

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 of China 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 primary and secondary school teachers in a western highland region of China 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 practical instructional value, task alignment, and organizational support than in technology anxiety. Based on these findings, this study recommends that primary and secondary schools in the region place greater emphasis on school-based training, demonstration-led guidance, resource support, and scenario-based adaptation to facilitate the transition of GenAI from being merely accessible to being meaningfully integrated and sustainably used in teaching. This study offers preliminary insights for the development of teacher support frameworks for intelligent technology adoption within the broader context of the digital transformation of basic education in ethnic minority regions.

Keywords

generative AI; primary and secondary school teachers in western highland region of China ; technology acceptance; instructional application; educational digitalization

1. Introduction

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

Generative artificial intelligence (GenAI), represented by ChatGPT, is catalyzing a profound revolution in educational technology, propelling education from digitalization toward comprehensive intelligentization. Conceptually, GenAI is characterized by its capacity to produce original content—spanning text, images, and other multimodal media—through algorithms trained on large-scale datasets, thereby establishing itself as a novel tool in education that integrates both content generation and cognitive support functions (Naval Postgraduate School, Dudley Knox Library, 2024).

In the domain of basic education, GenAI has demonstrated considerable application potential. In terms of specific use cases, GenAI can substantially streamline the creation of instructional materials, generating lesson plans, quizzes, and other teaching resources far more efficiently than conventional approaches, thereby enabling teachers to devote greater attention to direct student interaction (Giang, n.d.). Furthermore, by customizing content in terms of tone, length, difficulty, and style, GenAI can address the diverse needs of mixed-age groups and students with varying ability levels, supporting personalized learning at scale (The School House, n.d.). In the short term, as a highly integrated cognitive partner and instructional support tool, GenAI has the potential to comprehensively empower multiple educational scenarios—encompassing teaching, learning, assessment, research, and administration—thereby significantly enhancing instructional efficiency and quality (Ke et al., 2024). In the long term, it heralds a new era of education characterized by multidirectional, co-constitutive interaction among teachers, students, and machines, enabling the large-scale cultivation of individualized talent (Liu et al., 2024).

However, alongside this technological empowerment come structural challenges for key educational stakeholders. The digital transformation of education is not merely a matter of introducing new technologies; at its core, it requires the fundamental reconstruction of teachers' professional competencies. Intelligent educational environments call upon teachers to transition from the traditional role of “knowledge transmitter” to that of “learning facilitator” and “human-machine collaborator” centered on student learning (Tian et al., 2023). In this process, teachers serve as the critical nexus through which GenAI is translated into practical instructional productivity; accordingly, their level of acceptance and application of new technologies directly determines the effectiveness of educational transformation. As schools embrace this transformative technology, understanding its impact on teachers and their degree of acceptance has become essential for navigating an increasingly complex and evolving educational landscape (Naval Postgraduate School, Dudley Knox Library, 2024).

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

Despite the considerable potential of GenAI, its practical implementation at the frontline of primary and secondary school instruction continues to encounter multiple real-world challenges. The existing literature indicates that 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 (Giang, n.d.; Guinn Center for Policy Priorities, n.d.). Research suggests that educators with a solid understanding of generative AI tools such as ChatGPT and Microsoft Copilot are more likely to deploy these tools effectively in their instructional practice (Sanghvi, n.d.; Kim, 2025). Conversely, a lack of knowledge or training impedes acceptance, leaving some teachers feeling overwhelmed or ill-equipped to integrate AI into their existing curricula (University of Illinois Urbana-Champaign GenAI Solutions Hub: Teaching and Learning Working Group, n.d.; Chen et al., 2025). In the Chinese context specifically, teachers' effort expectancy and technological confidence constitute critical obstacles to GenAI adoption; many teachers report difficulty in acquiring the skills required to use GenAI effectively, giving rise to feelings of technological anxiety and apprehension (Qu et al., 2024). 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 (Mei, 2025).

Perceived ethical risks and role alienation anxiety. Concerns related to quality, accuracy, bias, academic integrity, and data security have increasingly surfaced as generative AI becomes more prevalent in classroom settings (Itransition, 2024). 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 (Sanghvi, n.d.; University of Illinois Urbana-Champaign GenAI Solutions Hub: Teaching and Learning Working Group, n.d.). 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 (Könning, n.d.; Russell, 2025). Within the Chinese context, the black-box nature of the technology and algorithmic bias contribute to heightened levels of perceived risk among teachers toward GenAI (Jiang et al., 2023). Furthermore, the powerful knowledge-generation capacity of GenAI 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 (Ke et al., 2024; Zhu et al., 2023).

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 (Guinn Center for Policy Priorities, n.d.; Kim, 2025; Könning, n.d.; Chen et al., 2025). 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 (Center for Policy Priorities, n.d.; Eusebio et al., 2025; Kreeft, 2025). In the Chinese context, teachers' acceptance of technology is highly contingent upon external facilitating conditions and community influence (Li & Gu, 2021; Zhang, 2025); however, the absence of corresponding policy frameworks, the shortage of high-quality training resources, and hardware limitations collectively constitute significant external constraints (Qu et al., 2024). More alarming still, the application of generative AI in education carries the potential risk of exacerbating existing inequalities (Manczka, 2024). 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 of China, thereby further compounding educational inequity (Jiang et al., 2023; Ke et al., 2024).

