



Using Games for Education

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Using games for education

“I’m calling for investments in educational technology that will help create digital tutors that are as effective as personal tutors, and educational software that’s as compelling as the best video game.”

President Obama



Why use games?



Fun



Engaging



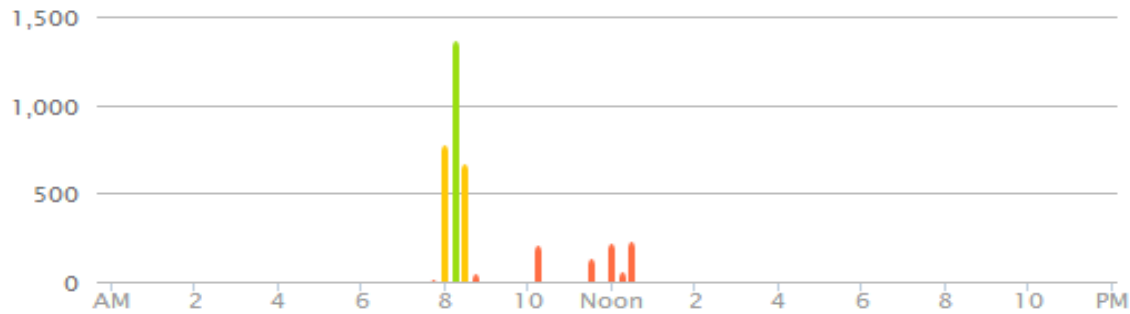
Challenge and assessment



Trackable

Activity

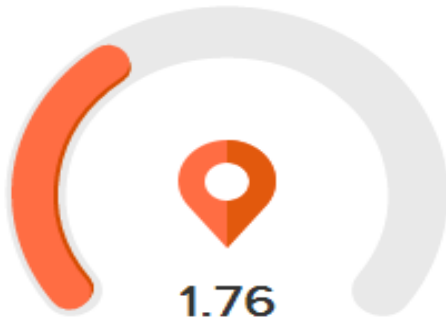
STEPS CALORIES FLOORS



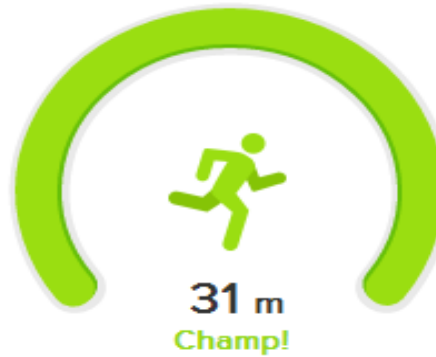
Steps



Distance / Miles



Very Active Mins



Top Badges



25,000 steps
Best in A Day

Scaffolded



Research: Design

- SRI International, 2013
 - Digital Games for Learning meta-analysis
 - 12% improvement in cognitive outcomes with addition of a learning game into standard curriculum
 - *“From our perspective, the most important questions for future research are which design approaches are productive...”*



Digital Games for Learning: A Systematic Review and Meta-Analysis

Executive Summary

DRAFT

August 2013



Research: Data

- University of Washington, 2014
 - Series of Algebra Challenges using DragonBox Adaptive
 - In Washington State, 93% of K-12 students reached 100% mastery
 - *“Because the algorithms improved with extra data, we were able to improve from 93%, to 95% of all the kids in Minnesota reaching 100% mastery, and they were doing it in 5% less time.”*



