

Exploring Teachers' Perspectives and Strategies on Student Assessment Using Generative AI in Chinese Universities

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Abstract—Generative artificial intelligence (AI) provides changes to higher education, which has attracted widespread attention from researchers and educators. However, the existing research has not comprehensively examined how university teachers perceive the use of generative AI for student assessment and what strategies should be implemented when applying this technology in China. This study employed mixed-method research to explore teachers' perceptions of student assessment using generative AI. We collected data through interviews and surveys from Chinese universities. Our findings demonstrate that a majority of teachers agreed with the power of AI tools to enhance the overall quality of the evaluation and their work efficiency, since they can alleviate the burden associated with manual grading and offer prompt feedback. University teachers expect to prepare their knowledge and skills for the usage of new technologies through training programs and professional development opportunities. Besides, this study notes some concerns like data security and privacy fairness, biases inherent in AI algorithms, overreliance on automation, and limited critical human thinking. These challenges lead to the need for further explorations to provide holistic feedback and balance the AI assessment approach with human judgment to meet reasonable standards. This study provides a general introduction to AI-assisted assessment transformation in the university setting, and more empirical inquiries on different types, phases, objectives, and strategies of assessment in practices are suggested.

Keywords—generative AI, student assessment, higher education, Chinese university teachers, AI- integrated assessment

I. INTRODUCTION

The rapid advancement of artificial intelligence (AI) technologies globally is transforming work, study, and life [1, 2]. Particularly in the field of education, generative AI creates new content from existing data, which shows great potential in reducing teachers' workload, improving evaluation objectivity, and enhancing educational quality [3, 4]. The Chinese government has emphasized AI in education through policies like the "New Generation Artificial Intelligence Development Plan" and the Ministry of Education's "AI Innovation Action Plan for Institutions of Higher Education". These initiatives drive educational innovation and reform, necessitating policy-oriented strategies for Chinese university teachers to use AI. It

is necessary to explore if teachers' generative AI usage experiences are consistent with these policies.

Generative AI is transformative across all educational levels, especially in universities. Traditional student assessment methods are labor-intensive and resource-constrained [5]. Generative AI offers innovative assessment methods, personalized learning experiences, and improved study outcomes [1, 6]. Collaborations between Chinese universities and AI companies, such as iFlytek's Spark Big Model, demonstrate generative AI's potential in reducing workload and enhancing assessment efficiency [7-8].

Despite the growing focus on generative AI in assessment, several critical issues remain underexplored [9-11], particularly in Chinese higher education. Teachers' experiences and attitudes towards AI are crucial for successful integration. Understanding their views on AI's assessment efficiency, perceived challenges, strategies, and readiness is essential. This study addresses the following questions: 1. What are Chinese teachers' perceptions of the accuracy and consistency of the use of AI in assisting student assessment? 2. What challenges do Chinese teachers perceive when using AI in student assessment, and what strategies do they employ in practice? 3. What is the readiness of Chinese teachers for using AI in student assessment?

II. LITERATURE REVIEW

A. Impacts and Challenges of Generative AI in Assessment

The potential of generative AI in educational assessment is particularly noteworthy. Traditional assessment methods often rely on teachers' manual grading, which is time-consuming and susceptible to subjective biases. Generative AI, through natural language processing and machine learning technologies, can automatically analyze and grade student assignments and exams, providing objective and consistent evaluation results [12]. Various AI Algorithms, such as decision tree, artificial neural networks, support vector machine, K-nearest neighbor, linear regression, and Naive Bayes, have been applied to predict student performance [13]. These algorithms are innovative approaches to creating models that can identify and uncover significant hidden patterns and extract useful information from vast amounts of data. A generative AI algorithm allows

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contextually generated human-like text based on the input it receives, which can offer immediate feedback to students, helping them identify and correct learning issues promptly, thereby enhancing their self-directed learning abilities [14, 15]. Besides, machine learning algorithms are capable of being used on extensive datasets that represents a wide range of student characteristics. To follow this technological trend, a growing number of Chinese universities are considering or have already partnered with companies that have AI educational products [12]. For instance, iFlytek's Spark Model has been piloted in several universities, utilizing generative AI to grade assignments and give feedback.

