A Balanced Approach to Artificial Intelligence Integration in Student Presentation Skills: A Study of Undergraduate Engineering Learners

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ABSTRACT

Artificial intelligence (AI) is rapidly becoming part of the everyday preparation of academic and professional presentations. Generative AI systems and AI-enabled presentation platforms can support brainstorming, content organisation, slide design, visual selection, language refinement and rehearsal. Yet the convenience of these systems creates a pedagogical tension: a technically polished presentation may not necessarily indicate that the student understands the content or can communicate it confidently in real time. This study examines the relationship between AI-assisted preparation and undergraduate students' presentation performance, with particular attention to content ownership, confidence, creativity, audience engagement and spontaneous communication. A descriptive qualitative design was used with 40 first-year engineering students. Data were gathered through a structured Google Form survey and classroom video observations. The study focused on students' use of tools such as ChatGPT, Canva and PowerPoint Designer, their degree of personalisation of AI-generated material, and their self-perceived confidence during live presentation. The findings indicate widespread use of AI during preparation, but also a noticeable gap between efficient slide production and effective oral delivery. Students who relied heavily on AI-generated material often found it difficult to explain ideas fluently, sustain audience engagement and respond spontaneously to questions. Students who revised AI-assisted content, added their own examples and rehearsed their presentations demonstrated stronger signs of confidence, eye contact and clarity. The study therefore argues for a human-centred, balanced model in which AI functions as a scaffold rather than a substitute for thinking and speaking. The paper proposes a practical AI–Presentation Balance Framework that integrates topic understanding, responsible prompting, personalisation, visual design, rehearsal and human delivery. The framework has implications for English language teaching, engineering education and employability-oriented communication training.

Keywords: Artificial intelligence, presentation skills, generative AI, communication competence, higher education

INTRODUCTION

Presentation competence has become an important component of higher education because students are increasingly expected to communicate technical information to peers, teachers, employers and multidisciplinary audiences. A presentation is not merely a sequence of slides; it is a communicative event in which the presenter selects information, organises ideas, interprets evidence, uses language purposefully, manages visual resources and establishes a relationship with an audience. For engineering students in particular, the ability to explain a technical concept in accessible language can influence academic performance, teamwork, interviews, project demonstrations and future workplace effectiveness.

The emergence of generative artificial intelligence has changed the preparation stage of this communicative process. Tools such as ChatGPT, Canva and PowerPoint Designer can generate ideas, suggest structures, improve wording, recommend layouts and produce visually coherent slides within minutes. The original study from which this paper has been developed already identified this growing dependence among first-year engineering learners. Its central concern was not whether AI should be rejected, but whether the efficiency offered by AI was beginning to displace the cognitive and communicative work that students need to perform themselves. The manuscript reported that AI could streamline preparation while leaving a significant gap in real-time presentation confidence and content ownership.

This concern is consistent with wider discussions of generative AI in education. UNESCO's guidance advocates a human-centred approach in which AI supports, rather than replaces, human agency, learning and judgement. Research on ChatGPT similarly identifies substantial educational opportunities alongside risks relating to accuracy, privacy, academic integrity and responsible use. Thus, the relevant educational question is not simply whether students use AI, but how they use it and what learning processes remain human.

The present paper develops the earlier classroom-based investigation into a more research-oriented account of AI-supported presentation learning. It retains the original sample, instruments and observed patterns rather than introducing new numerical claims. The study is guided by the proposition that presentation competence emerges from the interaction of content knowledge, language, visual design, rehearsal, confidence and audience awareness. AI can strengthen some of these components, particularly preparation and design, but cannot automatically produce the embodied, contextual and interpersonal performance required in a live presentation.

The paper therefore has three objectives: (1) to examine how undergraduate engineering students use AI tools while preparing presentations; (2) to explore the relationship between AI dependence, personalisation and perceived presentation confidence; and (3) to propose a practical model for balancing AI assistance with independent thinking, rehearsal and authentic delivery. The study contributes to the growing discussion of AI in English language teaching and employability education by placing oral presentation—not merely written output—at the centre of the analysis.

LITERATURE REVIEW

AI as a Presentation-Support Technology

Camp and Johnson (2024), in their discussion of Beautiful.ai in public-speaking education, similarly position generative AI as a design assistant rather than the owner of the presentation. Their argument is particularly relevant to language classrooms because visual design can otherwise consume considerable preparation time. AI can therefore reduce the technical burden for students who lack design expertise. The pedagogical benefit, however, depends on whether the student remains engaged with the ideas represented on the slides.

