The EdSim Challenge

Additional Resources

ADDITIONAL RESOURCES

The U.S. Department of Education (ED) aims to ease the development process by providing tools and resources for the creation of educational simulations.

The US market for simulation-based learning has an annual growth rate of nearly 20%

Less than half (42%) of employers believe graduates are adequately prepared to enter the job market.

Note: All links are provided for informational purposes only.

DEVELOPER RESOURCES

The U.S. Department of Education (ED) aims to ease the development process by providing tools and resources for the creation of educational simulations. Standardizing the use of simulations in educational contexts will require the development of standards better geared towards the needs of students, work which is already underway in the education technology community. It is furthermore important that developers be familiar with how federal regulations (including Family Educational Rights and Privacy Act and Children's Online Privacy Protection Act) impact the design and development of educational simulations.

Ed Tech Developer's Guide, *U.S. Department of Education.*
The U.S. Department of Education recently released this primer for software developers, startups, and entrepreneurs to centralize and simplify resources on regulatory compliance. This developer toolkit includes information on designing for educational customers, procurement, interoperability, compliance, and other useful information.

xAPI Spec Documentation, *Github.*
The Experience API was designed to enable the transfer of learning data between systems, making it particularly relevant to the EdSim Challenge. The Github page is a resource for developers looking to utilize this standard in technology development.

Model Terms of Service Guidance, *Privacy Technical Assistance Center.*
The Privacy Technical Assistance Center serves as a "one-stop" resource for education stakeholders to learn about data privacy, confidentiality, and security practices related to student-level longitudinal data systems and other uses of student data.

Interoperability Strategies for Serious Games Development, *Ioana Stanescu.*
Making the case for interoperability between learning tools, Stanescu reviews the technical components and standards relevant to simulation design. Interoperability is

a central tenet of the current Challenge; potential entrants are encouraged to explore this resource and others relevant to the design of interoperable systems.

SIMULATION-BASED LEARNING

Many students have access to engaging video game and simulation content at home, but until relatively recently there was little understanding of how such experiences affected classroom learning. However, an uptick in research around simulation-based learning in the last decade has demonstrated the advantages of simulations for engagement, achievement, and learning.

Simulation Nation: The Promise of Virtual Learning Activities, *Marc Prensky.*
This article makes a case for the inclusion of simulation technologies in the classroom, arguing that simulations help students understand complex systems and concepts. Supporting research is provided, and barriers to the inclusion of simulations in classroom learning are explored.

A Field Guide to Educational Simulations, *Clark Aldrich.*
In this paper, simulation designer Clark Aldrich describes the components and functions of a simulation, providing an essential guide for would-be simulation developers. Aldrich explores different types of game mechanics and their effects on student learning, as well as archetypes of simulation experiences.

Simulations for STEM Learning: Systematic Review and Meta-Analysis, *SRI International.*
This meta-analysis thoroughly reviews more than a decade of research into the efficacy of simulation-based learning on student outcomes. Results from the meta-analysis of 59 studies indicate that simulations have a beneficial effect over classroom learning in absence of simulations.

The 2013-2018 Worldwide Game-based Learning and Simulation-based Markets, *Ambient Insight.*
This presentation, delivered at the Serious Play Conference 2014, lays out a taxonomy of simulation-based learning, distinguishes simulation-based learning from game-based learning, and describes market growth and potential. Revenue forecasts predict the continuation of a nearly 20% compound annual growth rate.

CAREER AND TECHNICAL EDUCATION (CTE)

With more than 15 million students engaged in career and technical curricula across the U.S., the Department of Education is focused in ensuring that career seekers are optimally prepared for the high-skill technical jobs of today and tomorrow. The “skills gap” is particularly pronounced in advanced manufacturing, where millions of jobs go unfilled each year.

The National Career Clusters® Framework, *National Association of State Directors of Career Technical Education Consortium.*
The National Career Clusters Framework provides a vital structure for organizing and delivering quality CTE programs. In total, there are 16 Career Clusters in the

National Career Clusters Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career.

Education to Employment: Designing a System That Works, *Diana Farrell, and Dominic Barton, McKinsey & Company.*
This report reviews a survey of 8,000 employers, education providers, and students regarding job preparedness and skills preparation. The report also includes insights from reviewing successful CTE curricula.

What is CTE?, *Association for Career and Technical Education.*
Here the Association for Career and Technical Education provides a primer about the history of CTE and how it benefits high school students, college students, adults, businesses, and the economy.

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