

Globaloria

Better learning through game design

World Wide Workshop program advances student STEM and computing knowledge through game design and programming using Adobe Flash® Professional



World Wide Workshop

New York, New York

www.WorldWideWorkshop.org

Globaloria

www.globaloria.org

Results

- Drove student achievement in science, technology, engineering, mathematics, reading and writing
- 90% of Globaloria enrollees graduate from the course with a grade or credit
- 85% of educators retain the curriculum year after year
- Engaged 7,000 students in learning with hands-on game design
- Implemented in seven states and 20 countries
- Provided educators and administrators with real-world, project-based curriculum

The World Wide Workshop's Globaloria program is a learning network and curriculum for students in grades 6 through 12 that advances science, technology, engineering, and math (STEM), as well as computing knowledge, through hands-on game design and programming. Globaloria helps young people around the country learn to produce original, socially focused eLearning games on STEM-related subject matter.

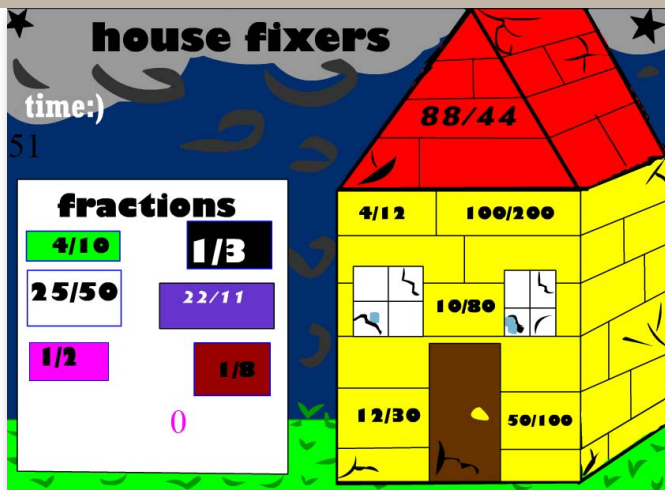
Initiatives such as Globaloria fill a gap for student communities by placing an emphasis on the proven educational method of learning by constructing in a digital learning environment. Every student who participates in Globaloria learns to invent, build, and publish an original game and related multimedia content; gains awareness of STEM-related topics; and benefits from the resulting boost in critical competencies—including programming, online research skills, and the effective use of Web 2.0 tools—for solving a complex design problem as a team.

Students pick a STEM-related or social issue topic that interests them and work in teams. Over the course of a full year (150 hours), semester (80 hours) or four-week summer program (40 hours), the student teams use Adobe Flash Professional—from prototype to implementation—to build eLearning games. For example, a team of middle school students in West Virginia, where Globaloria is deployed statewide, created *Water Waster Saver*, a game where players control a character's water usage to learn math skills and environmental responsibility.

At East Austin College Prep Academy (EAPrep) in Texas where Globaloria is a school-wide program—with every student participating from sixth grade through high school graduation—students create games such as *Flood Escape*, which challenges players to escape an oncoming flood and its accompanying dangers as they learn about the causes and impacts of these natural disasters; *House Fixers 2*, where players must reduce fractions correctly before time runs out and an animated house collapses; and *Tiger Savior*, a safari-themed game designed to educate players about environmental threats facing tigers around the world.

In California, where thousands of middle and high school students use Globaloria both in and after school, budding game designers created *Math Sports*, a multilevel game that helps players learn about square roots through sports simulations; *The Roman Games*, a game for players to learn about the Coliseum and ancient Rome; *Math Blocks*, designed for practicing arithmetic skills; and *Gear Box*, which educates players about gear rotation and ratios as they use gears to repair broken objects. Student games from states across the nation are all catalogued as part of the Globaloria.org game gallery and used to inspire others to take the STEM-learning leap.

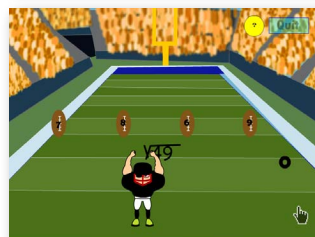
"In order to build a game that helps others learn, students must become subject matter experts at the appropriate grade level as well as master digital production," says Shannon Sullivan, vice president of programs and production. "This real-world learning model leads to greater understandings of core academic subjects while at the same time provides hands-on computer programming experience—blending together two critical modes of comprehension that serves learners well along educational and career paths."



House Fixers. By Andrea Ligués, EAPrep middle school student, Texas



Math Blocks. By Vanessa Solis, Rafael Cortez, Melissa Gonzalez, and Alfredo Mendoza, Christopher Middle School students, California



Math Sports. By Cassandra Fonseca, Huy Le, Manuel Bravo, Emily Mondragon, and Kevin Martinez, Christopher Middle School students, California

Challenge

- Infusing innovation into education to motivate STEM learning through game design
- Making education relevant and engaging for middle and high school students
- Empowering teachers to develop professionally with peer-to-peer collaboration

Solution

Implement a flexible, scalable game design curriculum to foster passion in learning core subjects and prepare students for success in an increasingly digital society

Systems at a glance

Adobe Creative Suite. Components used include:

- Adobe Flash Professional
- Adobe Photoshop®
- Adobe Illustrator®
- Adobe Fireworks®

Hands-on learning, real world skills

Students learn to design and program using Adobe Flash Professional, chosen by Globaloria developers to expose participants to an industry-leading tool that is popular in the job market. The program introduces young people to coding via the easy-to-use Adobe ActionScript® programming language, and gives students access to the massive, worldwide Flash development community for instructional resources and support; all motivating STEM learning through game design.