Previous studies also noted existing challenges and ethical considerations is using AI. A primary concern that scholars and educators agreed on is data privacy and security. Generative AI systems require substantial amounts of student data for training and optimization, which necessitates stringent privacy protection measures to prevent data breaches and misuse [16, 17]. Furthermore, issues of algorithmic bias and fairness are critical. AI algorithms can inherit and amplify biases present in the training data, leading to unfair assessment outcomes [16, 17]. Another problem is the potential overreliance on generative AI for educational assessment, which may undermine teachers' subjective judgment and professional capabilities, potentially affecting the diversity and flexibility of education [18].

The assessment approaches in the university setting must evolve in order to respond to the influence of generative AI. However, challenges such as data privacy, algorithmic bias, and overreliance on AI must be carefully managed. To achieve effective and equitable use of generative AI in education, ongoing technological improvements, regulatory frameworks, and comprehensive training and support for teachers and students are essential. These efforts could maximize the advantages of generative AI, fostering innovation and advancement in the educational sector. Thus, the current situation regarding understanding and application of generative AI in student assessment of Chinese university teachers is worth exploring to better cope with its impacts.

B. Teachers' Readiness for Using Generative AI

Generative AI technologies have a profound influence on the skills and methods that teachers use to evaluate student learning. The technologies could make the assessment processes easier but may also create differences in teachers' ability to accept and master digital technologies. Some teachers hold a positive attitude towards applying generative AI in education, regarding that it can enhance teaching efficiency, provide personalized learning experiences, and reduce their workload, while some are cautious about the application of generative AI due to the ethical and privacy issues that the rapid development of technology may bring [19]. Parikh [20]'s study identified that teachers find generative AI beneficial for automating the grading of assignments and exams, providing immediate feedback, thus saving time and improving the objectivity and consistency of assessments [19, 20]. Additionally, generative AI can help teachers identify the students' individual needs, allowing for more targeted teaching plans [21].

Teachers have recognized that generative AI revolutionizes assessment methodologies; thus, they must proactively prepare

for digital transformation. Existing research also noted some basic paths or strategies for teachers to use generative AI effectively in assessment practices [18]. Professional training is crucial for teachers to master the methods and techniques of using generative AI tools [18, 19]. Teachers should adapt assessment dimensions and evaluation methods to reduce students' inappropriate usage of AI tools, involving in-class examinations and out-class questions that need deeper thinking [22]. Teachers ought to prioritize the development of critical thinking and problem-solving skills when creating assessments, which are vital literacy in assessment design, implementation and interpretation, and ethical use [23].

Beyond technical preparedness, the readiness for teachers' assessment literacy, diverse assessment design, and assessment-driven teaching innovation are also necessary. Generally, teachers agree that generative AI should be integrated into student assessment because they trust the information that digital tools generate. Some noted the usage limitations and impacts on their feedback; thus, they used AI as an assisted tool in evaluation instead of a replacement. For instance, some teachers regarded that the feedback provided by ChatGPT was frequently lengthy and intricate, yet it contained irrelevant remarks, and some observed that ChatGPT may employ distinct assessment standards compared to their own, and its deficiency in specific knowledge regarding the class and students could result in unsuitable comments [14, 18, 19]. Teachers should be well prepared in assessing AI-generated feedback in various aspects, regardless of the powerful machine.

III. METHODS

This study employs a mixed-methods approach by collecting qualitative and quantitative data to understand the perceptions, challenges, strategies, and readiness of teachers in Chinese higher education institutions regarding using generative AI in student assessment. Sixty-eight teachers from public universities in central and southern China participated in a survey in the form of a 5-point Likert scale. Subsequently, 3 senior lecturers participated in semi-structured interviews, which offered explanatory insights for the statistical results. We used SPSS 26.0 and Atlas.ti 8.0 for data analysis. The explanatory sequential design in mixed research methods is beneficial in providing a more comprehensive and in-depth understanding of research questions.

