RESEARCH-ARTICLE

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A Study about University Teachers' Intentions Regarding Students' Usage on AI Tools: An Empirical Analysis Based on Involvement, Trust, and Perceived Risk

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Abstract

As the rise on generative artificial intelligence (GAI) in education, university teachers' attitudes have become more vital in the adoption and ethical governance of AI tools. Based on a survey of 789 humanities faculty members in universities across Guangdong Province, the study finds that teachers' involvement and trust significantly predict their intention how to adopt AI tools, while perceived risk negatively influences their thoughts. At the meanwhile significant differences are observed across gender, age, academic rank and usage frequency. The study contributes to the theoretical construction of AI educational technology acceptance models and offers practical guidance for AI literacy training, differentiated promotion strategies, and regulatory frameworks in higher education.

CCS Concepts

• **Applied computing**; • **Education**; • **Computer-assisted instruction**;

Keywords

Teacher Attitude, Educational Support Technology, Artificial Intelligence, Trust, Academic Ethics, Educational Innovation

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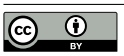

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1 Introduction

1.1 Research Background

The rapid advancement of generative artificial intelligence (GAI) has greatly expanded its involvement in educational environments. Since the emergence of ChatGPT in 2022, its application in academic writing, class assignments and content generation has grown greatly. According to The Washington Post, about 72% of American college students admitted to using AI writing tools in their courses.[1] In China, social media discussions on AI-generated content continue to surge, making it a focal point in academic integrity debates.[2] By early 2023, over 100,000 posts discussing the use of ChatGPT in completing university assignments had emerged.[3] In February 2025, China-developed AI tools gained global recognition across more than 140 countries.[4] These tools offer features such as structured content generation, stylistic consistency, rewriting suggestions and summarization, significantly impacting writing-heavy tasks in the humanities. Their widespread use has reshaped students' perceptions of originality, effort and learning objectives.

Although artificial intelligence tools have improved teaching efficiency and reduced teaching burden, their adoption has also brought challenges. How humanities teachers in universities perceive, trust, and respond to students' use of artificial intelligence writing tools has not been fully explored. This study fills this gap by proposing a theoretical model based on participation, trust, and perceived risk to test their behavioral intentions. From a theoretical perspective, this study extends models such as TAM and UTAUT to the field of education, with a particular focus on Chinese university teachers. From a practical perspective, it provides insights into the ethical and evaluative impacts of GAI, contributing to the transformation of adaptive education. Literature support and innovation: Global research increasingly examines artificial intelligence in education. Jarrahi had highlighted human-AI collaboration as a core trend.[5] Dwivedi et al. explored AI's impact on ethics, interaction and assessment in education.[6]

Kirwan discussed ChatGPT's influence on academic integrity. Obed et al. studied Tanzanian student teachers using ChatGPT during assessments.[7] Li et al. conducted surveys revealing students' mixed risk-benefit perceptions.[8] However, these studies focus on Western contexts and neglect China's educational landscape. This

study uniquely examines Chinese university humanities teachers to construct a culturally responsive model.

1.2 Research Value

While AI tools enhance teaching efficiency and reduce instructional burdens, their adoption also brings challenges. How humanities faculty members perceive, trust, and respond to students' use of AI writing tools remains underexplored. This study fills that gap by proposing a theoretical model based on involvement, trust, and perceived risk to examine behavioral intentions. Theoretically, it extends models such as TAM and UTAUT to the educational domain, particularly focusing on Chinese university faculty. Practically, it provides insight into the ethical and evaluative implications of GAI, contributing to adaptive educational transformation. This research enhances the education system's adaptability to technological changes and offers forward-looking insights for building future intelligent educational ecosystems.

