

## **Participation in EcoXPT or EcoMOBILE research**

Ecosystems are an important strand of the life science content standards, and ecosystem science involves complex processes difficult for students to understand. **EcoXPT** is a new research project based on EcoMUVE, a multi-user virtual environment (MUVE)-based middle school science curriculum that supports learning about the causal dynamics of ecosystems through observation and exploration in a virtual world. EcoXPT infuses epistemologically authentic experiment-based inquiry within the virtual ecosystem. Students engage with experimentation tools within a virtual pond ecosystem in order to test their hypotheses about variables and relationships, and engage in evidence-based reasoning as they develop hypotheses about the ecosystem scenario.

This video gives a brief introduction to the project:

<http://stemforall2016.videohall.com/presentations/746>

EcoXPT is beginning its third year. This fall, the project is focused on analysis of pilot data, developing and piloting new versions of the software, developing lesson plans and teacher training materials and preparing for a formal study in 2017.

Opportunities include:

- Data analysis of video and artifacts from pilot studies
- Development of teacher's guide materials
- Testing the latest version of EcoXPT in classrooms this fall
- Development of graphic tutorials to be integrated with the software
- Data analytics using log file data of student interactions with the software.

We are particularly interested in working with students who have background, skills, and/or interest in any of the following:

- Ecosystem science or biology
- Teaching, especially middle school students
- Paper writing and presentation
- Data scoring and analysis techniques
- Programming experience, esp. Java, Unity, and/or Postgres

**EcoMOBILE** (Ecosystems Mobile Outdoor Blended Immersive Learning Environment) is an NSF-funded research project that combines EcoMUVE with real-world learning in outdoor environments augmented with technology. EcoMOBILE uses smartphones or tablets running augmented reality (AR) experiences and probeware to collect scientific data during local field trips. This video gives a brief introduction to the project:  
<http://resourcecenters2015.videohall.com/presentations/586>

The EcoMOBILE research grant has ended, but we are sharing the AR experiences and teacher materials online for free use through Harvard. Some of the experiences we developed for our research haven't yet been translated into the AR platform that we are

using for dissemination, called ARIS. A possible T561 project would be to learn to use ARIS (<http://arisgames.org>) and help develop and adapt two EcoMOBILE experiences for the ARIS platform, and also provide teacher support materials.