Balakrishnan (2024) reports that AI-enabled PowerPoint functions can support design consistency, data visualisation, formatting and content coherence. Such capabilities can improve the surface quality of a presentation and reduce avoidable design errors. Yet presentation quality has at least two dimensions: the artefact that appears on the screen and the communicative performance of the presenter. A polished deck may conceal shallow understanding if the presenter simply reproduces AI-generated language without internalising it.

Generative AI, Human Agency and Learning

UNESCO's human-centred position provides a useful conceptual anchor for this study. The guidance emphasises that generative AI should not be treated as a solution to fundamental educational problems and stresses the continuing importance of human capacity, collective action and meaningful learning. Applied to presentation pedagogy, this means that AI should be integrated into the learning process without allowing the technology to become the primary speaker, thinker or decision-maker.

Research Gap

The literature establishes the usefulness of AI for presentation preparation and simultaneously identifies concerns about dependence and authenticity. A more specific pedagogical gap concerns the transition from AI-assisted preparation to human-led delivery. Students may become efficient at generating slides without becoming more capable presenters. The original classroom evidence provides a useful starting point for examining this gap because it combines survey responses with observations of actual presentations. The present paper therefore shifts the analytical focus from AI as a production technology to AI as a scaffold within a communicative learning cycle.

METHODOLOGY

Research Design and Participants

The study employed a descriptive qualitative design with descriptive interpretation of survey responses. Forty first-year engineering students participated. The research context was an undergraduate English/communication learning environment in which presentation activities formed part of students' communication development. The sample was therefore a classroom-based group rather than a statistically representative population. The findings should be interpreted as context-specific evidence that can inform pedagogy and further research rather than as generalisable claims about all engineering students.

The study used two complementary sources of evidence: a structured Google Form survey and video observations of classroom presentations. The survey captured students' use of AI tools, extent of reliance, degree of personalisation and self-assessed confidence. Classroom recordings provided an additional behavioural perspective, enabling comparison between students who appeared to depend heavily on AI-generated material and students who combined AI assistance with their own ideas and preparation. Participation was voluntary and the original manuscript states that students were permitted to use anonymised recordings for research purposes.

Data Collection and Analytical Procedure

The survey questions were designed to identify whether students used AI during presentation preparation and whether they perceived any effect on their creativity or thinking. The classroom observations focused on indicators relevant to oral presentation: fluency of explanation, eye contact, clarity, audience engagement and the ability to communicate beyond the exact wording of the slides. The analysis combined descriptive survey interpretation with observation-based categorisation.

RESULTS

Student Use of AI in Presentation Preparation

The survey responses show a clear pattern of AI adoption. As reported in the original manuscript, a majority of participants answered "Yes" when asked whether they had used AI tools to assist in preparing presentations. The tools specifically identified included ChatGPT, Canva and PowerPoint Designer. The result suggests that AI-supported presentation preparation was not an isolated behaviour but part of the students' emerging academic workflow.

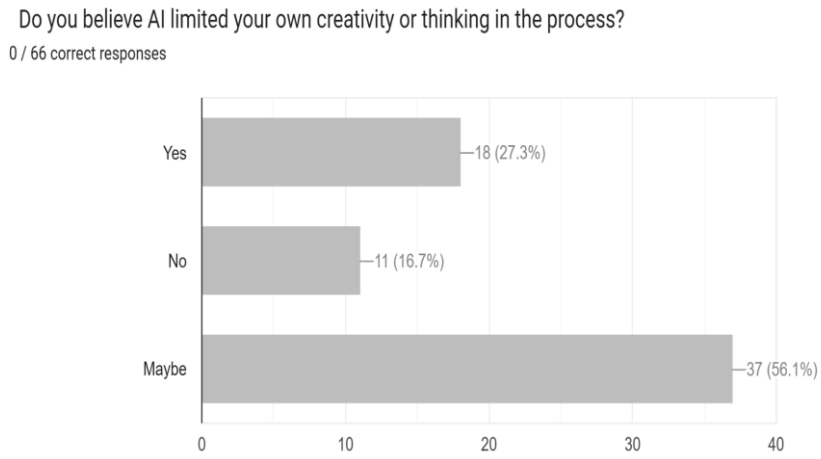

Figure 1. Student responses to "Have you used AI tools to assist in preparing presentations?"