1.3 Literature Support and Innovations

Global research has increasingly examined AI in education. Jarrahi highlighted human-AI collaboration as a core trend.[9] Dwivedi et al. explored AI's impact on ethics, interaction, and assessment in education.[10] Kirwan discussed ChatGPT's influence on academic integrity.[11] However, existing studies predominantly focus on Western contexts, neglecting China's educational landscape. This study uniquely examines Chinese university humanities teachers to construct a culturally responsive model. A paper surveyed 383 graduating student teachers at the University of Dar es Salaam regarding their use of ChatGPT in assessments, finding that many lacked adequate considerations of academic integrity during usage.[12] conducted an online survey of 167 students and qualitatively analyzed their perceptions of risks and benefits associated with such tools.[13] However, most existing studies focus on Western educational contexts, neglecting the roles of teachers, cultural perceptions, and policy orientations within China's unique educational environment. This research addresses this gap by adopting the perspective of humanities faculty in Chinese universities. Integrating relevant theories and empirical data, it seeks to construct a cross-cultural and cross-technological analytical framework, thereby complementing international studies with a regional-difference lens.

2 Literature Review

2.1 Involvement

As one of the core concepts in consumer behavior research, involvement was initially proposed by Sherif and Cantril in 1947, referring to the psychological relevance and degree of concern an individual exhibits toward a specific object, based on their needs, interests and values.[14] Involvement, defined as teachers' level of attention and willingness to explore AI tools by Zaichkowsky in 1985, positively correlates with technology adoption.[15] In AI-assisted writing scenarios, the higher the level of teacher involvement, the more likely they are to actively explore the tool's educational value, feedback mechanisms, and management rules.[16] Lee and Shin also pointed out that individuals with high involvement are more willing to understand the logic behind AI decisions and critically evaluate their outputs, rather than passively accepting them.[17]

2.2 Trust

Trust is one of the key psychological variables in the acceptance of consumer technology. Luhmann viewed trust as a mechanism to reduce social complexity, allowing individuals to maintain stable behavior in the face of technological uncertainty in 1979.[18] Trust in AI encompasses confidence in technical capabilities, ethics, and transparency.[19] In the context of AI use, trust includes not only confidence in technical capabilities but also perceptions of its ethics, fairness, and transparency.[20] Recent research in educational technology has increasingly focused on "trust in automation," with AI being one of its forms.[10] Yeo and Chu emphasized that perceived reliability and fairness strongly influence acceptance.[5] Jarrahi suggested that "collaborative trust" between humans and AI will become a key issue in future educational reforms, especially in tasks involving subjective judgment.[12] In this study, "trust" refers to teachers' subjective confidence in the accuracy, practicality, and educational adaptability of AI writing tools, and its role in shaping usage intention will be explored.

2.3 Perceived Risk

The concept of perceived risk was first proposed by Bauer in 1960, emphasizing that individuals tend to subjectively worry about potential negative outcomes. Kaplan and Jacoby divided risk into five dimensions: financial risk, performance risk, psychological risk, social risk, and health risk.[13] Later research extended these dimensions to include information privacy and technological uncertainty. The risks perceived by teachers mainly focus on three aspects: content accuracy, student skill degradation, and challenges to moral assessment and fairness.[7] In the field of education, risks include content accuracy and ethical challenges. Therefore, this study defines perceived risk as the cognitive assessment of potential negative educational consequences caused by artificial intelligence tools by teachers and observes whether it has a negative impact on the intention to use them.

2.4 Usage Intention

Usage intention is also a core variable in technology acceptance research. According to Theory of Planned Behavior (TPB), behavioral intention can be predicted by attitude toward the behavior, subjective norms, and perceived behavioral control[14]. In Davis's (1989) Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are key antecedents.[15] The more recent Unified Theory of Acceptance and Use of Technology (UTAUT) model integrates these theories and adds variables such as social influence and facilitating conditions.[16] In the educational context, this study defines "usage intention" as teachers' tendency to use AI writing tools in future teaching design, task assignment, or student recommendations.

2.5 Summary of Literature

In summary, existing research provides a solid theoretical foundation for this study. There is a relatively clear causal chain from trust to usage intention. However, most international studies have focused on the student perspective or corporate training scenarios, with limited attention to the psychological mechanisms of "teachers as key educational decision-makers." Therefore, this study aims

