shaped by the technology's practical value, its degree of task alignment, the availability of organizational support, and the conditions of its application context [15]. For basic education in ethnic minority regions, this implies that future efforts to promote generative AI should focus not merely on raising teachers' awareness of the technology, but more importantly on enabling teachers to use it effectively, stably, and productively within their specific instructional work.

7 Conclusion

This study examines primary and secondary school teachers in a western highland region of China, exploring their acceptance of and engagement with generative AI in instructional contexts. The findings reveal that the surveyed teachers generally hold positive attitudes toward generative AI and exhibit a notable intention to continue its use. Factors such as performance expectancy, social influence, relative advantage, task fit, and compatibility show strong correlations with behavioral intention, indicating that teachers' acceptance of generative AI is primarily influenced by its perceived practical instructional value, adaptability in application, and organizational support. Conversely, technology anxiety has not been identified as a significant factor affecting their intention to use the technology at this stage.

From a practical perspective, this study provides an initial overview of the current state of generative AI adoption among primary and secondary school teachers in the region, highlighting key issues related to technology acceptance in ethnic minority areas. For the digital transformation of basic education in this western highland region, the integration of generative AI extends beyond the mere introduction of technology into classrooms. It necessitates adjustments to teachers' instructional methods, enhancement of school-level support systems, and improved allocation of regional educational resources. Therefore, subsequent implementation efforts should prioritize the localization, task orientation, and contextualization of technology applications.

This study acknowledges certain limitations. Due to research constraints, the sample size is relatively small and primarily intended for exploratory analysis. As such, the conclusions are most relevant for descriptive characterization and identifying preliminary trends. Future research could focus on regional comparative studies with larger sample sizes and incorporate methods such as interviews and classroom observations to gain deeper insights into the processes, challenges, and support mechanisms associated with generative AI use among primary and secondary school teachers in similar highland and ethnic minority regions.

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