U.S. DEPARTMENT OF EDUCATION

GUIDE TO EDUCATIONAL LEARNING GAMES AND TECHNOLOGIES

7th Annual ED Games Expo
Terrace Level Galleries
John F. Kennedy Center for the Performing Arts
Washington, D.C.
January 9, 2020, 5–8 p.m.

Institute of Education Sciences
U.S. Department of Education

Contents

Introduction

Readers:

The U.S. Department of Education (Department) is hosting the **7th Annual ED Games Expo** to showcase and celebrate educational learning games and innovative forms of learning technologies for children and students, including those in special education programs. The event **(watch video)** will occur on Thursday, January 9, 2020, from 5–8 p.m. in the Terrace Level galleries at the John F. Kennedy Center for the Performing Arts in Washington, D.C. We hope you can attend this free event!

The Expo provides the opportunity for parents, students, and educators to discover and demo almost 150 learning games and technologies developed through more than 30 program offices at the Department and other government agencies. The games and technologies include an array of cutting-edge technologies—such as virtual reality, augmented reality, maker tools, automated tutors, and role playing games, and cover a range of topics, including early learning, science, engineering, math, reading, social studies, social skills, and to support students with or at risk for disabilities.

To attend the Expo, **RSVP here**. A note to parents—The developers will be on hand to provide information and answer questions. Bring your children after school so they can play, and then ask the experts "How did you create this learning game?" and "What do I need to study in school to become a game developer?"

This *Guide to Educational Learning Games and Technologies* provides brief descriptions of the learning games and technologies available to demo at the 7th Annual ED Games Expo. We encourage you to browse through this guide and watch the trailer videos to determine ahead of the Kennedy Center event which games and technologies you may want to check out. Please use the email addresses listed at the end of each short description if you have any immediate questions for the developers. General questions about the ED Games Expo can be emailed to **Edward.Metz@ed.gov**. We look forward to seeing you at the Kennedy Center on Thursday, January 9, 2020.

The ED Games Expo Planning Team

DISCLAIMER: The U.S. Department of Education does not endorse the developers, or the learning games or technologies listed in this guide.

Government Program Agencies and Offices
(*and their abbreviations*)
Represented at the 7TH Annual ED GAMES EXPO

U.S. Department of Agriculture (USDA)

- U.S. Department of Agriculture Small Business Innovation Research (USDA SBIR)
- Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K–12 Classroom Challenge Grants Program (SPECA)

U.S. Department of Defense (DoD)

- Office of Naval Research
- Defense Advanced Research Program Agency (DARPA)
- U.S. Army Mobile Division

U.S. Department of Education (ED)

- Institute of Education Research Small Business Innovation Research (ED/IES SBIR)
- IES National Center for Education Research (NCER)
- IES National Center for Special Education Research Grants (NCSER)
- Office of Career, Technical, and Adult Education (OCTAE)
- Office of Special Education Programs (OSEP)
- Ready to Learn (RTL)
- Office of Elementary and Secondary Education (OESE)

U.S. Department of Health and Human Services (HHS)

- Office of Adolescent Health (OAH)
- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)

Library of Congress

National Endowment for the Arts (NEA)

National Endowment for the Humanities (NEH)

Federal Reserve Board (The Fed)

National Institutes for Health (NIH)

- National Institutes for Health Small Business Innovation Research (NIH SBIR)
- National Institute on Drug Abuse Small Business Innovation Research (NIDA SBIR)
- National Institute of Dental and Craniofacial Small Business Innovation Research (NIDCDR SBIR)

- National Institute of General Medical Sciences (NIGMS)
- NIH Science Education Partnership Award (SEPA)
- National Institute of Allergy and Infectious Diseases (NIAID)
- National Institute of Nursing Research (NINR)

National Science Foundation (NSF)

- National Science Foundation Small Business Innovation Research (NSF SBIR)
- Advancing Informal STEM Learning (AISL)
- Major Research Instrumentation (MRI)
- Discovery Research K–12 (DRK12)