The Federal Games Guild (FGG): Interagency collaboration

- Development practices
- Collaborations
- Current research
- Game jams



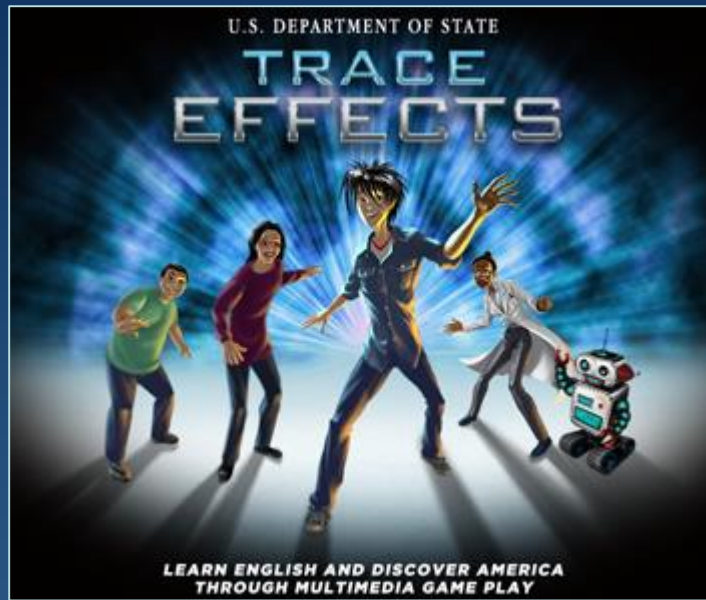
FGG: Most active agencies



Smithsonian



FGG: Funded games

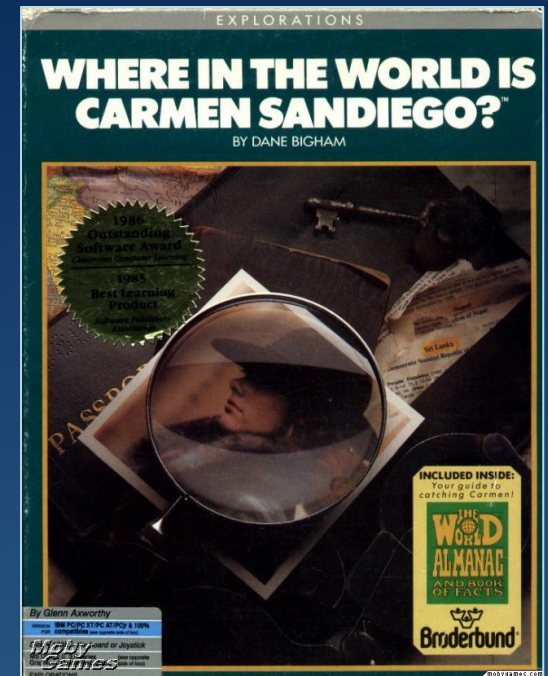
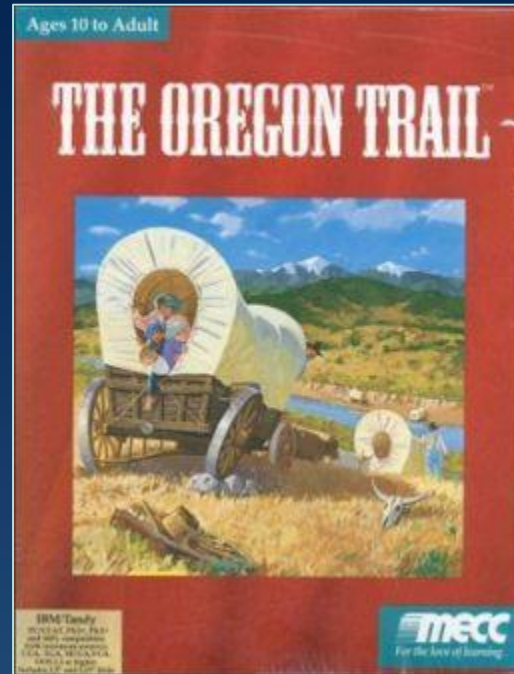
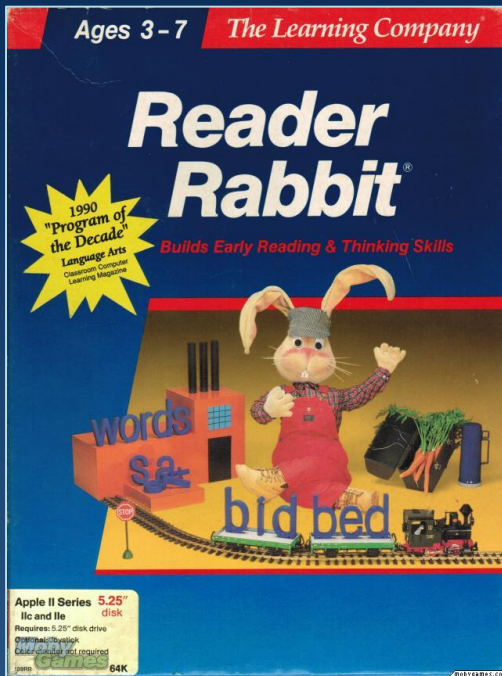


