

Using AI-Driven Virtual Reality to Improve Students' Confidence in Public Speaking

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Educators must adapt to the evolving technological landscape to effectively prepare the next generation of the agricultural workforce. Industry adoption of artificial intelligence (AI) and complementary technologies, such as virtual reality (VR), established the need for higher education to develop students' ethical, effective, and efficient use of these technologies (Ahmad & Bilal, 2024). The integration of VR in agricultural education has been promoted to improve students' interest, motivation, and learning outcomes by immersive learning in unique, digital environments (Greig et al., 2024; Wells & Miller, 2020). A technological advancement that can influence how VR is used in teaching and learning is the unique integration of AI within VR. Such platforms can harness AI to provide tailored communication between the interface and the user. For example, Ovation, a speech simulation program, allows users to interact and converse with virtual avatars using AI. These conversations are driven by user-selected inputs (e.g., scenarios) and flow based upon the user's communication and response(s) to the avatar(s). Additionally, the platform provides immediate feedback on users' communication effectiveness. Students can use these digital simulations to practice presentations in real-world scenarios (e.g., interviews, speeches, sales, etc.) to improve their confidence and performance, while also reducing the anxiety associated with public speaking (Grieve et al., 2021). In the Fall of 2025, we implemented Ovation in ALEC 240: Effective Oral Communication, a public speaking course in the Herbert College of Agriculture at the University of Tennessee, Knoxville, to improve students' public speaking confidence and performance, and AI literacy.

How it Works

To effectively integrate Ovation into our course, we utilized Meta Quest 2 VR headsets. Four Ovation licenses were purchased directly from the company, and the program was downloaded as an application onto each headset using the Meta Store. Through the Ovation platform, instructors emailed invitation links to students, which allowed them to create Ovation accounts. Once students activated accounts, instructors assigned speech practice sessions within the software. Before using the headsets, students learned to adjust the fit, operate hand controls, navigate and sign in to Ovation, and locate the speech practice assignment. Four private, quiet meeting rooms, one for each VR headset, were reserved during scheduled lab times for students to complete the practice session in Ovation utilizing the VR headsets. Two facilitators were present during each practice session to troubleshoot technology issues and provide student support. Upon arrival, students rotated individually through the meeting rooms to complete the speech assignment. Once inside the room, students accessed the VR headset and navigated to the Ovation landing page. Students then logged in and were prompted to complete the speech practice session assigned by instructors. Before beginning, students utilized scenario modifiers to alter the audience's location, appearance, demographics, and collegiality of the virtual environment. Students chose environments such as a hotel conference room, a classroom, or a debate stage. These scenario modifiers also adjusted the audience's dress, gender makeup and perspectives on their speech, allowing for a more critical or complimentary audience. Students also uploaded their speaking outlines and visuals (e.g., PowerPoint) into the Ovation system and could view these documents during their simulation. Facilitators left the room for the student to complete the practice speech session. Once students concluded their speech, avatars asked students AI-generated questions based on the speech content. At the conclusion of the simulation, AI-generated feedback on items including speech delivery, persuasiveness, content, clarity, speed, presence of filler words, and opportunities for growth were provided to students.

Ovation then automatically sent these reports to the course instructor, and students received class points for completing their practice session.

Results to Date

We have integrated Ovation into three sections of ALEC 240. In total, 51 students across the three sections completed speech practice sessions for both their informative and persuasive speeches. Initial student feedback following the practice session was mostly positive, particularly regarding the quality of the questions posed by the virtual audience. Many students noted the relevancy and quality of the content specific questions they received from Ovation. Moreover, students described the appearance of the virtual environment and avatars as interesting and amusing. From an instructor's standpoint, we believe using Ovation and the VR headsets prompted students' interest and provided them with a novel and fun experience that, anecdotally, improved students' speaking performance and confidence. However, integrating Ovation into the course has not been without its challenges. Drawbacks have included time constraints, extensive facilitator personnel, and technical challenges (e.g., login errors, students' low technology efficacy, battery life, etc.). Beyond the instructor and teaching assistant, this endeavor required five additional facilitators. Moreover, some students created their Ovation account without utilizing the invitation link causing students to fail to be affiliated with the course and therefore, lack certain Ovation features, such as uploading visuals. Students have expressed mixed results regarding their required use of Ovation for speech practice. Although most students have appreciated the time to practice in a low-stakes and virtual environment, the immediate feedback they receive from the platform, and the novelty of the technology, some students have expressed frustration with technology errors and time allowance. Of the 51 students utilizing Ovation, three students have been dismissive and skeptical of any required AI use, citing social and environmental concerns, and one student has declined to participate completely.

Future Plans and Advice

We plan to continue using Ovation as a required component of our course during the Spring 2026 semester to further investigate the educational implications and continue to advance AI literacy. We also plan to conduct a quasi-experimental study to determine if employing the technology improved students' speaking confidence and AI literacy. From a practitioner perspective, we encourage faculty to consider course structure, scheduling, and instructional needs when deciding if AI and VR is feasible, relevant, and applicable for the course learning outcomes (Wells & Miller, 2022). For proper integration of experiential learning by using VR and AI, instructors must actively orient the virtual learning experience as one that is educationally and professionally transferable (Greig et al., 2024; Kolb, 2015). Based on our experience utilizing AI-driven virtual reality, we encourage instructors to consider the cost, time, space, and personnel necessary to integrate the technology into coursework successfully. Additionally, instructors should consider beginning integration of innovative technologies, such as Ovation, early and often throughout the semester. Instructors should also recognize the potential for some students to have moral concerns about AI and, if applicable, identify alternative assignments or appropriate accommodations.

Resources Needed

The project's innovative nature demanded a significant quantity of time and labor resources from faculty and facilitators to plan for and implement Ovation into the course. A total of four Meta Quest 2 VR headsets (approx. \$1,800) were used, along with four Ovation licenses (\$2,000/year). Internet connectivity was needed to run Ovation. This work was supported by an internal university teaching grant to integrate AI into undergraduate courses.

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