ENHANCING STUDENTS' PUBLIC SPEAKING PERFORMANCE THROUGH AI-ASSISTED REFLECTIVE DIALOGUE IN HIGHER EDUCATION

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Abstract

Public speaking is a fundamental competence in higher education. However, many students continue to face persistent challenges related to confidence, organization, and the quality of feedback. This study examines the effectiveness of AI-assisted reflective dialogue in enhancing students' public speaking performance in higher education. A mixed-methods design was employed, involving AI-assisted reflective dialogue sessions, performance-based speaking assessments, and students' reflective responses. The findings indicate improvements in students' public speaking performance, particularly in confidence, delivery, organization, and metacognitive awareness. Despite the growing literature on public speaking pedagogy and AI-enhanced learning, empirical research on AI-assisted reflective dialogue as a systematic formative feedback mechanism in higher education remains limited. This study addresses this gap by conceptualizing AI as a dialogic reflective partner that supports reflective learning and self-regulated development in public speaking. Overall, AI-assisted reflective dialogue offers a pedagogically meaningful approach to strengthening communicative competence and reflective learning in higher education.

Keywords: *ai-assisted reflective dialogue, oral communication skills, formative feedback, self-regulated learning, higher education*

Introduction

Public speaking has become a fundamental competence in higher education, as students are increasingly required to communicate ideas clearly, persuasively, and confidently in academic, professional, and social contexts. Effective public speaking skills are closely associated with academic success, employability, leadership development, and professional readiness. Despite its importance, many university students continue to experience persistent challenges in public speaking, including anxiety, low self-confidence, limited audience engagement, and difficulties in organizing and delivering coherent speeches. These challenges often hinder students' ability to demonstrate

knowledge and participate actively in academic discourse.

Previous research has explored various instructional approaches to improving public speaking skills, such as experiential learning, peer feedback, presentation-based activities, and reflective practice. Reflective learning, in particular, has been widely acknowledged as a critical mechanism for fostering self-awareness, metacognitive engagement, and continuous performance improvement. Through reflection, learners are encouraged to evaluate their experiences, identify strengths and weaknesses, and develop strategies for future improvement. However, in many higher education contexts, opportunities for meaningful reflection in public speaking courses remain limited due to time constraints, large class sizes, and an overreliance on summative assessment practices.

Feedback plays a central role in supporting reflection and performance development in public speaking instruction. Nevertheless, conventional feedback practices are often delayed, inconsistent, and predominantly instructor-centered, providing students with limited opportunities for sustained engagement and self-evaluation. Such feedback is frequently perceived as evaluative rather than developmental, reducing its potential to support self-regulated learning and long-term skill improvement. As a result, students may struggle to translate feedback into actionable learning strategies that meaningfully enhance their speaking performance.

In recent years, advances in artificial intelligence have generated growing interest in its application within educational settings. AI-assisted technologies have been shown to offer adaptive, personalized, and data-driven support that can enhance learner autonomy and engagement. In language education and skill development, AI-based tools have demonstrated potential in providing immediate feedback, facilitating practice, and supporting self-regulated learning processes. However, existing applications of AI in public speaking instruction have largely emphasized automated assessment and performance scoring, with limited attention given to reflective and dialogic learning processes that actively engage students in sense-making and performance improvement.

Despite the expanding literature on public speaking pedagogy and AI-enhanced learning, empirical research examining the systematic integration of AI-assisted reflective dialogue as a formative feedback mechanism in higher education remains scarce. Most existing studies conceptualize AI as a technical evaluation tool rather than as a pedagogical agent capable of mediating reflective learning processes. Consequently, there is a lack of research that investigates how AI-supported dialogue can facilitate reflection, self-regulation, and sustained improvement in public speaking performance.

Addressing this gap, the present study investigates the effectiveness of AI-assisted reflective dialogue in enhancing students' public speaking performance in higher education contexts. This study

conceptualizes AI not merely as an assessment instrument, but as a dialogic reflective partner that supports formative feedback, reflective practice, and self-regulated learning. By examining improvements in multiple dimensions of public speaking performance, including confidence, organization, delivery, and metacognitive awareness, this study aims to contribute theoretical and pedagogical insights into the role of AI-assisted reflective dialogue in fostering sustainable communicative competence in higher education.

Literature Review

Public Speaking in Higher Education

Public speaking is widely recognized as a core competence in higher education, playing a crucial role in students' academic communication, professional readiness, and leadership development. Recent studies indicate that effective public speaking skills contribute significantly to students' academic success, employability, and confidence in professional contexts (Morales et al., 2020; van Ginkel et al., 2017). Nevertheless, empirical evidence consistently shows that many university students experience persistent challenges in public speaking, including communication anxiety, low self-confidence, limited audience engagement, and difficulties in organizing and delivering coherent speeches (Bodie, 2010; Dwyer & Davidson, 2019). These findings suggest that public speaking development requires pedagogical approaches that address not only performance practice but also learners' cognitive, affective, and reflective processes.