FGG: Genre activity

- Education
- Health & fitness
- Citizen science
- Coding literacy

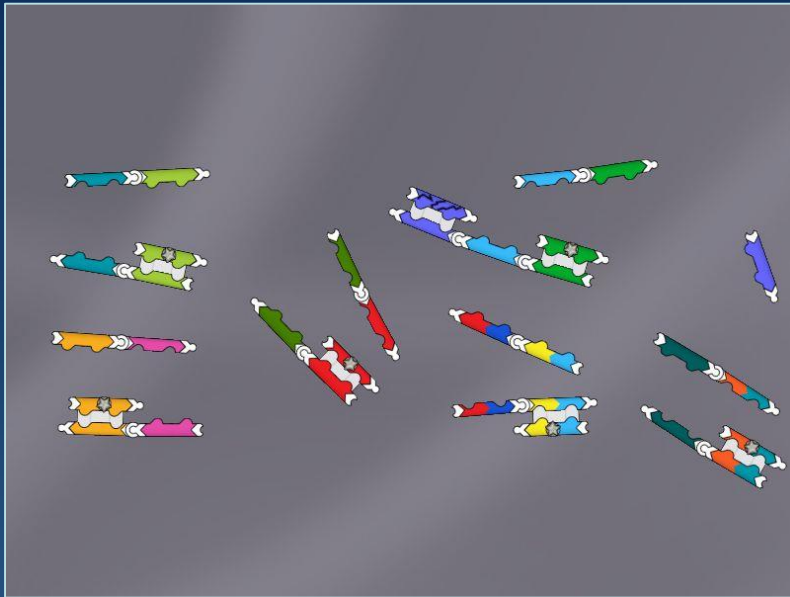


Historical education games

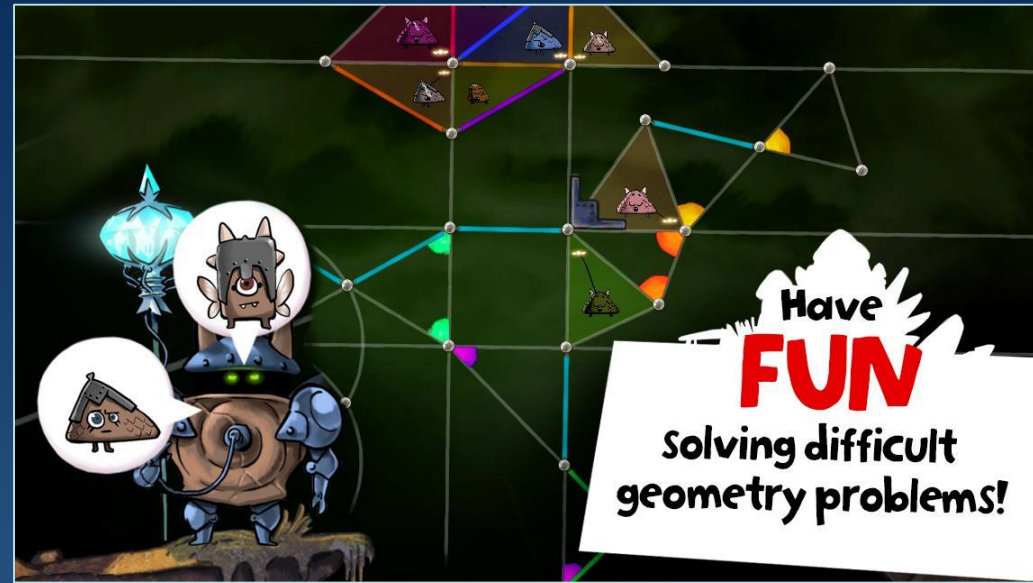


Recent education games

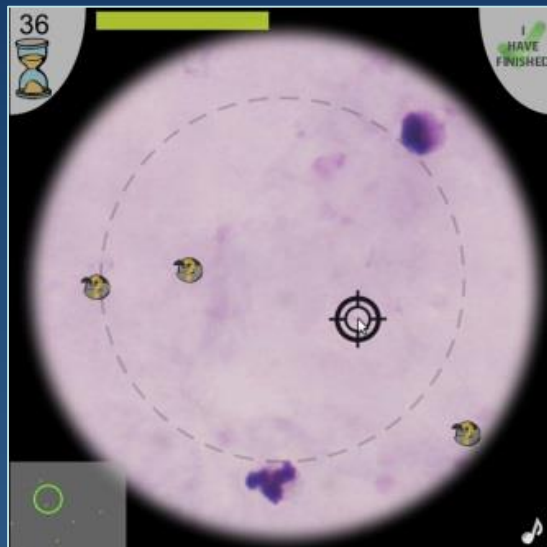
