

Title: The design of an immersive informal learning space for STEM education

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Session Track: Spaces for Learning

Session Type: Breakout session

Session Delivery Format: Short Presentation Pair (15 min)

Abstract (500 character limit)

Given that learning is a social activity, space design should create comfortable, immersive spaces for learners to meet and collaborate, yet how students use and perceive these spaces has not been well-studied. Examining students' use of immersive informal learning spaces is vital to space design. This session will share students' experience in a space called the Idea Garden. Session attendees will share their experiences in designing immersive informal learning spaces on their campuses.

Session Keywords: immersive learning space; informal learning space; STEM education; higher education

Description (2100 character limit)

Informal learning spaces are becoming increasingly popular across higher education institutions as many institutions are repurposing study halls, libraries, computer labs, and other spaces to address a broader set of students' educational goals. These informal learning spaces often include new technologies and offer students a flexible multipurpose space for extending their learning outside of classes (Lomas & Oblinger, 2006). These spaces can be particularly powerful for offering STEM technologies that students likely do not otherwise have access to.

It is important to design an immersive informal learning space to support STEM students' creative thinking and collaboration. The use of VR technology offers interactive experiences to students (Roussou, 2000). The Idea Garden (<https://ideagarden.iupui.edu/>) at IUPUI was designed with the intention of encouraging STEM students to think creatively and to collaborate with their peers. The physical space is equipped with 3D printers, high-performance PCs, virtual reality (VR) headsets, Dell Canvas, Microsoft Surface, and an IQ-Wall Touch. In addition, workshops, online training resources, and other services are provided to support students' use of the space. To best address STEM students' educational goals, it is critical to understand their perceptions of the design, technology, and services, as well as understand how they are actually using the space and its features.

The purpose of this session is to share the design of the Idea Garden and students' perceptions of using this space to assist other universities who may plan to design immersive informal learning spaces.

This case study examined students' perceptions of the Idea Garden through a survey (N=366) and focus group with nine students.

The findings indicated that students came to the space with four primary purposes: (1) to try out new technologies; (2) to hang out with friends; (3) curiosity; and (4) to work on class projects. They used VR headset most and like it best. Ways to design and engage STEM students' informal learning will be discussed.

Session Learning Outcomes (350 character limit)

1. Describe the design of the Idea Garden as an immersive informal learning space
2. Describe STEM students' use and perceptions of the learning affordances of immersive informal learning spaces
3. Explore the benefits and challenges of designing immersive informal learning spaces for STEM education

Session Timing

The presentation can be paired by the ELI annual meeting program team.

Session Participant Engagement Strategies (700 character limit)

Session participants will actively engage in discussion throughout the session. Background experience with informal learning environments for STEM education will be posed at the onset of the presentation using Poll Everywhere. The purpose of the polling activity is to find out the ways in which the session participants have been involved in the creation and design of immersive informal learning spaces for STEM education and students' perceptions of using in these spaces. There will be brief brainstorming activity regarding how to create immersive informal learning space for STEM education. The session will conclude with a discussion of effective immersive learning spaces for STEM education.

Diversity and Inclusion Content (700 character limit)

The exposure to emerging technologies in the Idea Garden engaged students from diverse backgrounds in STEM education. First, it seemed to encourage female students to enroll and stay in STEM majors. The comfortable and collaborative Idea Garden learning space attracted female students to try technologies in a low-risk environment, which might further increase their retention in STEM disciplines. Second, this space provided an opportunity for students from low socio-economic backgrounds to explore advanced technologies that they otherwise would not be able to access.

References:

Lomas, C., & Oblinger, D. G. (2006). Student practices and their impact on learning spaces. In D. G. Oblinger (Ed.). *Learning spaces* (pp. 5.1-5.11). Washington, DC: EDUCAUSE.

Roussou, M. (2000). Immersive interactive virtual reality and informal education. In *Proceedings of user interfaces for all: Interactive learning environments for children*, Athens, Greece.