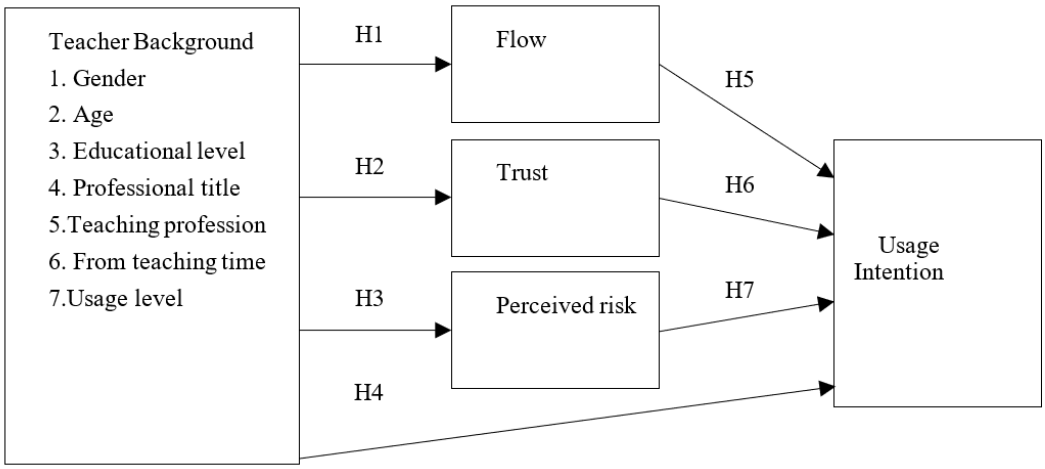

Figure 1: Research Framework

Table 1: Items And References

Construst	Items	Items Contest	Reference
Flow	5	I am very interested in the functions of AI writing tools	(Zaichkowsky ,1985), (Lu et al. ,2019)
Trust	5	I believe that the content generated by AI is trustworthy	(Rousseau et al. ,1998), (Yeo & Chu ,2022)
Perceived Risk	6	Students using AI writing may harm their original ability	(Bauer ,1960), (Lee & Shin ,2020)
Usage Intention	5	I am willing to recommend students to use AI tools in their writing	(Davis ,1989), (Venkatesh et al. ,2016)

The scale design was reviewed by experts in educational technology and psychometrics, and the wording was refined through a pilot test (n=30) to ensure the reliability and validity of the instrument.

to explore the interactive effects of "involvement, trust, and perceived risk" on "usage intention" based on a sample of university teachers in China, integrating mainstream theories to bridge the gap between theory and practice.

3 Research Methodology

3.1 Research Framework

A multidimensional model integrating TPB and TAM was developed, with involvement, trust, and perceived risk as core predictors. Demographic variables (e.g., gender, age) were controlled.[16]

3.2 Research Subjects and Sampling Method

This study focuses on humanities teachers in typical city universities in Guangdong Province, China. Due to the nature of their discipline, this group has high requirements for text quality, writing logic, and expression, making the impact of artificial intelligence writing tools on their teaching and student management particularly significant. Adopting a stratified sampling method, combining online questionnaires with offline interviews. A stratified sampling was conducted on 817 humanities teachers in Guangdong Province, resulting in 789 valid questionnaires (with a response rate of 96.6%). The sample covers multiple universities, including various academic titles and educational backgrounds, ensuring strong representativeness.

3.3 Questionnaire Design and Scale Description

The questionnaire consists of five parts, including background information and four key construct variables: Involvement, Trust, Perceived Risk, and Usage Intention. All scales use a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The measurement items for each construction are as follows:

3.4 Reliability and Validity Testing

To ensure data quality, this study conducted reliability (Cronbach's α) and validity (KMO and Bartlett's test) analyses for each construct in the questionnaire. All constructions yielded Cronbach's α values above 0.74, with the highest reaching 0.89, meeting the standard threshold of >0.7. KMO values were all greater than 0.70, and Bartlett's test of sphericity was significant ($p < 0.001$), indicating that the data were suitable for factor analysis. Principal component analysis with varimax rotation confirmed clear categorization of the

four constructs, demonstrating good construct validity. In addition, a Structural Equation Modeling (SEM) approach was used to verify the path relationships among variables, and multiple regression analysis (using SPSS 26.0) was applied as supplementary validation to enhance the robustness of the research findings.