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

In recent years, scholars have begun drawing on theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate the factors influencing primary and secondary school teachers' acceptance of artificial intelligence and GenAI. At the international level, researchers have also called for longitudinal studies to obtain evidence-based data on the effects of generative AI on student learning outcomes, and have recommended greater attention to its indirect and long-term impacts on creativity and critical thinking across diverse educational contexts. However, the samples employed in existing empirical studies are predominantly drawn from developed regions in eastern and central China or from designated pilot areas—such as Shanghai, Chengdu, and Anhui (Qu et al., 2024; Zhang, 2025; Mei, 2025)—leaving a conspicuous gap in research focused on western frontier ethnic minority regions, and particularly in a western highland region of China.

Primary and secondary education in a western highland region of China differs markedly 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. Against the backdrop of the national strategy for advancing educational digitalization—and particularly in light of international policy developments such as the 2025 Executive Order on Advancing Artificial Intelligence Education for Young Americans, which reflects a global trend toward positioning AI literacy as a national priority (Manczka, 2024)—primary and secondary school teachers in this region face considerably more complex constraints related to facilitating conditions and substantially greater pressure to achieve leapfrog development than their counterparts in inland regions. Given that ongoing stakeholder dialogue and strategic planning have yet to adequately reach frontier regions (Giang, n.d.), addressing this research gap is a matter of particular urgency.

In light of the above, this study focuses on primary and secondary school teachers in a western highland region of China, with the aim of investigating the current state of, and the factors

influencing, their acceptance of generative AI in instructional contexts. It should be noted that, given the limited scale of the data available at this stage, the present 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 difficulties, and actual needs associated with its instructional application, while providing preliminary empirical support and policy reference for the digital transformation of education in highland regions.

2. Research Design

2.1 Theoretical Framework

The present study draws primarily on the Unified Theory of Acceptance and Use of Technology (UTAUT) as its foundational theoretical framework. Proposed by Venkatesh et al. (2003), the UTAUT model posits that performance expectancy, effort expectancy, social influence, and facilitating conditions are key determinants of individuals' technology acceptance and use behavior. Given that the educational application of generative AI involves additional concerns specific to this context—including content authenticity, privacy and data security, and technological dependency—this study incorporates perceived risk as an additional analytical dimension, informed by existing research, in order to develop a more comprehensive understanding of primary and secondary school teachers' acceptance attitudes toward and reservations about AIGC in a western highland region of China.

In addition, this study draws on the Diffusion of Innovations Theory (IDT) to illuminate the processes of dissemination and adoption of AIGC within the teacher population. Rogers (2003) argues that the adoption of an innovation is not a one-time decision but rather 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 AIGC 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. Dai and Xu (2018) demonstrate that the enhancement of information literacy, the degree of engagement with educational digitalization, and the technology application capabilities of teachers in ethnic minority regions are simultaneously shaped by a range of factors, including resource availability, training support, school environment, multicultural orientations, and regional development conditions. 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 AIGC 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 attend further to how teachers in the region understand, adapt to, and apply AIGC within their particular cultural and educational contexts.

In sum, the UTAUT provides the foundational framework for analyzing teacher technology acceptance in this study; the Diffusion of Innovations Theory contributes to an understanding of the mechanisms through which AIGC 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.

2.2 Research Methods and Participants

This study employs a questionnaire survey as its primary research method, with primary and secondary school teachers in a western highland region of China as the target population. The investigation focuses on teachers' acceptance of generative AI (AIGC) in instructional contexts, their current patterns of use, the practical difficulties they encounter, and their perceived support needs. Given that empirical research on the instructional use of generative AI among primary and secondary school teachers in this region remains relatively limited, and that the sample size obtained in the present study is small, this study is explicitly positioned as an exploratory survey. Through an initial small-sample investigation, it seeks to construct a preliminary profile of teachers' current use of AIGC in the region, thereby providing foundational clues and practical reference for subsequent research. With respect to sampling, convenience sampling was employed for questionnaire distribution and collection, yielding a total of approximately 40 valid responses to date.

It should be noted that, given the relatively limited sample size, the findings of this study are intended primarily for descriptive purposes and preliminary trend identification rather than for broad generalization. Nevertheless, the study retains meaningful practical value in advancing understanding of primary and secondary school teachers' current use of AIGC in this western highland region and in accumulating first-hand evidence on the digital transformation of education in frontier ethnic minority areas.

2.3 Research Instrument

This study employs a questionnaire survey as its primary research instrument. The questionnaire items were adapted primarily from the survey instrument included in Appendix A of a doctoral dissertation submitted to Long Island University in 2025 by Jinhua Wang, titled *Survey Study on College Student's Acceptance and Attitude Towards Generative AI to Their Learning*. The items were translated into Chinese and subjected to adaptive revision in accordance with the research population and context of the present study. As the original instrument was designed primarily for the context of 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 AIGC in their instructional practice. Items pertaining to technology acceptance, current patterns of use, application difficulties, and support needs were prioritized for retention.