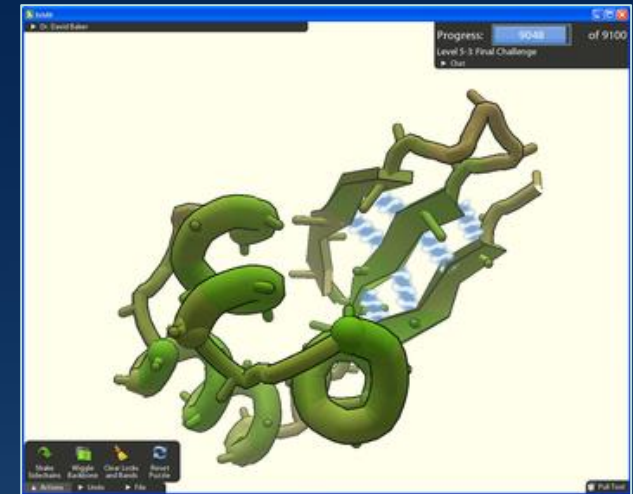
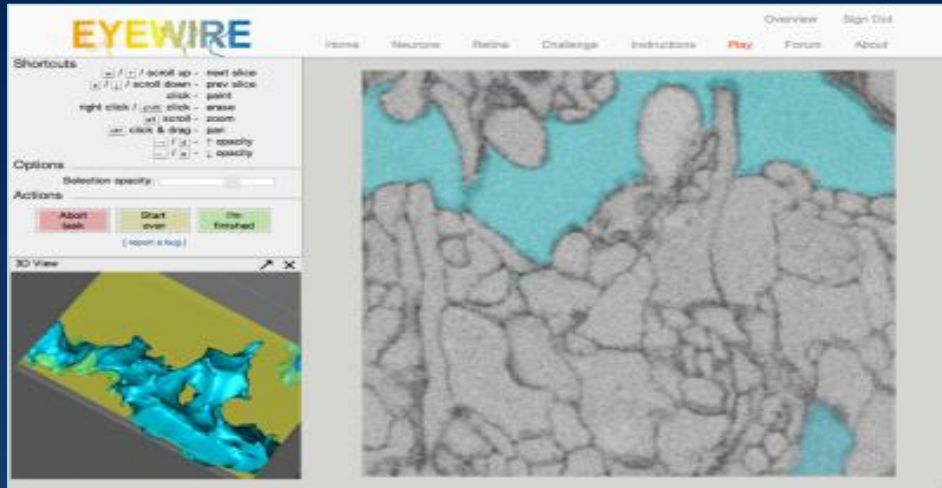
NanoCrafter



DragonBox Elements



Crowdsourcing games & Citizen science



RNA VirtuaLab – Eterna

- WGBH worked with Carnegie Mellon to combine Eterna game with curriculum for classroom use