4 Discussion

4.1 Overview of Sample Structure and Usage Patterns

The mean scores for each construct in this study are as follows: Flow (Involvement) – 3.68, Trust – 3.52, Perceived Risk – 3.04, and Usage Intention – 3.57. Most respondents demonstrated a generally positive attitude in terms of trust and involvement, although there remains a certain degree of concern regarding the risks associated with AI writing tools. Overall, female respondents slightly outnumbered males, accounting for approximately 59.4%. The majority were aged 30–39 (43.2%), and most held a Master's degree (68.9%) or Doctorate (21.4%). Regarding frequency of AI use, 21.2% of teachers reported being "proficient or frequent users," while nearly half stated they "occasionally use" or "rarely use" AI writing tools. This suggests that high-frequency users among university faculty are still in the minority, and AI writing tools have not yet become mainstream teaching instruments.

4.2 Gender Differences: Female teachers showed higher involvement, while males exhibited greater trust

The analysis shows that female teachers scored higher on the "Involvement" construct (M = 3.31 vs. M = 3.22), indicating a stronger interest in the educational implications and trends of AI writing. Male teachers, on the other hand, scored higher on "Trust" reflecting a greater confidence in the reliability of such systems during actual use. Moreover, men perceived significantly lower risk than women ($p < 0.05$), possibly indicating a more optimistic view of technological risks. Lu similarly found that women with high technological involvement tend to focus more on the process and value of usage, while men are more inclined toward efficiency and control [6].

4.3 Age Differences: Younger Teachers Had Higher Acceptance, whereas older teachers demonstrated steadier trust.

The age group of 20-29 scored the highest in participation structure ($M=3.43$, $p<0.01$), indicating that young teachers are more willing to explore the application of artificial intelligence. Meanwhile, teachers aged 50 and above scored the highest in "Trust" and "Perceived Risk", indicating a more stable foundation of trust and a more optimistic perception of risk. Jarrahi pointed out that older educators are more likely to see artificial intelligence as a teaching assistant, while younger teachers often have transformative expectations.[5] These intergenerational differences are worth considering in training and resource allocation strategies at the university level.

4.4 Academic Rank: Professors expressed trust but remained cautious about risks.

Teachers with a master's degree typically score higher than those with a doctoral degree in terms of engagement, trust, and perceived risk. Professors and associate professors exhibit a more subtle attitude towards artificial intelligence tools: while expressing higher levels of trust, they remain vigilant about potential risks. Lee & Shin pointed out that people with higher education tend to examine the application of artificial intelligence from a structural and ethical perspective, thus being cautious about its double-edged nature.[7]

4.5 Discipline-Specific Differences: Arts Faculty Show Highest Engagement

Among all disciplines, arts faculty achieved the highest scores in involvement, usage intention, and perceived risk, reflecting their strong recognition of AI's role in enhancing creative inspiration and assistive expression. They perceived AI as less capable of replacing artistic individuality, resulting in relatively lower risk concerns. This aligns with Yeo & Chu's (2022) conclusion that "teachers in highly creative fields are more inclined to view AI as a collaborative partner." [10]

4.6 Usage Frequency Differences: Greater Proficiency Enhances Trust and Adoption

From a usage frequency perspective, teachers categorized as "highly proficient or frequent users" scored significantly higher across all constructs compared to other groups:

4.7 Path analysis

The Pearson correlation analysis results showed a significant correlation between various dimensions: "flow involvement" was moderately positively correlated with "intention to use" ($r=0.56$, $p<.001$); There is a high positive correlation between "trust" and "intention to use" ($r=0.63$, $p<.001$); There is a negative correlation between "perceived risk" and "intention to use" ($r=-0.41$, $p<.001$). The above results support the theoretical direction of the previous hypothesis, that is, higher levels of participation and trust will positively promote usage intention, while risk perception plays a inhibitory role. These results once again confirm the viewpoint in the literature that the adoption of AI tools in teaching is influenced by both individual attitudes and their perception of technological uncertainty.[17]

Further construct a structural equation model (SEM) to verify the path relationships between various structural planes. The model was modeled and analyzed using AMOS 26.0, and the overall fit was good (χ^2/df=1.74, CFI=0.948, TLI=0.937, RMSEA=0.043, SRMR=0.038). The results of the model path coefficient are as follows: flow involvement → usage intention: $\beta = 0.42$($p < .001$); Trust → Usage intention: $\beta = 0.39$($p < .001$); Perceived risk → Usage intention: $\beta = -0.31$($p < .001$) ◦ The model explained about 64.7% of the variation in the "intention to use" variable (R^2=0.647), indicating that the model constructed in this study has strong explanatory power.

