



AI²LM-HE Panel Session: Advancing Interactive & Immersive Learning Media in Higher Education – Insights from a Systematic Expert Review

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Abstract. Building on the iLRN2024 panel "Interactive & Immersive Learning Media in Higher Education – XR and Beyond," this session explored advancements in immersive learning through a Delphi expert review. The panel systematically gathered expert input on the challenges, opportunities, and best practices for integrating Interactive and Immersive Learning Media (ILM) in higher education. A multi-phase Delphi approach was used to extract, refine, and prioritize expert insights across key domains, including pedagogical integration, institutional adoption, interdisciplinary collaboration, ethical considerations, and technological challenges. Panelists presented findings from this process, discussing strategic visions for XR implementation, impactful design principles, and emerging trends shaping ILM. Attendees gained actionable insights for implementing immersive technologies in education, informed by a rigorous expert validation process.

Keywords: Immersive Learning Media, Higher Education, Delphi Study, XR, Pedagogical Integration

1 The AI²LM-HE Panel Session

This panel built upon the success of the iLRN2024 panel session titled "Interactive & Immersive Learning Media in Higher Education – XR and Beyond," transitioning from exploratory dialogue to a structured Delphi study facilitating the systematic collection and refinement of expert insights on the design, integration, and impact of ILM in higher education. The session provided a critical examination of key barriers and enablers influencing XR adoption in educational settings and contributed to the development of a validated framework for integrating ILM in higher education.

The AI²LM-HE Panel Session (2025) presented:

- (a) the approach that was followed employing a Delphi study to explore the design and integration of ILM in higher education;
- (b) the outcomes of this initiative, highlighting key findings derived from a systematic approach grounded in the Delphi framework, which facilitated expert input, and a pre-panel webinar designed to engage specialists and refine discussion points.

2 Methodology

The panel session discussed the framework that was employed to explore the design and integration of ILM in higher education based on Delphi method [1]. Delphi is a structured approach to achieving consensus among experts. It is particularly valuable in areas where empirical data may be scarce or where future trends need to be forecasted. Lee and other iLRN scholars [2] used this method to identify the trends in XR. The Delphi method

was selected due to its iterative nature, ensuring a rigorous, consensus-driven process to refine expert insights over multiple rounds, unlike traditional surveys or single-session panels

Round 1 was conducted through an expert panel session featuring five highly experienced professionals from diverse backgrounds, including academia, instructional design, XR development, and digital education leadership. The panel addressed ten key topics, each corresponding to critical aspects of XR adoption, implementation, and impact. The session was transcribed and thematically analyzed, leading to the identification of seven key categories, including pedagogical design, faculty training, technological infrastructure, student engagement, interdisciplinary collaboration, ethical considerations, and assessment strategies. These categories formed the basis for a structured Delphi survey to further refine expert consensus.

In Round 2, a broader panel of experts were invited to participate in a structured survey, incorporating both open-ended and Likert-scale questions. This phase aimed to validate and prioritize the themes identified in Round 1, quantifying expert agreement on critical challenges, best practices, and strategic recommendations. Building on the findings from Round 2, Round 3 engaged experts in an interactive ranking process to establish a consensus-driven framework for the effective integration of ILM in higher education. This iterative approach ensured that the study leveraged expert knowledge, structured validation, and consensus-building to guide the future of immersive learning.

3 Study Outcomes

The AP²LM-HE Panel Session presented the outcomes of this initiative, highlighting key findings derived from a systematic approach grounded in the Delphi framework, which facilitated expert input, and a pre-panel webinar designed to engage specialists and refine discussion points. It addressed pivotal questions such as:

- What are the current drivers and blockers for adopting IML in higher education?
- How can innovative interdisciplinary projects catalyze progress?
- What design principles enhance IML learning experiences, and how do we ensure accessibility, sustainability, and inclusivity?
- What technical challenges and trends will shape the future of ILM in higher education?

The webinar's outcomes shape the panel discussion, offering a well-rounded exploration of these topics. Esteemed panellists—leaders in digital media, educational technology, and immersive learning—share their unique perspectives on key themes, including:

- Strategic visions and institutional barriers to XR adoption.
- Innovative design principles for immersive learning experiences.
- Ethical considerations for inclusivity and accessibility in XR technologies.
- Technical challenges and future trends shaping immersive learning in higher education.

The panel session targeted: Educators, technologists, researchers, and policymakers interested in leading-edge technologies, pedagogical innovation, and strategic implementation in higher education. Participants gained actionable insights into advancements in ILM facilitated by the Delphi framework and its implications for integrating immersive technologies into higher education.

4 Panel Objectives

The panel provided a comprehensive exploration of the progress and potential of ILM in higher education. Specifically, it:

1. Presented key findings from the Delphi-based framework and the pre-panel webinar.
2. Discussed strategic visions, technical advancements, and pedagogical practices for XR adoption.
3. Highlighted innovative interdisciplinary projects and ethical considerations for inclusivity and accessibility.
4. Explored actionable strategies and best practices to overcome barriers to XR adoption in higher education.

5 Panellists

The panellists—are leading experts in educational technology, immersive learning, and interdisciplinary collaboration—offering unique insights drawn from their work in higher education and beyond:

- **Daphne Economou** (Panel Co-Coordinator): Senior Researcher in immersive learning technologies, with extensive experience coordinating multidisciplinary projects [3]. She coordinated the panel session, provided an overview of the 2024 iLRN panel and demonstrated the follow-up initiatives, including the Delphi-based framework and webinar outcomes.
- **Daniel Mitelpunkt**: Director of the Digital Media Lab, Imperial College London. As an expert in institutional XR strategy and innovative media applications, he discussed drivers and blockers of XR adoption, sharing insights from Imperial College’s strategic approach [4].
- **Paula MacDowell**: Assistant Professor specializing in educational technology, immersive learning, and AI literacy for educators [5]. She explored authentic and inclusive design principles and the role of XR in teacher education.
- **Helen McKenna**: Head of the Interdisciplinary EdTech Lab at Imperial College London, focusing on inclusive design and collaborative XR projects [4]. She highlighted innovative projects and ethical considerations for inclusivity in XR technologies.
- **Ioannis Doumanis**: Senior Lecturer and MSc Computing Course Leader, University of Central Lancashire, with expertise in integrating XR into computing curricula [6]. He examined emerging trends, technical hurdles, and solutions for XR integration.
- **Stavros Nikou**: Senior Lecturer in Digital Education, University of Strathclyde, specializing in the pedagogical integration of XR and AR competences. He discussed barriers to adoption and best practices for integrating ILM, referencing the Teachers’ AR Competencies (TARC) framework [7].

6 The Panel Outcomes

The AI²LM-HE Panel Session presented how the application of Delphi methodology helped extract and validate expert insights on XR integration in higher education. The study demonstrates that structured expert engagement can inform the best practices, identify key challenges, and shape future research and policy recommendations. In general, the panel outcomes include:

- A comprehensive understanding of the advancements and best practices in ILM.
- Identification of actionable strategies for overcoming barriers to XR adoption.
- Interdisciplinary collaboration and knowledge sharing among educators, technologists, and researchers.

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