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

2.4 Data Processing and Analytical Methods

Following questionnaire collection, the raw data were first 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 SPSS 26.0 for all statistical analyses. Specifically, 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 AIGC tool usage, thereby presenting an overview of the sample's general composition. Second, Cronbach's α coefficients were calculated for each scale dimension to assess the internal consistency of the questionnaire. Third, descriptive statistics—including means, standard deviations, minimum values, and maximum values—were computed for all core variables in order to characterize the overall level and distributional patterns of teachers' acceptance of AIGC in instructional contexts. Finally, Pearson correlation analysis was conducted to examine the relationships among core variables, with the aim of identifying the factors most strongly associated with teachers' behavioral intention.

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 AIGC 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.

3. Findings and Analysis

3.1 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%). In terms of 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. Regarding 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%) and 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.

3.2 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 main analyses that follow.

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 ($M = 4.025$, $SD = 0.786$), suggesting that teachers place the greatest value on the role of generative AI in enhancing instructional and research efficiency. Hedonic motivation ($M = 3.942$, $SD = 0.683$) and relative advantage/task fit ($M = 3.881$, $SD = 0.707$) 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 was 3.794, reflecting a generally positive orientation among the majority of teachers toward continued use of generative AI in the future.

By contrast, technology anxiety yielded the lowest mean score ($M = 3.063$, $SD = 0.871$), 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. With respect to standard deviations, values across all dimensions ranged from 0.654 to 0.871, indicating 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.

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

Note. 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 main analyses.

3.3 Correlation Analysis Among Core Variables

As shown in Table 2, the core variables exhibit a generally pronounced pattern of positive intercorrelations. Overall, behavioral intention is significantly and positively correlated with the vast majority of antecedent variables. Among these, relative advantage/task fit demonstrates the highest correlation with behavioral intention ($r = 0.874$, $p < 0.01$), followed by social influence ($r = 0.781$, $p < 0.01$), compatibility ($r = 0.763$, $p < 0.01$), hedonic motivation ($r = 0.753$, $p < 0.01$), and performance expectancy ($r = 0.729$, $p < 0.01$). These findings indicate that the more strongly teachers perceive generative AI as aligned with their instructional tasks, as offering clear advantages, and as supported by their external environment, the stronger their intention to continue using it.

In addition, effort expectancy, facilitating conditions, and technology trust also demonstrate significant positive correlations with behavioral intention, suggesting that teachers' perceptions of the technology's ease of use, the availability of school-level support, and their degree of trust in the technology itself each exert a meaningful influence on their intention to use it. Notably, technology anxiety does not exhibit a significant linear correlation with behavioral intention ($r = 0.086$, $p > 0.05$), indicating that, within the present sample, technology anxiety does not constitute a critical determinant of teachers' continued use intention. Furthermore, relatively high correlations are also observed among certain pairs of predictor variables—for instance, between social influence and hedonic motivation, between social influence and facilitating conditions, and between relative advantage/task fit and compatibility. This suggests, to a certain extent, that teachers' positive perceptions of generative AI do not exist in isolation from one another, but rather exhibit a notable pattern of co-variation.

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.

4. 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. 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.

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.

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. 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. 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.

5. Conclusion

This study takes primary and secondary school teachers in a western highland region of China as its research population and conducts an exploratory investigation into the acceptance of and engagement with generative AI in instructional contexts. The findings indicate that the surveyed teachers hold a generally positive attitude toward generative AI overall and demonstrate a meaningful degree of continued use intention. Performance expectancy, social influence, relative advantage/task fit, and compatibility all exhibit strong associations with behavioral intention, suggesting that teachers' acceptance of generative AI is more substantially grounded in perceived practical instructional value, application adaptability, and organizational support, while technology anxiety has not emerged as a decisive factor influencing their use intention at the present stage.

From a practical standpoint, this study offers a preliminary profile of the current state of generative AI use among primary and secondary school teachers in the region, and sheds light on several key issues pertaining to technology acceptance among teachers in ethnic minority regions. For the digital transformation of basic education in this western highland region, the promotion of generative AI is not merely a question of introducing technology into the classroom; it is equally a

question of adjusting teachers' instructional approaches, strengthening school-level support systems, and optimizing the allocation of regional educational resources. Accordingly, greater emphasis should be placed on the localization, task orientation, and contextualization of technology application in subsequent implementation efforts.

This study is not without limitations. Due to constraints on research conditions, the sample size is relatively small and is intended primarily for exploratory analysis; accordingly, the conclusions of this study are most applicable to descriptive characterization and preliminary trend identification. Future research may pursue regional comparative studies with larger samples and may incorporate methods such as interviews and classroom observation to more thoroughly illuminate the actual processes, practical difficulties, and pathways of support associated with generative AI use among primary and secondary school teachers in similar highland and ethnic minority regions.

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