The questionnaire survey is consists of three dimensions, namely accuracy and consistency, perceived challenges and strategies, and readiness for generative AI integration in student evaluation. The instrument was carefully designed by the researchers, and the content validity was verified by three experts in the field of education. Six respondents participated in the pre-test and put forward optimizing feedback concerning fluent expression, understanding of the Chinese language, and respondent's reading habits, which ensured the face validity of this data collection tool. The reliability of the instrument was assessed using Cronbach's alpha, which reached .923 in this study. The 3 dimensions showed reliability coefficients of .883, .697, and .913, respectively, indicating good reliability. In the qualitative phase, researchers used a series of open-ended questions to collect data from selected teachers. Thematic analysis was employed to analyze the qualitative data and to

provide an in-depth interpretation of the quantitative findings. A coding form was collaboratively created by two authors and subsequently evaluated by another author to identify the variables that should be extracted.

IV. RESULTS AND DISCUSSION

A. Perceptions on Accuracy and Consistency of Assignments Evaluation Using AI

The survey data shows university teachers' perceptions of the application of AI in the assignment assessment. Table I shows their responses regarding its impacts on the accuracy and consistency of evaluation, indicating a generally positive attitude towards AI-enabled assignment design and evaluation (Mean=3.69). Notably, Item 1 has the highest value (Mean=3.90) among this dimension, illustrating teachers' high level of recognition of AI's ability to enhance the accuracy of work evaluation. Item 2 (Mean=3.68) and Item 3 (Mean=3.69) also received a high average value, showing the recognized function of technology in supporting student understanding of tasks.

TABLE I. SURVEY FINDINGS ON AI-SUPPORTED STUDENT EVALUATION'S ACCURACY AND CONSISTENCY

Item	Mean	SD
1. Accuracy of assignment	3.90	.917
2. Understanding of assignment	3.68	.999
3. Assisting in mastering the course content	3.69	.935
4. Consistency of assessment	3.60	.866
5. Generative feedback	3.60	.995
Dimension 1	3.69	.779

Subsequently, we summarized themes and sub-themes based on coding interview data, which further provided evidence for understanding quantitative findings. As shown in Table II, the results indicate the diverse perceptions of generative AI in assisting assignment evaluation, revealing both the recognition of its values and potential constraints. Some interviewees mentioned the positive impacts of generative AI on the wide range of resources, various learning experiences, working efficiency, and available feedback. Nevertheless, concerns have been raised concerning the reliance on digital tools since excessive dependence may hinder students' engagement with learning activities, hindering autonomous learning. University teachers also pointed out the necessity of careful consideration of ethical norms due to the authenticity and originality of the evaluation. It is also a problem whether the understanding error of evaluation criteria can be avoided during the interaction between the machine and human beings.

TABLE II. INTERVIEW FINDINGS ON AI-SUPPORTED STUDENT EVALUATION'S ACCURACY AND CONSISTENCY

Theme	Sub-theme	Code
Impact of generative AI on assignment evaluation	Recognized value	Accuracy of assessment Consistency of assessment Rich resource Learning experience Evaluation efficiency
	Potential concerns	Ethical challenges Over-reliance on technology Understanding of evaluation criteria

The results are in line with previous findings [24, 25] that the use of AI provides support for teachers in creating innovative ways of evaluation. The advanced technical characteristics of generative AI, such as using complex algorithms, models, and rules to learn from massive data sets to create new content, could be the reason behind accurate and consistent evaluations. Researchers have explored several applications in assessment: Generative AI tools can act as virtual teaching assistants, asking learners questions with straightforward explanations and giving them instructions on a variety of topics [18]; AI-driven writing assistants are able to automatically grade and give comments on student assignments by identifying elements like grammar, sentence structure, and word usage [20]; the application of AI learning analytics dashboards are used to visualize learning performance and learning achievements [19].