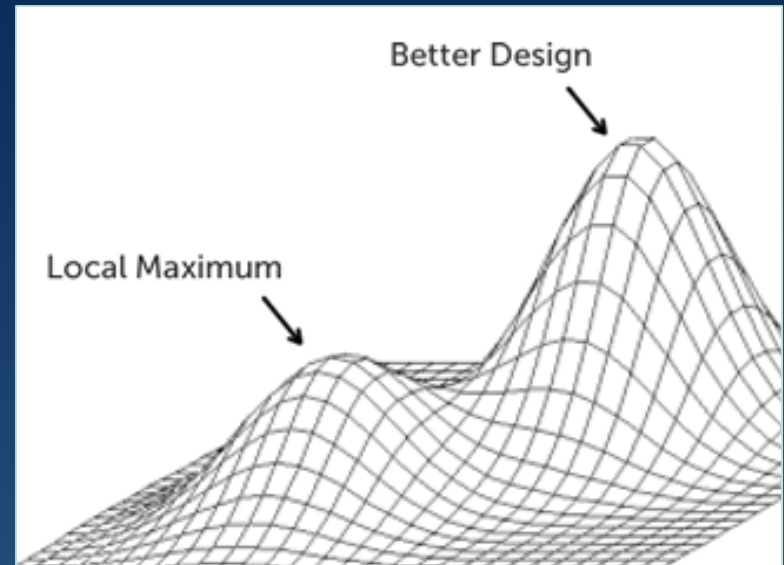


The screenshot shows the NOVA Labs website interface. At the top, the NOVA LABS logo is on the left, and "SUPPORT PROVIDED BY ARGOSY FOUNDATION" is on the right. A navigation menu includes "THE LABS", "ABOUT", "MEET SCIENTISTS", "OPPORTUNITIES", "EDUCATORS", "SOCIAL", "VIDEOS", and "LOG-IN". Below the navigation, a user profile section shows "YOU ARE HERE" with a person icon, "NOVA RNA VIRTUALAB" with a subtext "ETERNA PUZZLES + RNA SCIENCE VIDEOS", and a "CARRY-OVER 5000 PTS" button. To the right is the "eterna" logo with "RESEARCH COMMUNITY @ CMU". The main content area features the title "RNA VirtuaLab" in yellow. Below it is a paragraph: "Nature's best kept secret is a wonder molecule called RNA. It is central to the origin of life, evolution, and the cellular machinery that keeps us alive. In this Lab you'll play the role of a molecular engineer by solving RNA folding puzzles. Then take your skills to Eterna, where you can design RNAs that could be at the heart of future life-saving therapies." To the left of this text is a decorative graphic of gears and a DNA helix. To the right is a large, stylized green and yellow molecular structure. Below the text are three buttons: "PLAY GAME" (yellow), "VIDEO INTRO" (white), "ABOUT THE LAB" (white), and "EDUCATION GUIDE" (white). To the right of the "PLAY GAME" button is the text "GAME ENGINE BY THE ETERNA PROJECT" and "CARNEGIE MELLON UNIVERSITY".



All hands on deck

- Game design and data challenges benefit from scale
- Opportunity for all to get involved
 - Publishers, developers & players
 - AAA & indy
 - Researchers & students
 - Non-profits & government



What is a game jam?

- A 48-hour hackathon with game developers of various skills
- Small teams producing game prototypes on specific themes



- Subject matter experts on site
- Playtesters to “keep it real”
- Competition or coopetition



Game jams



Game jams

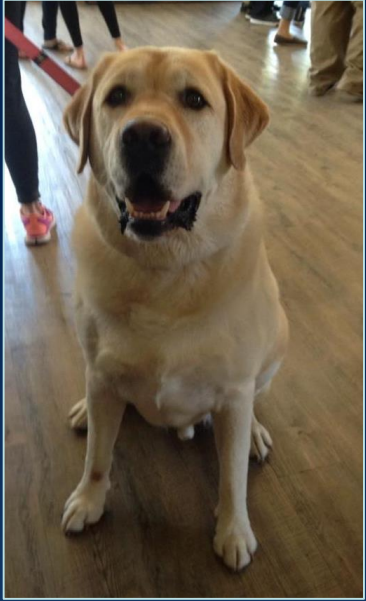
- Global Game Jam 2014
 - 488 sites, 23,198 people, 4290 games
- Nordic Game Jam 2014
 - 1 site, 500 people, 110 games
- HHS Health Game Jam 2014
 - 1 site, 300 people, 41 games



The White House Education Game Jam

- Building and testing education game prototypes to develop new tools for teachers in the classroom





#WHGameJam: The Numbers

- U.S. Department of Education, Smithsonian, NASA
- 105 game developers
- 30 teachers, students, learning researchers, and staff

