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Exploring Pathways to Enhance Students' Acceptance of an Artificial Intelligence Speech Evaluation Program for EFL Speaking Practice from a Translanguaging Perspective: An Application of the Technology Acceptance Model

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Abstract: In the era of globalization and digitalization, translanguaging, which integrates multimodal resources, is gaining prominence in education. As AI oral evaluation systems are increasingly used in language teaching, translanguaging practices are becoming more common. Traditional English education emphasizes basic "listening and speaking" skills, but these fall short in the multimodal educational environment, necessitating a focus on transmodal listening and speaking abilities. This paper uses the Technology Acceptance Model (TAM) to analyze its impact on students' acceptance of oral evaluation and its limitations. The study finds that most participants find the AI program useful, enjoyable, and easy to use, with a strong intention to continue. Perceived usefulness (PU) and perceived enjoyment (PE) are key predictors of behavioral intention (BI). However, issues like user interface design, automatic feedback accuracy, and the lack of face-to-face interaction are noted. Based on these findings and from a translanguaging perspective, this paper proposes ways to boost students' acceptance of AI oral evaluation systems. It suggests optimizing system design for multimodal interaction, tailoring the interface for diverse cultures, enriching content with cross-cultural elements, and using project-based and cooperative learning. These steps aim to enhance the application of educational technology and students' oral learning motivation and confidence.

1. Introduction

In the realm of education, the advent of AI technology has revolutionized language learning by driving the interaction and integration of multimodal resources (text, images, sounds). This technological empowerment has fostered richer meaning construction through mutual metaphorical interpretation across modalities, giving rise to multimodal, multilingual, and multisymbol fusion in meaning expression. Through the collaboration of modality, language, and symbol systems, accurate semantic conveyance is achieved.

Technological media have significantly expanded the outreach of language, breaking free from

traditional classroom and text-based confines to permeate social practice, virtual scenarios, and cross-cultural communication. The ability of AI oral evaluation systems to retain and present diverse cultural, regional, and social language styles and habits has enriched semantic connotations. Moreover, increased attention to heterogeneity allows for personalized learning by adapting to individual differences in language proficiency, learning styles, and cognitive traits.

AI oral evaluation systems create an immersive, interactive multimodal learning environment. Real-time interaction, simultaneous multimodal information reception, and multi-sensory stimulation facilitate the internalization of language knowledge. Immediate and accurate feedback from the system helps learners refine strategies and expressions, enhancing the quality and efficiency of language acquisition and promoting transmodal listening and speaking abilities.

China has made remarkable strides in this field, with several self-developed AI speech oral evaluation systems (e.g., AI Oral Evaluation System, Xinghuo Yuban) emerging. However, the full potential of these systems relies on students' active acceptance and positive engagement. Student resistance or low willingness to use the system can limit its effectiveness. Thus, understanding students' acceptance is vital for maximizing the impact of educational technology and boosting students' oral-learning motivation and confidence.

Using the TAM framework and considering Chinese educational realities, this paper systematically examines the environmental, personal, and educational factors affecting college students' acceptance of AI oral evaluation systems and their influence on behavioral intentions. From a translanguaging perspective, focusing on language outreach, diversity, and heterogeneity, it proposes key strategies to enhance acceptance: optimizing system design for multimodal interaction, customizing the interface for diverse cultures, enriching content with cross-cultural elements and real-world scenarios using cultural symbols, and adopting project-based and cooperative learning methods to fully engage students' initiative [1].

2. Research on Students' Acceptance of AI Oral Evaluation Systems Based on the TAM

2.1 The Definition and Development of the TAM

Davis introduced the Technology Acceptance Model (TAM), which posits that perceived usefulness (PU) and perceived ease of use (PEOU) are key determinants of users' adoption intentions for new information systems, namely behavioral intention (BI) (Davis, 1989). In the context of AI oral evaluation systems, students' perception of the system's ability to enhance their oral skills (PU) and their perception of how easy it is to use the system (PEOU) directly influence their usage intention (BI), which subsequently affects actual usage behavior (AU)(see figure 1).