Table 2: Different degrees of use affect various structural surfaces

Construct	High-Frequency Users (M)	Non-Users (M)	Significance
Involvement	3.69	2.91	$p < 0.001$
Usage Intention	3.27	2.89	$p < 0.001$
Trust	3.99	3.08	$p < 0.001$

This is consistent with the core assumption of Venkatesh et al. (2016) in the UTAUT model: using experience enhances perceived efficacy, reduces technology anxiety, and thus increases willingness to use.[16]

5 Research conclusions and recommendations

This study highlights the interplay of involvement, trust, and risk in shaping AI adoption intentions. Future research should expand geographic scope and incorporate longitudinal data.

5.1 Main research conclusions

The attitude of teachers is the key to the success or failure of artificial intelligence teaching applications. Teachers with high participation and trust are more likely to actively adopt artificial intelligence tools to promote students' rational use. Strengthening trust mechanisms will help expand their use. Risk awareness is the biggest obstacle to promoting AI writing. Policy makers should pay attention to the ethical issues of teachers, fair evaluation, and student dependency. The high scoring items such as "I am willing to learn about the functions of AI writing tools" and "I believe that AI writing tools are closely related to my teaching" in the questionnaire indicate that teachers' cognitive interest and psychological attention directly promote their willingness to adopt them. Especially among the group of teachers aged 20-29, this dimension scored the highest (M=3.43), confirming the sensitivity of young people to technology.

Trust is the core driving factor for behavior transformation. In regression analysis, the higher the scores of items such as "I believe the content of artificial intelligence writing tools is generally trustworthy" and "I believe they will not mislead students", the more willing teachers are to recommend them to students (β =0.63, p<0.001), and this trend is also reflected in the teacher group with high frequency of use (M>3.5). Perceived risk significantly suppresses the intention to use. Some teachers have expressed clear concerns about issues such as "artificial intelligence writing causing students to lose their original abilities" and "the hidden dangers of inaccurate information and plagiarism". Lee & Shins also pointed out that risk perception is one of the biggest obstacles to technology adoption.[7]

The background characteristics of teachers have a significant impact on differences in behavioral attitudes. There are significant inter group differences in variables such as gender, age, professional title, and major in the data table. The use of proficiency significantly improves all dimensions, and teachers who highly utilize artificial intelligence exhibit a significant positive skewed distribution in the four dimensions of participation, trust, risk perception, and behavioral intention. Especially in the items "I believe AI writing can improve lesson preparation efficiency" and "I am willing to let students try and revise", the average score is close to 4.0, confirming Venkatesh et al.(2016) suggestion that perceived efficacy affects the acceptance path of adoption behavior.[16]

5.2 Suggestions and practical inspirations

Establish an AI education literacy training mechanism and clarify usage boundaries. Universities can establish regular training courses on AI writing tools to help teachers establish positive cognitive pathways, covering areas such as logical understanding of writing, methods for verifying results, and guidance for student use. Based on the risk dimension of teachers' concerns, it is recommended to introduce guidelines, clarify boundaries, and enhance transparency in their use.

Establish an interdisciplinary shared practice platform to promote knowledge flow. For high willingness professional teachers in art, education, and other fields, they can be guided to form an "AI integrated writing course laboratory" to provide integrated cases and evaluation templates for other disciplines and promote horizontal knowledge circulation within the school.

Emphasize group differentiation technology adoption strategies and provide targeted support. Considering the impact of gender, professional title, proficiency in use, etc. on technical attitudes, a layered promotion strategy can be customized: such as providing creative tool training for young teaching assistants and targeted support such as AI assisted grading for senior professors.

5.3 Research limitations and prospects

The sample source of this study is concentrated in universities in Guangdong Province, and the data is cross-sectional. The longitudinal depth and width of the explanatory variables are significantly insufficient; More psychological mechanism variables can be introduced in the future to refine the prediction path; The next step could be to consider further expanding the relationship between AI tools and teacher evaluation trust mechanisms, as well as tracking changes in student learning autonomy.

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