As they work with Adobe Flash technology, Globaloria students also learn to read and comprehend real-world technical documentation, use best practices when designing and developing games, and be precise in writing ActionScript code—skills that are also essential for collaboration as they share the tasks of concept design, creating graphical assets, and coding.

"I find it very rewarding to see students dig into game design at relatively high levels of expertise," says Sullivan. "Imagine, sixth graders who can build dynamic eLearning games from scratch with the same tools professional game designers and developers use!"

Empowering young learners

Research shows that students who participate in the Globaloria game design program gain measurable benefits in the classroom and beyond. They achieve higher test scores in core academic subjects, develop critical digital literacy skills that prepare them for success at higher levels of education, and are more likely to gravitate toward STEM topics and IT as areas of educational and professional interest.

Additionally, low-income middle school students in certain states show statistically significant gains in critical reading, math, and self-efficacy scores on standardized tests. Girls, who enroll in Globaloria at higher rates than in similar programs nationwide, show particular gains in their knowledge and use of computing technology.

In addition to the gains made by students, Globaloria has a positive impact on participating teachers. Educators receive extensive professional development support and, as a result, bring the teaching styles they learn through Globaloria into other classroom contexts.

An original model for STEM learning through game design

The Globaloria model, with its original platform and curriculum, is comprised of four learning units that guide and support students from the conceiving of an original idea to production of a final product. The first is an introduction to the program and its blended learning environment where students virtually connect to other learners as well as experts online. This provides an orientation to a greater learning community of peers and professionals, exploring the principles of how to share content and ideas ethically and with a view to production.

At East Austin College Prep Academy in Texas Globaloria is a school-wide program where students from sixth grade through high school graduation participate. Here, student Devin Madison created *Tiger Savior*, a safari-themed game designed to educate players about environmental threats facing tigers around the world.



Tiger Savior. By Devin Madison, EAPrep middle school student, Texas

“Students on the downside of the digital divide benefit greatly from the blended learning approach that this innovative initiative delivers. It transforms the way they engage with core curriculum, bringing STEM topics to life through game design.”

Dr. Joe Gonzales,
Superintendent,
East Austin College Prep Academy

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Student-produced Globaloria games

House Fixers: www.globaloria.org/games-front-page/item/house-fixers-2

Tiger Savior: <http://www.globaloria.org/games-front-page/item/tiger-savior>

Math Blocks: www.globaloria.org/games-front-page/item/math-blocks

Math Sports: www.globaloria.org/games-front-page/item/math-sports

The second unit introduces students to gaming—how to make an educational game using timelines, layers, symbols and objects, and even movie clips. Students also acquire fundamental programming skills and actually create code to add game components, such as new characters or obstacles to overcome, buttons, and counters—all customized to their specific interests.

In the third unit, learners move to game-building mode. Students break into groups of three or four and develop a concept for a unique game that explores a particular learning subject. Students design a game layout, produce a prototype on paper, play-test the game, and present the game concept to their peers. Presentations are recorded and later viewed by the student network as well as professional game designers and developers recruited from the real world.

The last unit of Globaloria guides learners to program the game using Adobe ActionScript. Dedicated students are able to learn how to program through this software and to integrate assets created using components of Adobe Creative Suite, including characters designed in Adobe Photoshop, game elements created in Adobe Illustrator, and effects created using Adobe Fireworks.

Technology that inspires, topics that engage

For educators, Globaloria is an innovative, turnkey, and project-based curriculum. Teachers and school leaders across the country have seen increased student engagement and achievement, as well as gained an opportunity for their own professional development and growth.

Since 2006, more than 7,000 students and educators in seven states have used Globaloria to learn how to design, program, and publish games that support STEM topics. Results show that formerly underachieving student populations are now succeeding academically. “Students on the downside of the digital divide benefit greatly from the blended learning approach that this innovative initiative delivers. It transforms the way they engage with core curriculum, bringing STEM topics to life through game design,” says Dr. Joe Gonzales, school superintendent, East Austin College Prep Academy, Texas.

Globaloria helps students achieve success at levels that were previously considered out of reach. In schools where Globaloria is deployed, reports show that students show improvement in reading, writing, and mathematics proficiency by grade level, with a near 90% graduation rate. 85% of educators using Globaloria continue teaching with it year after year and recommend it to their peers. “Globaloria is a shining example of how to develop digital literacy and foster enthusiasm for STEM topics in young people today,” says Gonzales.



Adobe

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