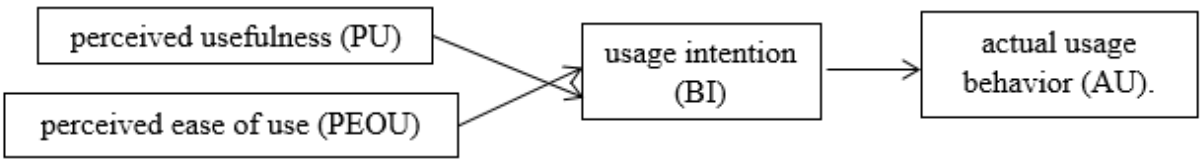

Figure 1: Technology Acceptance Model (Davis, 1989)

Given the high level of technological familiarity among the younger generation, recent TAM studies have found non-significant relationships between PEOU and BI (Zou et al., 2023). Consequently, this study does not consider the influence of PEOU.

Venkatesh and Davis (2000) integrated constructs related to social influence and cognitive instrumental processes into the TAM as factors influencing PU. Since then, researchers have expanded the model by introducing various external variables that significantly impact PU and

PEOU. A TAM incorporating external factors not only provides in-depth insights into users' perceptions of the system but also offers specific guidance for system development (Abdullah & Ward, 2016). When applying the TAM to the use of AI oral evaluation systems, carefully selected external variables should be included to better explain students' acceptance in this context.

However, there is a paucity of published studies investigating the external factors affecting students' acceptance of AI oral systems. After an extensive search in SSCI and CNKI academic journals, the author found only one empirical study (Zou et al., 2023) that examined the personal factor (students' intrinsic motivation) influencing their acceptance of AI oral evaluation systems. Unfortunately, this study did not cover the personal factor of perceived trust, nor did it address environmental and educational factors, which are crucial in the adoption of new technologies (Ma et al., 2022). Considering personal, environmental, and educational factors is essential as they are indispensable for deepening educators' understanding and achieving educational goals (Ma et al., 2022). This study, drawing on the research of Ma et al. (2022), attempts to add three external variables—perceived trust (PT), subjective norm (SN), and cognitive feedback (CF)—from the perspectives of students' personal, environmental, and educational factors (Table 1 provides the definitions and supporting literature for these variables, and illustrates the relationships among the relevant variables). It systematically explores the factors influencing students' use of AI oral evaluation systems, using the TAM as a theoretical foundation [2].

Table 1: External Variables, Their Definitions, and Supporting Literature

Group	External Variable	Definition in the Study	Supporting Literature
Individual	Perceived Trust	Students' confidence in the reliability and trustworthiness of the AI oral evaluation system, i.e., their belief that the system can perform its functions as expected.	Arpaci (2016)
Environmental	Subjective Norm	Students' perception of what important others (such as classmates, friends, family, etc.) think they should do regarding using the AI oral evaluation system.	Venkatesh et al. (2003)
Educational	Cognitive Feedback	The feedback provided by the AI oral evaluation system to help learners reflect on their oral quality, problem-solving processes, and solutions, aiming to build a more effective oral cognitive model.	Van Merriënboer & Kirschner (2018)

2.2 Empirical Research Results and Discussion

2.2.1 Perceived Trust

Students' confidence in the reliability and trustworthiness of the AI oral evaluation system, i.e., perceived trust, significantly affects their behavioral intention ($\beta = 0.35$, $p < 0.01$). This result aligns with Arpaci's (2016) research, indicating that trust serves as a crucial bridge in establishing a connection between users and technology. In the context of AI oral evaluation systems, students' trust in the system directly influences their willingness to use it. If students harbor doubts about the system's accuracy, fairness, and stability, they are likely to exhibit a resistant attitude towards the system, thereby affecting its acceptance.

