

Student-Developed Podcasts as an Accessible Pedagogical Model for Teaching Rehabilitation Technologies

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Abstract

Emerging technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) are transforming rehabilitation, yet integrating these rapidly evolving topics into undergraduate curricula remains challenging. This paper presents a Universal Design for Learning (UDL)-informed pedagogical model that uses student developed podcasts to support learning about rehabilitation technologies in an undergraduate motor control and learning course. Students critically evaluate evidence related to a selected rehabilitation technology, synthesize findings regarding its application in rehabilitation practice, and communicate those findings to a broad audience through an interview-style podcast and transcript. The assignment promotes science communication, critical appraisal, and knowledge translation by requiring students to translate complex scientific concepts into accessible language for broad, non-specialist audiences. As a multi-modal assessment strategy, the model provides alternative pathways for demonstrating knowledge while supporting competencies relevant to evidence-based rehabilitation practice. The approach offers a practical and transferable framework for integrating emerging technologies into rehabilitation and health sciences curricula.

1. Introduction

Emerging technologies including virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) are increasingly used in rehabilitation and assistive technology applications. Integrating these rapidly evolving technologies into undergraduate curricula requires instructional approaches that support critical evaluation of evidence and effective communication of complex concepts. Podcasting is particularly well suited to these topics because it requires students to synthesize research, translate technical information for non-specialist audiences, and communicate practical implications. Unlike traditional assignments that primarily prepare students to communicate with instructors or other professionals, podcast development emphasizes science communication and knowledge translation for broader community audiences. These communication skills support scientific literacy and align with critical appraisal and knowledge translation competencies central to evidence-based rehabilitation practice (Kaur, 2022; Almendingen et al., 2021).

2. Pedagogical approach

The aim of the podcast assignment is for students to critically evaluate evidence related to a selected rehabilitation technology, synthesize findings from the research literature regarding its applications in rehabilitation practice, and communicate those findings through an accessible podcast for a broader audience. Podcasting is particularly well suited to rehabilitation technologies because it requires students to synthesize evolving evidence, evaluate clinical applications, and translate complex scientific concepts into language accessible to patients, families, and community audiences.

The pedagogical model for this podcast assignment is grounded in Universal Design for Learning (UDL), which emphasizes proactive instructional design that provides multiple means of engagement, representation, and action and expression (CAST, 2024). Engagement was supported through student-selected rehabilitation technology topics, self-selected groups, peer discussion, and iterative instructor feedback, allowing students to connect learning to their interests while participating in collaborative inquiry. Representation was fostered through engagement with peer-reviewed literature, research summaries, class discussion, and podcast transcripts, providing multiple formats for accessing and organizing information. Action and expression were addressed through the creation of an interview-style podcast and transcript, enabling students to demonstrate understanding through multimodal communication rather than traditional writing-intensive assessments. Together, these components support critical evaluation of evidence, science communication, and knowledge translation skills relevant to evidence-based rehabilitation practice.

Shifting assessment from writing-intensive assignments to multimodal production may reduce barriers for students with chronic pain or fatigue associated with prolonged writing tasks. Flexible pacing and location independence support participation through mobility accommodations and preferred work environments. As an inclusive design strategy, podcast production also provides alternative ways for students to demonstrate knowledge (Kushwaha & Kushwaha, 2025).

3. Assignment design

Students worked in self-selected groups to investigate a rehabilitation technology topic of interest, such as VR, AR, or AI applications in rehabilitation. The assignment consisted of five stages: (1) topic development, including class presentation, peer and instructor feedback; (2) research development through the identification and synthesis of six peer-reviewed articles; (3) creation of a 12-minute interview-style podcast and accompanying transcript intended for a broad audience; (4) instructor review and feedback on the podcast and transcript; and (5) group discussion.

Assessment emphasized evidence synthesis, critical evaluation of rehabilitation applications, communication of findings to non-specialist audiences, and participation in collaborative discussion. This staged design provided multiple opportunities for feedback, reflection, and knowledge translation while supporting the development of evidence-based practice skills. Example podcast topics included VR for stroke rehabilitation, AR for gait training for Parkinson's disease, and AI-enabled robotic gait therapy for stroke.

4. Pedagogical outcomes and implications

The podcast assignment supports the development of critical appraisal, science communication, and knowledge translation skills relevant to evidence-based rehabilitation practice. By requiring students to identify, synthesize, and communicate research findings related to emerging rehabilitation technologies, the assignment encourages critical evaluation of evidence rather than passive acquisition of technical knowledge. Communicating findings to non-specialist audiences further promotes scientific literacy and provides opportunities for students to translate complex concepts into accessible language for patients, families, and community members. This approach is consistent with emerging evidence that student-created podcasts can enhance subject understanding, engagement, and peer connections while promoting active participation in the learning process (Hernandez-Lopez & Mendoza-Jimenez, 2025). As emerging technologies continue to shape rehabilitation practice, instructional approaches that integrate evidence appraisal, science communication, and knowledge translation may help prepare students to critically evaluate new technologies and communicate their implications across diverse audiences. The model may also be transferable to other rehabilitation and health sciences courses exploring rapidly evolving areas of practice.

5. Conclusion

Student-developed podcasts may provide an accessible and scalable pedagogical model for integrating rehabilitation technologies into undergraduate education. By engaging students in evidence synthesis, critical evaluation of rehabilitation applications, and communication for broad audiences, the assignment supports science literacy, knowledge translation, and competencies relevant to evidence-based rehabilitation practice. This approach offers a practical and transferable framework for rehabilitation and health sciences curricula.

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