AI Use and Presentation Confidence

The study identified an important distinction between preparation efficiency and delivery confidence. Most students rated themselves as only "somewhat confident" or "not confident" when presenting. Classroom observations further suggested that students who depended heavily on AI-generated material sometimes struggled to explain their content fluently and to maintain audience engagement. By contrast, students who combined AI assistance with original input showed stronger signs of confidence, eye contact and clarity during delivery.

AI Use and Perceived Creativity

A second pattern concerned students' perception of creativity and independent thinking. When asked whether AI had limited their own creativity or thinking, most respondents selected "Maybe" or "Yes." The finding is significant because it reveals an internal tension: students appreciate AI for saving time and organising information, while simultaneously questioning whether the convenience of AI reduces their own contribution. The result does not demonstrate that AI necessarily diminishes creativity; rather, it indicates that learners themselves recognise the possibility of cognitive displacement when AI-generated material is accepted without sufficient revision.

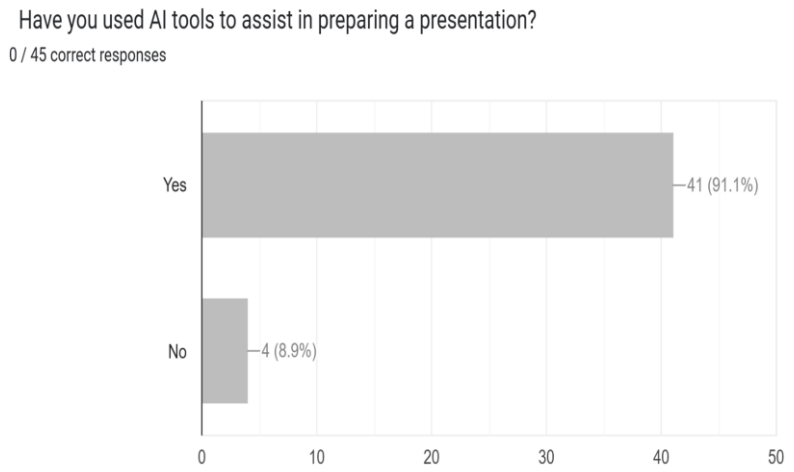

Figure 2. Student responses to "Do you believe AI limited your own creativity or thinking in the process?"

DISCUSSION

AI Improves Preparation, but Preparation Is Not Performance

The central finding of the study can be expressed as a preparation–performance distinction. AI is particularly effective in tasks that are visible in the final presentation file: generating an outline, suggesting wording, creating a visual theme, improving slide consistency and reducing preparation time. These are valuable functions. However, live presentation requires additional competencies that remain dependent on the presenter: understanding, memory, interpretation, voice modulation, eye contact, gesture, audience awareness, question handling and the ability to adapt the message in real time.

The evidence from the present classroom study therefore supports a conditional rather than an absolute evaluation of AI. AI can make a presentation artefact more efficient or attractive, but the educational value of that presentation depends on whether students have mentally appropriated the content. When students use AI output with minimal editing, the slides may become a script that they read rather than a visual support for a message they own. This interpretation is consistent with the earlier study's observation that heavy AI dependence was associated with difficulty in fluent explanation and audience engagement.

Content Ownership as the Core of the Balanced Approach

Content ownership is proposed here as the central pedagogical principle. Ownership does not mean that every word must be created without technological assistance. Instead, it means that the learner understands, evaluates, selects, revises and can explain the content. A useful test is simple: if the screen disappears, can the student still explain the main idea? If the audience asks an unexpected question, can the student respond using their own understanding? If the answer to these questions is yes, AI has functioned as a scaffold. If the answer is no, the technology has become a substitute for learning.

The AI–Presentation Balance Framework

Based on the findings and the literature, the study proposes an AI–Presentation Balance Framework consisting of six connected stages. The framework is intended for classroom use and can be adapted to English communication, technical communication and employability-skills courses.

Stage	Role of AI	Human responsibility
1. Understand	Offer background explanations and alternative viewpoints.	Define the topic, audience, purpose and key concepts.
2. Explore	Brainstorm ideas, keywords, examples and possible structures.	Select relevant ideas and verify information.
3. Develop	Suggest wording, slide organisation and visual possibilities.	Rewrite, personalise and connect content to experience.
4. Design	Support layouts, visuals and consistency.	Ensure that visuals serve the message rather than decorate it.
5. Rehearse	Generate practice questions or simulate audience questions.	Speak aloud, record, review and improve delivery.
6. Deliver	Remain a backstage support where appropriate.	Own the message, engage the audience and respond spontaneously.