Recent instructional approaches to public speaking have emphasized experiential learning, presentation-based activities, peer feedback, and performance-oriented assessment (van Ginkel et al., 2017; De Grez et al., 2018). While these approaches have demonstrated positive effects on speaking performance, their effectiveness largely depends on the quality of feedback and learners' engagement in reflective processes. Consequently, reflective learning has gained increasing attention as a critical mechanism for supporting sustained improvement in public speaking skills.

Reflective Learning and Self-Regulated Learning

Reflective learning is widely regarded as a foundational process through which learners critically examine their experiences, identify strengths and weaknesses, and develop strategies for future improvement. Contemporary research highlights reflection as a key contributor to metacognitive awareness and self-regulated learning, enabling learners to actively monitor and regulate their learning processes (Panadero, 2017; Kori et al., 2015). Although early conceptualizations of reflective practice were articulated by Schön (1983), recent studies have extended these ideas by empirically demonstrating the role of structured reflection in enhancing performance and learner autonomy across higher education contexts (Saqr et al., 2023; León et al., 2021).

Self-regulated learning theory further complements reflective learning by emphasizing cyclical processes of goal setting, self-monitoring, and self-evaluation. Empirical evidence indicates that students who actively engage in reflective and self-regulatory practices are more likely to translate feedback into actionable learning strategies and achieve sustained performance improvement (Panadero et al., 2019; Winstone & Carless, 2020). Despite these benefits, opportunities for structured reflection in public speaking courses remain limited, particularly in large classes where instructional time and feedback resources are constrained.

Feedback Practices in Public Speaking Instruction

Feedback plays a central role in supporting learning and performance development in public speaking instruction. Recent research underscores the effectiveness of formative feedback that is timely, dialogic, and learner-centered in enhancing students' oral communication skills (Wisniewski et al., 2020; De Grez et al., 2018). However, studies also reveal that feedback practices in higher education often remain predominantly instructor-centered and evaluative, which may limit students' engagement with feedback and reduce its developmental impact (Carless & Boud, 2018).

Furthermore, when feedback is delivered as a one-directional evaluation rather than an interactive process, students may struggle to internalize feedback and apply it meaningfully to future performances. This limitation has prompted a shift in recent literature toward feedback models that emphasize learner agency, evaluative judgment, and reflective engagement (Winstone & Carless, 2020). Such perspectives suggest the need for feedback mechanisms that support continuous reflection and self-regulated learning rather than isolated performance evaluation.

Artificial Intelligence in Educational Feedback and Skill Development

Advances in artificial intelligence have generated growing interest in its application within educational feedback and skill development. Recent systematic reviews indicate that AI-assisted technologies can provide adaptive, personalized, and scalable feedback that supports learner engagement and autonomy across various educational contexts (Zawacki-Richter et al., 2019; Holmes et al., 2022). In language education and performance-based learning, AI-based tools have demonstrated potential in offering immediate feedback, facilitating practice, and supporting self-regulated learning processes (Ouyang & Jiao, 2021; Lim et al., 2023).

In the context of public speaking, however, existing AI applications have largely focused on automated assessment, speech analytics, and performance scoring (Ruan et al., 2020). While such approaches offer efficiency and immediacy, they often conceptualize AI primarily as a technical evaluation tool. Recent scholarship has increasingly called for AI systems that move beyond automated scoring to support dialogic interaction, reflective learning, and

metacognitive engagement (Holmes et al., 2022; Luckin et al., 2016). Nevertheless, empirical studies examining AI as a reflective and dialogic pedagogical agent in public speaking instruction remain limited.

Positioning the Present Study

Despite the growing body of research on public speaking pedagogy, reflective learning, feedback practices, and AI-enhanced education, empirical evidence integrating AI-assisted reflective dialogue into public speaking instruction in higher education is still scarce. Existing studies rarely investigate how AI-mediated dialogue can function as a formative feedback mechanism that supports reflection, self-regulated learning, and sustained performance improvement. Addressing this gap, the present study positions AI-assisted reflective dialogue as a pedagogical scaffold that mediates reflective practice and formative feedback. By synthesizing recent insights from reflective learning, self-regulated learning, and educational technology research, this study seeks to extend current understanding of how AI can function as a dialogic reflective partner in fostering public speaking competence in higher education.

Method

This section describes the methodological procedures employed to investigate the effectiveness of AI-assisted reflective dialogue in enhancing students' public speaking performance in higher education. It outlines the research design, participants, data collection techniques and instruments, and data analysis procedures to ensure transparency, rigor, and replicability of the study.

Research Design

This study employed a mixed-methods research design to examine the effectiveness of AI-assisted reflective dialogue in enhancing students' public speaking performance in higher education. The mixed-methods approach was selected to integrate quantitative measurement of students' speaking performance improvement with qualitative exploration of their reflective learning processes. This design allows for a more comprehensive understanding of both outcome-oriented and process-oriented aspects of AI-assisted reflective dialogue in public speaking instruction.

Participants

The participants consisted of undergraduate students enrolled in a public speaking course at a higher education institution. Participants were selected using purposive sampling, as they were actively involved in structured public speaking activities and reflective learning tasks as part of the course curriculum. This sampling approach ensured that all participants had relevant exposure to public speaking practice and AI-assisted reflective dialogue. All participants completed the instructional intervention and provided data for analysis.

