The Radix Endeavor

A multiplayer online game for STEM learning

In development at the
MIT Education Arcade

Funded by [The Bill and
Melinda Gates Foundation](The Bill and Melinda Gates Foundation)

Game Experience

When you enter the game, you find yourself on an island with many unknown species of plants and animals, and many mysterious places waiting to be discovered, along with many problems to be solved. The current leader, in search of an alleged meteor thought to have special properties, has taken actions that have endangered the health of the island and its inhabitants. You come to join a group called The Curiosi who ask you to help find solutions to some of the island's worst problems, both environmental and societal. If you can figure out what is causing the problems, how the natural systems work, and which factors need to be changed, you may be able to improve the lives of the people and even save the island from destruction.

Benefits of an MMO

Massively Multiplayer Online Games are a popular genre in which players' avatars exist in a shared and persistent world, and players work together to understand how the world works, then use that knowledge to complete task-based goals. This type of game structure has affordances that integrate well with inquiry based learning and scientific ways of thinking, making an MMO a uniquely suitable framework for STEM learning. In *The Radix Endeavor*, players will need to explore the virtual world and conduct their own "experiments" to develop hypotheses and figure out how the biological and mathematical systems function. They will be able to collaborate with other players in the game to compare ideas and solve problems using scientific reasoning, while being motivated by the social and contextual nature of the in-game goals.


Curriculum

Our first version of the game will cover a variety of topics in high school biology, geometry, algebra, and probability and statistics. It is designed to align with the Common Core standards in mathematics and Next Generation Science Standards for high school students. In addition, we are placing particular emphasis on including opportunities for students to develop key math practices and 21st century skills.

Assessment & Teacher Tools

Innovative task-based assessments will be embedded into the game for each topic area, and that data will be triangulated through the use of validated external assessments. The game will utilize back-end data logging to track players' strategies, progress, and potential misconceptions. The data will be analyzed in real time to offer feedback and scaffolding to the player, and it will also be synthesized and displayed on a "Teacher Portal" web site to help teachers monitor student progress and tailor their lessons to students' needs.
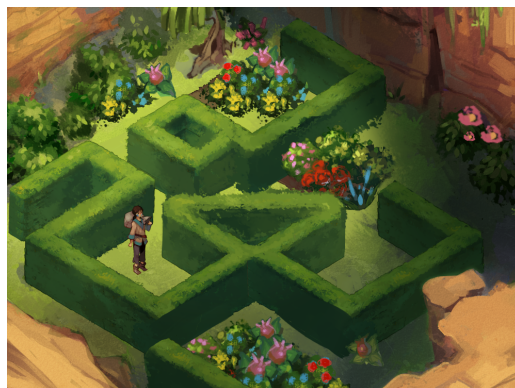
Research

This design-based research project aims to look at the efficacy of an MMO for STEM learning, as well as the specific ways in which students acquire and apply knowledge of science and math concepts in an online environment. We plan to explore the feasibility of implementing such a game in a classroom setting, as well as the potential of game-based assessments in STEM courses.

For anyone interested in participating, there are a number of opportunities for teachers and others to be involved with the project: initially, we will have a small number of Boston-area teachers and students take part in a pre-pilot phase; in addition, by the end of the three-year project the game is expected to have 10,000 users nationwide.

If you are interested in finding out more, please contact:
radix-info@mit.edu

For updates on the development of the project, please visit:
radixendeavor.wordpress.com