Table 1. AI–Presentation Balance Framework for undergraduate communication learning

Pedagogical Strategies for Balanced AI Use

• Use AI for brainstorming rather than automatic completion. Students can ask for possible themes, counterarguments, examples or questions, then decide which ideas fit their purpose.

• Personalise every AI-assisted section. Students should rewrite content in their own language, add examples from their discipline or experience, and remove claims they cannot explain.

• Adopt a "slide-free explanation" checkpoint. Before presenting, students should explain the topic without looking at the screen. This provides a simple test of content ownership.

• Separate slide creation from speech preparation. A slide should function as a visual cue rather than a full transcript. Students should prepare a speaking outline using keywords, transitions and examples.

• Use AI for rehearsal questions. A student can ask an AI system to act as a critical audience and generate possible questions. The learner must then answer aloud without reading an AI-generated response.

• Require evidence verification. Students should cross-check factual claims, statistics, quotations and references rather than assuming that fluent AI output is accurate.

• Assess the presenter as well as the product. Rubrics should allocate marks to content understanding, organisation, language, delivery, eye contact, audience engagement, response to questions and responsible AI use.

• Ask students to disclose meaningful AI assistance where appropriate. A short statement such as "AI was used for brainstorming and language refinement; the content was verified and personalised by the authors" encourages transparency and reflection.

Implications for English Language Teaching and Engineering Education

For English language teaching and engineering education, the findings suggest that AI literacy should be integrated with authentic communication practice. Students can use AI to brainstorm, refine language, organise visuals and generate practice questions, but assessment should still require independent explanation, audience engagement and spontaneous response. This supports employability because future engineers will need both technological fluency and the ability to explain technical ideas clearly to teams, clients and other stakeholders.

The study has several limitations. First, the sample consists of 40 first-year engineering students from a single educational context, so the findings should not be generalised without caution. Second, the design is descriptive and does not establish a causal relationship between AI dependence and presentation performance. Third, confidence is partly based on self-report, which may differ from observed behaviour. Fourth, the study focuses on a limited set of AI-enabled tools and therefore does not capture the rapidly changing landscape of generative AI.

Future research could employ a larger sample across multiple institutions and compare groups using different levels of structured AI support. A pre-test/post-test design could examine whether an explicit balanced-AI intervention improves presentation performance. Future studies could also use a validated rubric to score content ownership, fluency, pronunciation, eye contact, visual design, audience engagement and question handling. Longitudinal research would be especially valuable in determining whether students who are taught responsible AI use become more independent presenters over time.

CONCLUSION

This study examined the emerging relationship between AI-assisted presentation preparation and the real-time communication skills of undergraduate engineering students. The evidence suggests that AI has clear value in brainstorming, organisation, visual design and preparation efficiency. At the same time, the study highlights a crucial limitation: efficient preparation does not automatically produce confident communication. Students who

depended heavily on AI-generated material were observed to experience difficulties in fluent explanation and audience engagement, whereas students who personalised AI-assisted material and rehearsed their presentations demonstrated stronger signs of confidence, eye contact and clarity.

The appropriate response is therefore neither unrestricted dependence nor complete rejection of AI. A balanced approach positions AI as a scaffold that supports the learner while preserving human ownership of meaning. The proposed AI–Presentation Balance Framework translates this principle into a practical cycle of understanding, exploring, developing, designing, rehearsing and delivering. At each stage, AI may contribute efficiency, but the learner remains responsible for judgement, verification, personalisation and performance.

The broader implication is that the success of AI in education should not be measured only by how quickly a student can produce a polished artefact. It should also be measured by what the student can understand, explain, question and communicate independently. In presentation education, the ultimate product is not the slide deck; it is the learner's capacity to transform knowledge into meaningful human communication. Responsible AI use therefore means allowing technology to improve the process without allowing it to replace the voice of the learner.

Declarations

Ethical Considerations

Ethical Approval: The study involved voluntary participation by undergraduate students and the original manuscript states that students were permitted to use anonymised presentation recordings for research purposes. The authors should insert the institutional ethics approval number/date here if formal approval was obtained, or state the applicable institutional exemption/permission accurately before submission.

Data Availability

The survey and classroom observation materials are not publicly deposited. The underlying classroom data are available only to the extent permitted by participant consent and institutional requirements; no public dataset is claimed for this manuscript.

Conflict of Interest

The authors declare that they have no known conflict of interest related to this study.

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