

June 12, 2023



# LEARNING NEWSFLASH

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Innovative Strategies and Tools to Enrich Knowledge

## 2023 Awardees of the Teaching and Learning Collaboratory Seed Projects

The Undergraduate Department and the Teaching and Learning Collaboratory are excited to announce the winners of the 2023 seed project call. The purpose of the seed projects are to develop a project to the point that it is competitive for external funding. The projects test new pedagogical approaches or technologies that will impact student learning. The grants are in partnership with funding from the Undergraduate Department and the Teaching and Learning Collaboratory. And to this point, we wish to extend a big Congratulations to this year's winners!

### **Systematizing Gameful Learning Strategies: Extending the Scope of Gameful Learning Initiative Pilots and Research and Codifying Gameful Learning Professional Development**

Gameful learning focuses on using the principles of game design to increase motivation, engagement, and joy of students in the learning process. Rather than a superficial 'gamification,' where elements of video games like badges are applied mechanistically so that they "become contorted techniques for producing compliance," holistic gameful learning design seeks to generate game-like engagement within an educational context, even if the end result does not necessarily conform to typical expectations of a 'game.' The goals are to continue to expand our initiative in two distinct ways: Firstly, we will increase the number of pilot studies and associated research initiatives. Secondly, we will use these expanded efforts to systematize the strategies of gameful learning —rather than focusing solely on individual iterations of gameful learning, we seek to find a pattern and process for gameful learning that can be applied in numerous ways. Concretely, this systematization will have several overarching aims:

- 1) Gameful learning strategies will be more easily disseminated internally through professional developments, continuing to foster a more pedagogically engaged faculty and vibrant learning community at RPI.
- 2) The research surrounding gameful learning strategies developed at RPI will be recognized as being at the forefront of pedagogical innovation through networking, academic conferences, and publications
- 3) These efforts at systematization will position us to effectively seek outside funding sources to continue our work in gameful learning. The long-term goal of the initiative is a 'Center for Gameful Learning at RPI', cementing RPI as a leader in this field.

**Team Members:** Christopher Jeansonne, Nicholas Mizer, Victoria Bennett, Michael Hughes, and Brian Clark

### **Expanding the Frontier of RPI's Immersive and Embodied Learning Initiative**

RPI's Immersive and Embodied Learning Initiative are one of the institute's landmark activities. It builds on RPI's unique experience with panorama screen environments at EMPAC and in the CRAIVE-Lab. At the same time overcoming the hurdles of developing class material and moreover methods to create material rapidly for these classes requires sustained effort. We have made great progress expanding our group, and in particular, we are thrilled that we now have dedicated STEM faculty on board to expand our program to RPI's more traditional courses. The proposal focuses on the following items:

- 1) We plan to expand our immersive learning course elements to STEM-related courses for environmental engineering, working closely with an early career lecturer who is new to our team, Eyosias Ashenafi, and a senior lecturer in chemistry, Alex Ma.
- 2) We will work on a DEI outreach program for immersive learning, and work with lecturer Jillian Willis, who is an African-American scholar and vocalist. She is leading the RPI jazz ensemble and we will use an existing project on Auralizing Jazz Venues (Braasch's Ph.D. Student Ellington Scott, who plans to graduate this summer) for new immersive teaching units.
- 3) We plan to conduct a user studies program to bring us to the point, where we can demonstrate the effectiveness of immersive learning which will be crucial for securing external funding through grants.
- 4) We will work on a telematic, immersive teaching component with CASE and EBESS in New York City. Our goal is to offer regular telematic classes between the Troy and Brooklyn campuses. Spanning from a nearly completed NSF project to developing telematic technologies for classrooms (Braasch, NSF TICE), we propose to do course development and focus on the educational aspects for regular courses.

**Team Members:** Jonas Braasch, Carla Leitao, Emily Liu, Rhett Russo, Mei Si, Amy Svirsky, Eyosias Ashenafi, Alex Ma, Dennis Shelden, Jillian Willis, and Helen Zhou

### **Building Capacity for Innovations in Community Engaged Learning at Rensselaer**

Rensselaer President Marty Schmidt '81, Ph.D., has championed regional engagement as one of the five focus areas in Rensselaer Forward, the university's strategic plan that will guide the institute for the coming decade. This vision for regional engagement aims to position Rensselaer as "the convener" bringing together a wide variety of key partners. As Lecturers who have together taught well over a hundred courses at RPI, we recognize the incredible skills and diverse perspectives that students have to offer the broader community. We also recognize how rich the Capital Region is in community-based organizations that can offer our students transformative experiences. This project aims to activate the potential of mutually-beneficial connections between RPI students and the broader community by piloting and assessing pedagogical innovations in community-engaged learning. We propose developing a course on community engagement that can be adapted to multiple disciplines and taught by faculty or teams of faculty across departments at RPI.

**Team Members:** Jen Cardinal, Guy Schaffer, Chris Tozzi, and Brandon Costelloe-Kuehn

### **Teaching and Learning in the Metaverse and the CAVE**

Immersive virtual reality (VR) has a long history of interest and experimentation in education. The affordances of VR offer broad potential in teaching and learning, including the sense of presence, capacity for visualization, constructivist approaches to learning, motivation and engagement, collaboration, and spatial reasoning. Technology platforms have included CAVE's, VR head-mounted displays (HMD's) , augmented reality headsets, mobile device augmented reality, online virtual environments (VE's), and a range of other immersive or interactive media environments from panoramic video projection to digital games. Recently, the term "metaverse" has emerged as an umbrella concept, oriented towards the notion of shared, persistent online virtual worlds that are enmeshed with the physical world. Common challenges include user interface, user experience, and human factors; access to the technologies; and the work involved in developing instructional content. For educators, the underlying question remains how best to utilize these technologies. This project addresses two research questions in teaching and learning with metaverse technologies, focusing on the CAVE and online VE's:

- 1) How might we best formulate elements of pedagogy, the building blocks and vocabulary of teaching with metaverse technologies?
- 2) How do we archive, preserve, maintain, and re-present the history of work in this area?

**Team Members:** Ben Chang, Silvia Ruzanka, and Matthew Gantt