Data Collection Techniques and Instruments

Data were collected from multiple sources to ensure methodological rigor.

Students' public speaking performances were recorded and assessed using a public speaking performance rubric. The rubric evaluated several key dimensions of public speaking, including confidence, organization, delivery, and audience engagement. In addition, reflective dialogue data were collected through an AI-assisted platform that generated structured reflective prompts to support students' evaluation of their performance and learning strategies.

Data Analysis Procedures

Quantitative data from the public speaking performance rubric were analyzed using descriptive statistics and inferential statistical techniques to examine changes in students' public speaking performance. Qualitative data obtained from students' reflective dialogue responses were analyzed using thematic analysis, involving systematic coding and theme development to identify patterns related to reflection, self-regulated learning, and performance awareness. The integration of quantitative and qualitative analyses enabled a comprehensive interpretation of the research findings.

Findings

Students' Public Speaking Performance

The findings show an overall improvement in students' public speaking performance after the implementation of AI-assisted reflective dialogue. Based on the performance rubric, increases were observed across all assessed dimensions, including confidence, organization, delivery, and audience engagement. Students demonstrated clearer speech structure, improved coherence of ideas, and more effective delivery in post-intervention performances compared to their initial presentations.

Reflective Dialogue Responses

Analysis of students' reflective dialogue responses indicated increased engagement with reflective learning activities. Students consistently identified specific aspects of their public speaking performance, including strengths and areas requiring improvement. The reflective responses frequently included explicit references to speech structure, delivery strategies, and audience interaction. AI-assisted reflective prompts generated detailed and focused responses across participants.

Self-Regulated Learning Indicators

The findings also revealed observable indicators of self-regulated learning. Students demonstrated greater awareness of their learning progress and performance goals over time. Reflective dialogue data showed evidence of goal-setting, self-monitoring, and strategy adjustment across repeated speaking tasks. Students reported modifying their preparation and delivery approaches based on insights gained from earlier reflective dialogues.

Discussion

The present study investigated the effectiveness of AI-assisted reflective dialogue in enhancing undergraduate students' public speaking performance.

Overall, the findings indicate notable improvements across key dimensions, including confidence, organization, delivery, and audience engagement. Students also demonstrated increased engagement in reflective learning processes and higher levels of self-regulated learning, suggesting that AI-mediated dialogue can support both performance enhancement and metacognitive development.

These results align with previous research highlighting the importance of reflective practice and formative feedback in public speaking instruction (Panadero, 2017; De Grez et al., 2018; Winstone & Carless, 2020). Consistent with these studies, the findings of this study demonstrate that structured reflection promotes self-awareness, goal-setting, and strategic planning. At the same time, the use of AI-assisted dialogue extends prior work by providing immediate, personalized, and interactive feedback, which traditional instructor-centered feedback often lacks. Unlike conventional automated assessment tools that primarily focus on scoring (Ruan et al., 2020), the AI system in this study functioned as a dialogic partner, scaffolding reflective processes and facilitating actionable self-regulatory strategies.

The integration of AI-assisted reflective dialogue appears to mitigate common challenges in public speaking, such as performance anxiety, limited confidence, and difficulties in organizing speeches. By promoting iterative reflection and individualized feedback, the approach supports sustainable improvement and encourages students to internalize learning strategies, enhancing both competence and autonomy. These findings suggest that AI can act as a pedagogical agent rather than merely a technical evaluator, bridging the gap between assessment and meaningful learning.

Despite these strengths, the study has several limitations. The sample was limited to students from a single institution and a single public speaking course, which may constrain generalizability. Additionally, the study did not examine long-term retention of skills beyond the intervention period. Future research could explore multi-institutional implementations, longitudinal effects, and the integration of AI-assisted reflective dialogue with other instructional modalities.

In practical terms, the findings imply that higher education instructors can leverage AI-assisted reflective dialogue to enhance students' public speaking skills while fostering reflective and self-regulated learning behaviors. The study contributes both theoretically and pedagogically by demonstrating how AI can function as an interactive reflective partner, extending the literature on technology-enhanced skill development and formative feedback in higher education.

Conclusion

This study examined the effectiveness of AI-assisted reflective dialogue in enhancing undergraduate students' public speaking performance in higher education. The research demonstrated that integrating AI-mediated reflection

into public speaking instruction improves students' confidence, organization, delivery, and audience engagement, while fostering deeper reflective thinking and self-regulated learning behaviors.

The findings highlight that AI-assisted dialogue can function as a pedagogical partner, providing personalized, timely, and interactive feedback that supports iterative improvement. This approach addresses common challenges in public speaking, such as anxiety, low self-confidence, and difficulties in structuring presentations, and extends existing literature by shifting AI applications from mere automated scoring to facilitating meaningful reflective practice.

Overall, the study underscores the potential of AI-enhanced reflective dialogue to bridge the gap between performance assessment and active learning. Higher education instructors may consider incorporating such AI-supported interventions to promote both skill development and learner autonomy, contributing to more effective, sustainable, and student-centered public speaking pedagogy.

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