Smithsonian Institution

U.S. Department of State

Wilson Center

Learning Games and Technology Developers at the 7TH Annual ED GAMES EXPO

7 Generation Games
Alchemie
Analytic Measures
Andamio Games
Apprendis and Rutgers University
Attainment Company
Benetech
Bridge Multimedia
Building Momentum
CAST
CharmTech Labs
Chef Koochooloo
CodeSpark
Cognitive ToyBox
Ed Modified
Electric Funstuff
Empirical Games and Florida State University
FableVision
Fleet Engineers
Navatek
Fluidity Software
Future Engineers
Game Innovation Lab
Games That Work
George Mason University
Georgia State University
Gigantic Mechanic
Graspable Math, University of Richmond, and WPI
Half Full Nelson & Indiana University
Hats and Ladders
Healthy U Campus
iCivics
IDRT
Indelible
INSIGHTS
Iowa State University
Kiko Labs
Killer Snails
Learning Ovations, Univ of California Irvine
LEVR Studios
Lighthaus
LightUp
LiveSchool
MathBrix
Media Rez
MidSchooMath
Mindtrust Labs and University of Houston
Molecular Jig
MULE Games and University of Missouri
Muzology
Muzzy Lane
Myriad Sensors
New Mexico State University
New York University
North Carolina State University
Northeastern University
Not Suspicious
NWEA
Osso VR
Parametric Studios
PBS Kids
Readorium
Rounded Learning
Sama Learning
Schell Games
Scoutlier
Second Avenue Learning
SimInsights
Simiosys
Sirius Thinking
Smithsonian
Speak Agent
StoryWorld
Substrate Interactive
Teaching It Right
Teachley
TERC
Texas A&M University
The Beamer
Thrust Interactive and University of Georgia
Triseum
UMASS Boston
University of California Irvine
University of Connecticut
University of Iowa
University of Miami
University of Minnesota
University of Oregon
University of Washington
University of Wisconsin and SMU
University of Wisconsin
Urban Arts
Vanderbilt University
VidCode
Wilson Center
Woot Math
Worcester Polytechnic Institute
Words Liive

Areas of Focus for Learning Games and Technologies

EARLY LEARNING

(A few learning games and technologies listed under other areas of focus may also be appropriate for pre-K students. If so, they are marked as such.)

1. **Kiko's Thinking Time (Video Demo)** is a suite of 25 adaptive game-based exercises designed to promote executive function, reasoning, and spatial skills for pre-K to first grade students. Developed by Kiko Labs with a **2015 ED/IES SBIR** award. Contact: Grace Wardhana (**grace@kikolabs.com**)

2. **The Under the Sea Adventure (Video Demo)** game app identifies strengths and needs for childhood relative to skills in early literacy, language, writing, math, and science. Developed by NWEA (Northwest Evaluation Association) with initial development through a **2007** ED/IES SBIR award. Contact: Mike Nesterack **(mike.nesterak@nwea.org)**

3. **Fuzzy Numbers (Video Demo)** is a math game for children ages 3 to 5 for kindergarten readiness in numbers sense, which helps children leverage their approximate number system (a cognitive system responsible for estimating quantity without counting). Developed by Cognitive Toybox with a **2016** NSF SBIR award. Contact: Tammy Kwan (**tammy@cognitivetoybox.com**)

4. **Cognitive ToyBox for Schools (Video Demo)** is a hybrid observation and game-based assessment platform for children from birth to 5 years old. Children play developmentally appropriate touchscreen games for five minutes per week, and teachers have access to timely information on each individual child's learning trajectory. Developed by Cognitive ToyBox with a **2016** NSF SBIR award. Contact: Tammy Kwan (**tammy@cognitivetoybox.com**).

5. **Brush Up (Video Demo)** helps children master toothbrush excellence with a daily brush-along challenge in a mixed reality mobile game. Developed by **Games That Work** with a **2011** NIH/NIDCR SBIR award. Contact: Dov Jacobson (**dov@gamesthatwork.com**)