In actual teaching scenarios, some students may be concerned about scoring deviations or misjudgments in the AI oral evaluation process, which in turn raises questions about the system's reliability. To enhance students' perceived trust, educators and system developers need to

implement a series of measures, such as disclosing the system's evaluation algorithms and standards, providing channels for user evaluation and feedback, and regularly updating and optimizing the system, thereby bolstering students' confidence in the system.

2.2.2 Subjective Norm

The recommendation of important others, i.e., subjective norm, also has a positive impact on students' behavioral intention ($\beta = 0.28$, $p < 0.05$). This result underscores the significant role of the social environment in shaping user behavior. In the learning process of students, the opinions and suggestions of important others, such as classmates, friends, and family, often have a substantial impact on their decisions. If students around them have a positive attitude towards the AI oral evaluation system and recommend its use, students are more inclined to try using it [3].

In a classroom setting, if most students believe that the AI oral evaluation system is beneficial for improving oral ability and actively share their experiences and gains from using the system, other students are likely to be influenced by them and develop an interest in trying the system. Therefore, educators can organize group discussions, sharing sessions, and other activities to promote communication and interaction among students and create a positive usage atmosphere, thereby improving students' subjective norm level.

2.2.3 Cognitive Feedback

The quality of feedback provided by the system significantly affects perceived usefulness ($\beta = 0.42$, $p < 0.001$), which in turn influences students' oral learning outcomes. This result confirms the effectiveness of personalized feedback in enhancing learning motivation and performance. In AI oral evaluation systems, feedback is a vital component of students' learning process. High-quality feedback can help students understand their oral proficiency, identify existing problems, and provide targeted improvement suggestions, thus facilitating students' learning and progress.

When the AI oral evaluation system can offer detailed feedback on students' oral performance in terms of pronunciation, grammar, vocabulary, etc., and provide specific improvement methods and practice suggestions, students can carefully analyze the feedback and engage in targeted learning and training to enhance their oral ability. Conversely, if the feedback provided by the system is vague and lacks pertinence, students may not be able to obtain effective information from it, thereby affecting their perceived usefulness and acceptance of the system [4].

2.2.4 Interaction among Influencing Factors

In addition to their individual effects, there is a certain interaction among perceived trust, subjective norm, and cognitive feedback. Perceived trust can amplify the influence of subjective norm on students. When students have a high level of trust in the system, they are more likely to value the recommendations of important others and are willing to try using the system. At the same time, subjective norm can also, in turn, affect perceived trust. If students around them generally believe that the AI oral evaluation system is reliable and effective, students may feel more at ease when using the system, thereby enhancing their trust in it.

Cognitive feedback is also closely related to perceived trust and subjective norm. High-quality cognitive feedback can improve students' perceived usefulness of the system, thereby enhancing their trust in it. When students have a high level of trust in the system and receive positive recommendations from important others, they may be more willing to take the feedback provided by the system seriously and make improvements based on it [5].

2.2.5 Limitations of This Empirical Study

This study only considered three external variables: individual factor (perceived trust), environmental factor (subjective norm), and educational factor (cognitive feedback). It paid insufficient attention to the multimodal, multilingual, and multisymbol fusion characteristics inherent in translanguaging and did not fully cover the relevant factors affecting students' acceptance.