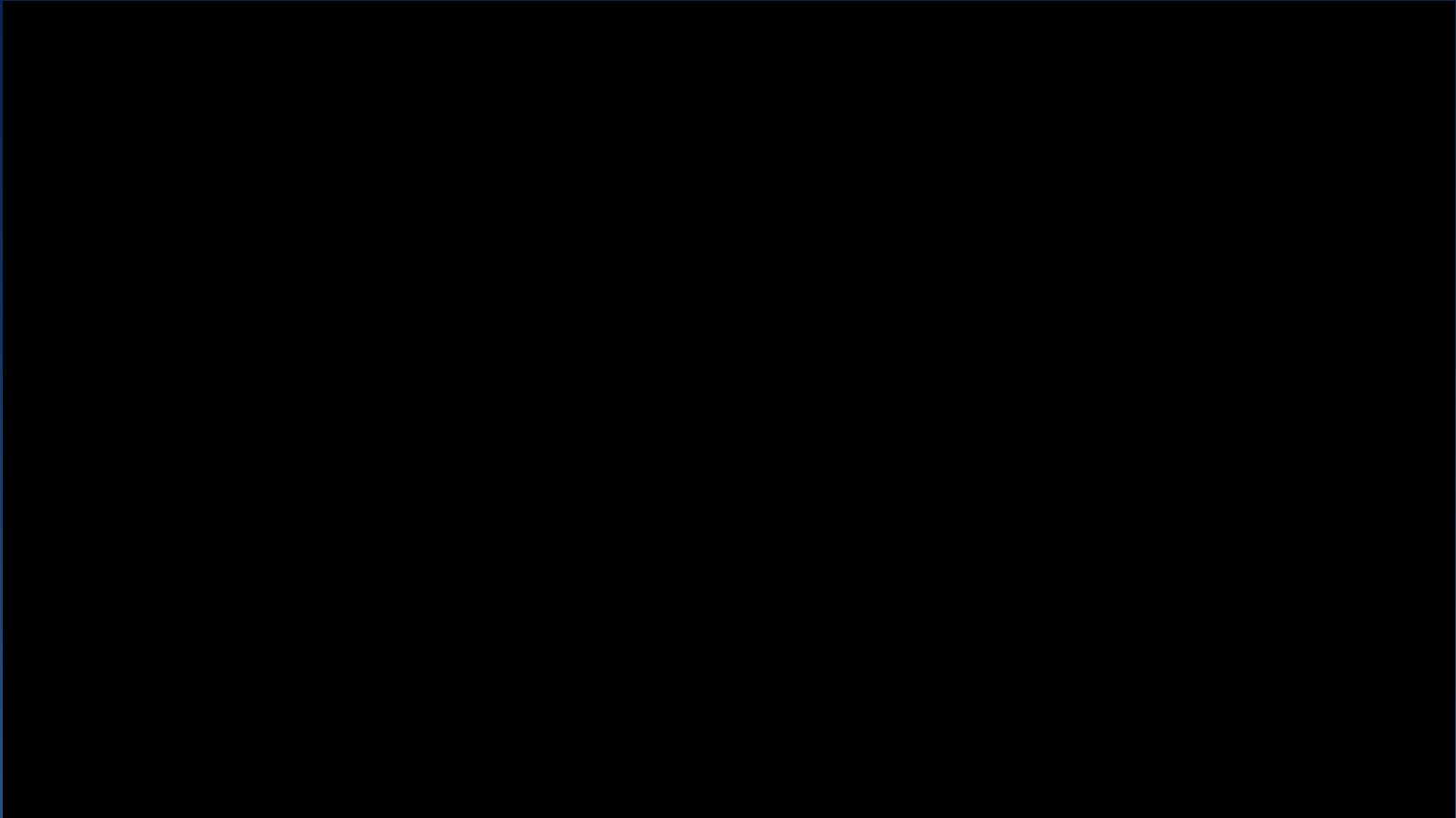
23 education game prototypes built!