Through the interpretation of data generated by AI tools, teachers can get insight into students' learning behaviors. This supports educators in improving their decision-making and teaching intervention strategies. The application of generative AI tools has the potential to enhance assignment assessment by customizing individual learning needs and learning preferences. When using AI tools in educational practices, university teachers should consider how AI can effectively integrate existing evaluation strategies. Thus, today, university teachers can acquire the skills to effectively employ diverse AI technologies for monitoring students' learning progress, facilitating feedback, and adjusting their teaching practices.

B. Perceptions on Challenges and Strategies of Assignments Evaluation Using AI

The second section of quantitative results indicates difficulties perceived by university teachers and approaches suggested by them to improve AI in the assignment assessment. Table III presents perceptions on challenges and strategies related to integrating AI into assessment. Item 8 has the highest value (Mean=3.90) among this dimension, illustrating that teachers consider participating in training provided by universities or other institutions to be an effective strategy for promotion AI skills in evaluation. It shows the necessity of attending relative training for teachers' development to engage with AI technology. Despite of a set of application difficulties, teachers are aware of advanced usage strategies to facilitate their teaching and assessment with an above-average score (Mean=3.52). In terms of strategies, participants particularly consider fairness a critical aspect of using AI for evaluations and actively seek methods to ensure bias mitigation and equity, and a problem-solving mindset, focusing on how AI can address specific educational challenges.

TABLE III. SURVEY FINDINGS ON AI-SUPPORTED STUDENT EVALUATION'S CHALLENGES AND STRATEGIES

Item	Mean	SD
6. Technical difficulties	3.12	1.100
7. Awareness of usage strategies	3.54	.999
8. Attending to training	3.90	.900
9. Pay attention to fairness	3.53	.855
10. Problem-oriented	3.53	.969
Dimension 2	3.52	.651

Then, the researchers conducted coding to summarize sub-themes based on interview data to better understand survey results. Table IV indicates perceived the challenges and strategies of generative AI in assisting assignment evaluation. Interviewees mentioned challenges of using new technologies, like technical barriers, pedagogical adaption, and communication problems. The reason may be that most teachers have limited experience and are not familiar with algorithms behind AI tools. The lack of skills concerning data input, parameters setting, and classification could reduce teachers' confidence in application. Regarding strategies, respondents highlighted that collaboration among teachers and between departments is greatly enhanced by AI tools, which facilitates shared assessments and consistency in grading standards. Teachers reported that their institutions provide regular professional development opportunities tailored explicitly to AI in education, helping them to stay updated with AI tools and methodologies. Also, the findings indicated various assessment forms by integrating formative and reflective or considering peer evaluation are suggested.

TABLE IV. INTERVIEW FINDINGS ON AI-SUPPORTED ASSIGNMENT EVALUATION'S CHALLENGES AND STRATEGIES

Theme	Sub-theme	Code
Challenges and strategies of generative AI on assignment evaluation	Challenges	Technical barriers Pedagogical adaption Communication problems Lack of unified evaluation standard Lack of human thinking Lack of algorithms knowledge
	Strategies	Collaboration Professional development Integration of formative feedback Peer assessment

Challenges like AI-integrated misunderstanding and limitations in the education filed have been widely identified [26]. It is important to understand what difficulties modern teachers face when using AI-supported assignment evaluation to prepare them with adequate AI literacy to overcome these challenges. Research have proven that technological barriers could harm the quality of teachers' delivery of course content and student assessment [19]. This suggests some opportunities and obstacles regarding educators' utilization of AI for assessment. Teachers are currently facing the issue of adapting to digital transformation and meeting new needs that were not included in their previous preparation for effective teaching.