- Adding variables related to language outreach: Introduce students' cognitive variables regarding the application value of the AI oral evaluation system in different scenarios (such as social practice, virtual scenarios, and cross-cultural communication). Understanding whether students believe that the system can help them effectively use language in actual multimodal scenarios, for example, in simulated international business negotiations and overseas travel communications, whether the system can provide oral evaluation and feedback that closely aligns with actual needs, can enhance students' perception of the system's practicality in different scenarios and affect their acceptance.
- Incorporating variables related to language diversity: Consider students' cognition of the system's ability to present and adapt to the language styles and expression habits of different cultures, regions, and social groups. For example, whether students believe that the system can accurately identify and provide feedback on the characteristics of different English variants (such as British English and American English), as well as handle oral expressions with specific cultural connotations. This will affect students' recognition of the system's diversity and, consequently, their willingness to accept it.
- Considering variables related to language heterogeneity: Add students' cognitive variables regarding the system's ability to adapt to individual language proficiency, learning styles, and cognitive characteristics. Understanding whether students feel that the system can provide personalized evaluation and feedback according to their personal differences, for example, for students with different language foundations, whether the system can provide evaluation tasks of appropriate difficulty; for students with different learning styles (such as visual, auditory, and kinesthetic), whether the system can use appropriate feedback methods to meet students' personalized needs and improve their acceptance of the system.

3. Translanguaging-Empowered AI Oral Evaluation Systems

3.1 The Connotation of Translanguaging

Translanguaging is a complex and highly innovative knowledge-construction process that breaks through the rigid patterns of traditional language learning and communication, opening up a broad, diverse, and profound learning and practice space for learners. Its core value lies in constructing a comprehensive framework that integrates multiple dimensions such as personal history, experiences, environment, attitudes, ideologies, cognition, and physical abilities. Within this framework, learners can flexibly mobilize multilingual, multisymbol, multimodal, and multi-sensory resources in specific social contexts to deeply construct knowledge and meaning and achieve coherent and meaningful expression [6].

In essence, the "trans" in translanguaging encompasses three profound connotations. First, it transcends the traditional limitations of language outreach. Traditional views often narrowly define language as the conversion between specific languages (such as Chinese and English). However, from a translanguaging perspective, language outreach has been significantly expanded, emphasizing the deep integration of multiple language resources and modalities. For instance, in an English classroom, when introducing traditional English festivals, in addition to textual language

descriptions, teachers can also incorporate multimedia resources such as pictures and videos. For example, when introducing Christmas, displaying pictures of Christmas trees, Santa Claus, and gifts, and playing Christmas carols and Christmas-themed animated videos can enable students to more intuitively feel the festival atmosphere, enriching their understanding and use of relevant vocabulary and expressions. This multimodal communication system greatly expands the boundaries of language learning.

Second, it goes beyond a simple understanding of language diversity. The world's languages are rich and diverse, and each language carries specific cultures and histories. The language styles and expression habits of different cultures, regions, and social groups vary greatly. Taking British English and American English as examples, there are obvious differences in pronunciation, vocabulary, and expression habits between them. For example, in terms of vocabulary, British English uses "flat" to express "apartment" in American English; in pronunciation, there are also differences in the pronunciation of some vowels and consonants between British English and American English. Translanguaging requires AI oral evaluation systems to accurately identify and present these differences, respecting and tolerating multilingual elements such as slang and dialects. For example, the system should be able to accurately identify and evaluate students' use of English expressions with specific regional characteristics, allowing students to be exposed to a real and diverse language environment and broaden their language horizons [7].

Third, it overcomes the neglect of language heterogeneity. There are significant individual differences among learners in language proficiency, learning styles, and cognitive characteristics. Traditional teaching and evaluation methods often adopt a "one-size-fits-all" model, which is difficult to meet students' personalized needs. From a translanguaging perspective, AI oral evaluation systems should have strong adaptability and be able to provide accurate evaluation and feedback according to students' individual differences. For students with weak language foundations, the system can provide evaluation tasks of appropriate difficulty, starting from basic vocabulary and grammar, and gradually guiding students to improve their language ability. For example, the system can first provide simple daily-use expression evaluations, such as greetings and self-introductions, and then gradually increase the difficulty after students master them. For students with different learning styles (such as visual, auditory, and kinesthetic), the system can adopt diverse feedback methods. For visual learners, the system can use text prompts to explain problems in oral expressions in detail; for auditory learners, the system can provide feedback through voice explanations; for kinesthetic learners, the system can combine action demonstrations, such as showing correct pronunciation mouth-shapes and body language, to help them better understand and improve [8].