Team Wolfshark (Ubisoft)



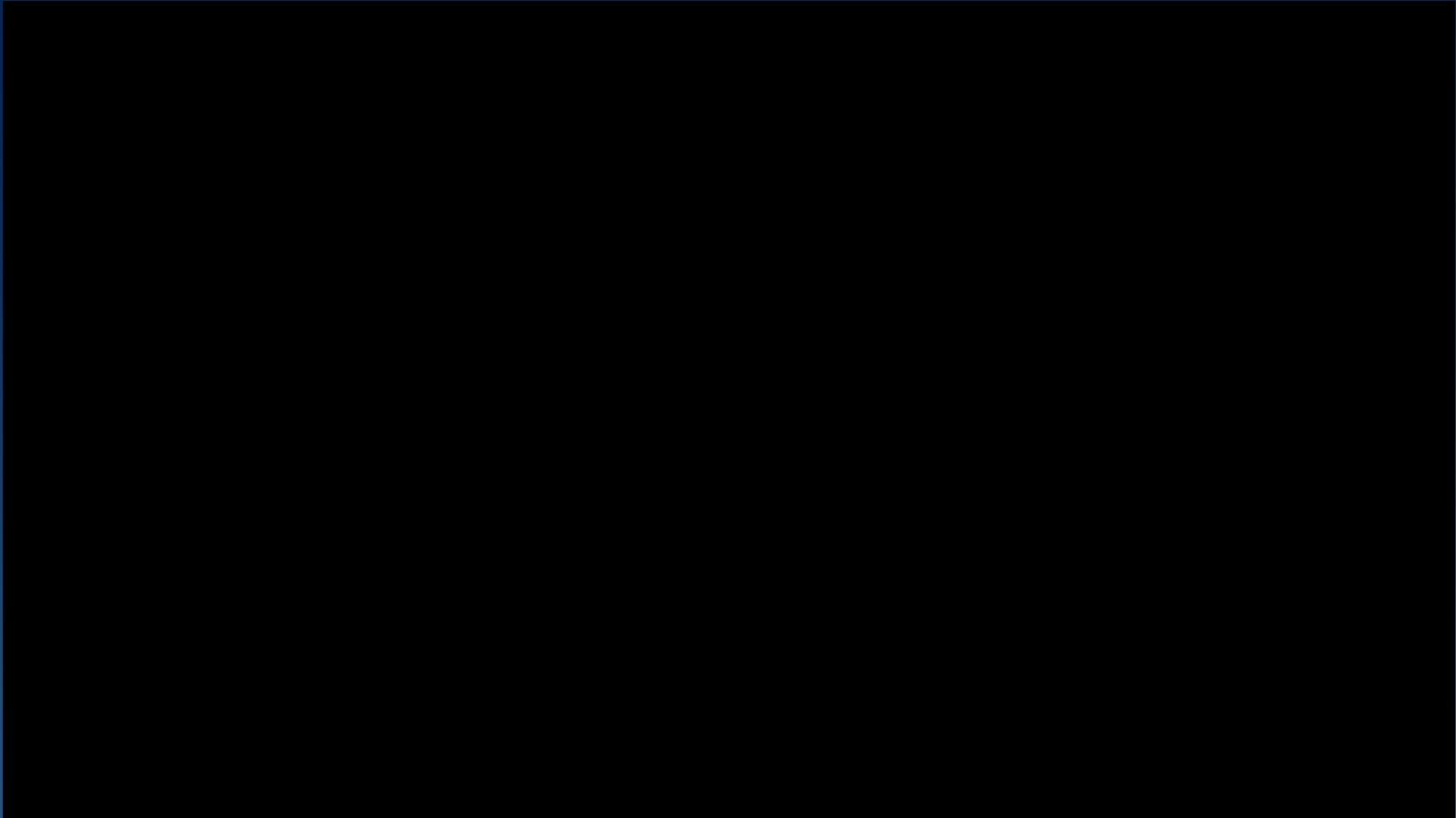
Team Wolfshark (Ubisoft) – Endemos



Team Mouse Jam (Disney)



Team Mouse Jam – Gloobal Doomination



Follow-on game jam work

- Dept of Education is working to develop promising prototypes further
 - SBIR program interested in game jams as an on-ramp
 - Regional pop-up jams
- Game jam for climate change education
- Health & fitness game jam using fitness data API



Informal science education games



Curious to learn more?

- Mark DeLoura, mdeloura@ostp.eop.gov
- #WHGameJam videos at YouTube “Office of Ed Tech”
- Federal Games Guild newsletter and monthly meetings
 - listserv@listserv.gsa.gov
 - SUBSCRIBE OSTP-GAMESFORIMPACT Fname Lname