C. Perceptions on Readiness of Assignment Evaluation Using AI

As shown in Table V, the survey data indicates participants' views of the readiness to apply AI in the assignment evaluation. Most respondents felt they needed to prepare to integrate AI into assignment evaluations due to needing more basic knowledge and operating skills (Mean=3.25). Some teachers report that their institutions have the necessary technological infrastructure to support AI in evaluation (Mean=3.15), and some believe institutions have clear, actionable plans to integrate AI into educational processes, including regular updates and professional development (Mean=3.59). Although over half of respondents strongly agreed or agreed that their organization provides sufficient funding for AI initiatives, Item 14 has the lowest score among the survey. Providing adequate financial

support for the use of AI remains a challenge for universities. Teachers perceived that their leaders are proactive and well-informed about the advantages of using AI in work (Mean=3.10). These results suggest a generally positive but varied perception of readiness across different factors, with significant strengths in individual preparation and technology leadership but limitations in funding and infrastructure.

TABLE V. SURVEY FINDINGS ON READINESS OF AI-SUPPORTED STUDENT EVALUATION

Item	Mean	SD
11. Individual preparation	3.63	1.132
12. Facility	3.15	1.162
13. Ongoing teacher development plan	3.59	1.136
14. Funding	2.79	1.204
15. Technology leadership	3.10	1.186
Dimension 3	3.25	1.003

Also, the authors summarized themes and sub-themes based on coding interview data that provided an explanation for comprehensive understanding. As shown in Table VI, the findings show that readiness for AI-supported assignment evaluation can be classified into individual and organizational aspects that are consistent with previous findings [22, 27]. Regarding individual preparation, most interviewees are aware of AI's potential in education, with many having encountered various forms of tools and resources. Teachers' acceptance and self-efficiency of using AI for student evaluation are generally moderate, but relatively high among those who have seen positive outcomes from pilot projects in the university. Teachers significantly differed in self-perceived knowledge and skills to apply AI in assessment.

TABLE VI. INTERVIEW FINDINGS ON READINESS OF AI-SUPPORTED STUDENT EVALUATION

Theme	Sub-theme	Code
Readiness of generative AI on assignment evaluation	Individual factors	Awareness; Acceptance; Knowledge; Skill; Self-efficacy
	Organizational factors	Financial support Technical support Digital infrastructure Teacher development plan Leadership and management

Regarding organizational aspects, technical support is available in most institutions, but the quality and speed of support vary. Quick and effective technical support is linked to better acceptance and usage of AI tools. Most teachers are satisfied with infrastructure and financial support. There is a noted need for these development plans to be more adaptive and regularly updated to keep pace with technological advancements. In line with existing arguments [22, 26], technology leadership plays a critical role in bridging these gaps and fostering an environment conducive to the adoption of AI in educational assessment. There is a base level of readiness in terms of individual preparation; significant variability exists in organizational preparation, particularly in financial and infrastructural aspects.

V. CONCLUSION

This empirical study provides a general introduction to Chinese university teachers' perceptions of AI-assisted student assessment by elaborating quantitative and qualitative evidence. The findings offer new avenues for research in educational technology, particularly in understanding how AI can influence teachers' evaluation practices. It contributes to the literature on AI-driven assessment by adding evidence through contextual originality in China to existing knowledge. Future studies are suggested in more contexts to explore what digital competencies are critical for university educators to equip themselves with the necessary skills that enable AI-driven applications in the evaluation and cultivate students to be well-prepared to interact with AI and for work in the technology-enriched context.

Today's universities are experiencing digital transformations facilitated by AI techniques, which require more varied and creative methods of assessment. Although most teachers acknowledge the value of AI applications, there is a lack of guidelines or recommendations to inform them of the specific abilities required to facilitate student assessment. Teachers ought to overcome many obstacles when integrating AI into evaluation, including ethical, technical, and assessable issues. Through the present research, understanding teachers' perceptions could promote the adoption of technology in evaluation, improve AI-driven effectiveness, and balance AI-driven and human-mediated assessment. Teachers should consider new assessment approaches and adapt their instructional methodologies to align with cultivating students in the AI age. The influence of AI tools in different types of evaluation, like learning performance, learning process, assignments, examination analysis, etc., should receive constant attention.

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