3.2 Pathways to Enhance Students' Acceptance of AI Oral Evaluation

In terms of system design, emphasis should be placed on strengthening multimodal interaction functions to achieve a more natural and diverse interaction between students and the system. In addition to regular voice input and output functions, functions such as image recognition and gesture control should be incorporated. For example, in a simulated international business negotiation scenario, students can simulate actions in negotiations, such as handshakes and handing over documents, with gestures while describing the negotiation content and strategy with voice. The system can comprehensively evaluate students' multimodal performance, including voice, gestures, etc., not only paying attention to the accuracy and fluency of students' language expressions but also evaluating whether their body language is appropriate and in line with business scenario requirements.

At the same time, the interface design should be optimized to fully consider the aesthetic and

usage habits of students from different cultural backgrounds. The operation logic can be metaphorically represented through colors, icons, etc., to reduce the difficulty of use and improve the user experience. For example, for students from Eastern cultural backgrounds, the interface can use some color combinations with Eastern aesthetic characteristics, such as red and gold, and use simple and clear icons to represent different functions, such as a microphone icon for voice input and a camera icon for image recognition. For students from Western cultural backgrounds, the interface can adopt a simple and modern design style, with more emphasis on color contrast and coordination, and the icon design is more intuitive and easy to understand. In addition, multiple language versions of the interface can be provided to facilitate students from different language backgrounds.

In teaching content, more cross-cultural elements and actual scenario cases should be incorporated, making full use of the translanguaging phenomenon of cultural symbols. Cultural symbols from different countries can be cleverly integrated into evaluation questions to allow students to gain a deep understanding of diverse cultures while completing evaluation tasks. For example, with the theme of Japan's Cherry Blossom Festival, students are required to describe the customs, traditional food, and related cultural activities of the festival in English. The evaluation questions can be accompanied by exquisite cherry blossom pictures and video clips related to the festival, so that students can more intuitively feel the festival atmosphere. In the description process, students not only need to use English to express relevant content but also need to show their understanding of Japanese culture [9].

Another example is taking Brazil's Carnival as the theme, requiring students to introduce the origin, characteristic costumes, and dance styles of the carnival in English. The system can provide materials such as pictures, music, and dance videos of the carnival, so that students can complete the oral evaluation task while appreciating and feeling the unique charm of the carnival. Through this method, students can not only improve their language ability but also enhance their understanding and tolerance of different cultures, thus being more willing to accept and participate in AI oral evaluation.

In terms of teaching methods, project-based learning and cooperative learning models should be actively adopted. Teachers assign project tasks closely related to real life, and students work in groups to use the AI oral evaluation system for project discussions, presentations, etc. For example, in the "International Cultural Exchange Activity Planning" project, students work in groups to plan the project. During the project discussion process, group members can use the AI oral evaluation system to discuss the plan, and the system provides real-time feedback and evaluation on students' language expressions and logical thinking abilities, helping students adjust the discussion direction and content in a timely manner.

In the presentation stage, each group uses the AI oral evaluation system for simulated presentations. The system comprehensively evaluates students' presentation performance, including the accuracy and fluency of language expressions, the grasp of intonation, and the performance of team collaboration. In the cooperation process, students communicate, learn from each other, and jointly improve their transmodal listening-and-speaking abilities. Teachers can also provide targeted guidance and tutoring according to the feedback results of the system to further improve students' learning effects and their participation and acceptance of the AI oral evaluation system.

4. Conclusions

This paper has explored pathways to enhance students' acceptance of an AI speech evaluation program for EFL speaking practice from a translanguaging perspective, using the TAM as a theoretical framework. By analyzing the factors affecting students' acceptance and proposing

corresponding strategies, it is hoped that the findings can contribute to the effective application of educational technology and the improvement of students' oral learning motivation and confidence.

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