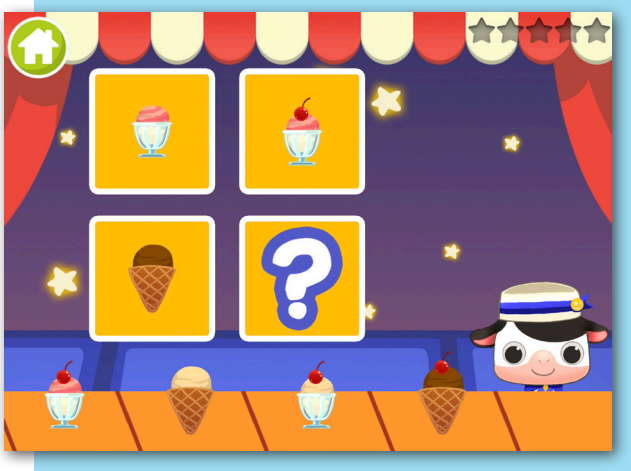
6. **Brush Up VR (Video Demo)** is a high-energy virtual reality toothbrushing game where children learn to clean all tooth surfaces—far beyond the few obvious places they typically brush. Developed by **GamesThatWork** with a **2011** NIH/NIDCR award. Contact: Dov Jacobson **(dov@gamesthatwork.com)**

7. **The Cat in the Hat Invents** app introduces preschool students to science, technology, engineering, and math (STEM) concepts, such as simple machines and the engineering design process, as they outfit robots with tools to overcome obstacles in fantastic Seussian worlds. Developed by PBS KIDS, CPB, and Random House with a **2015** Ready to Learn Award at ED. Contact: David Lowenstein **(dmlowenstein@pbs.org)**.

8. In the **Molly of Denali** (**video demo**) app, 5- to 8-year-olds use everyday informational texts (i.e. field guides, recipes, diagrams, etc.) to solve problems and fulfill their curiosity in an immersive version of Molly's Alaska Native village. Developed by PBS KIDS, CPB, and WGBH, through a **2015** Ready to Learn Award at ED. Contact: David Lowenstein (**dmlowenstein@pbs.org**).

*With **Moby.Read** students read a story aloud on a tablet device and instantaneously receive a score for their oral reading fluency.*

*With **Chef Koochooloo** children learn about healthy eating and different cultures.*



***Kiko's Thinking Time** is a suite of 25 adaptive game-based exercises designed to promote executive function, reasoning, and spatial skills for pre-K to first grade students.*

9. **Individual Growth & Development Indicators "IGDIs" (Video Demo)** are a set of preschool assessments for monitoring the growth and development of English- and Spanish-speaking preschoolers on the pathway to kindergarten. Developed by researchers at the University of Minnesota with **2012 and 2016** grants from IES/ NCER. Contact: Alisha Wackerle-Hollman (**wacke020@umn.edu**)

10. **MathBRIX** (**Video Demo**) is a game for pre-K to grade two students to think mathematically and problem-solve by moving virtual replicas of toy-building bricks into place to arrive at solutions. PlayPACT, the home companion, encourages parents to help children build early cognitive skills using a "connected play" approach. Developed by MathBRIX with **2016** and **2019** NSF SBIR awards. Contact:Bettie Schwartz **(bettie@mathbrix.com)**

11. **INSIGHTS** is a social-emotional learning intervention on children's temperament with programs for children, teachers, and parents. Using puppetry and videos, four typical temperaments are featured: Coretta the Cautious, Gregory the Grumpy, Fredrico the Friendly, and Hilary the Hard Worker. Developed by researchers at NYU with a **2016** award from IES/NCER and a **1998** award from the NIH/NINR. Contact: Sandee McClowry (**drmcclowry@insightsintervention.com**)

12. The **Optimizing Learning Opportunities for Students (OLOS)** is an observational system for prekindergarten to third grade students to assess instruction, teacher-child interactions, and the classroom learning environment. Developed with a **2016** IES/NCER award. Contact: Ashley Adams (**adamsak@uci.edu**)

13. **Uno, Dos, Tres, Listos!** (**Video Demo**) is a classroom-based, bilingual (Spanish/ English) adaptive assessment. Game activities spanning several knowledge domains and cognitive skills assess children's readiness for kindergarten. In development by researchers at the University of Houston and MindTrust Labs with a **2016** IES research grant. Contact: Chris Errato (**cerrato@ mindtrust.com**)

14. **Enfoque en Ciencia** (**Video Demo**) is a Spanish version of the Lens on Science computer-administered, adaptive science assessment for Spanish-speaking preschoolers that measures children's knowledge in life science, earth and space science, and physical science and science practices (observing, describing, comparing, questioning, predicting, experimenting, reflecting, and cooperating). Developed by researchers at the University of Miami with a **2013** IES NCER grant. Contact: Dr. Daryl Greenfield (**dgreenfield@miami.edu**)

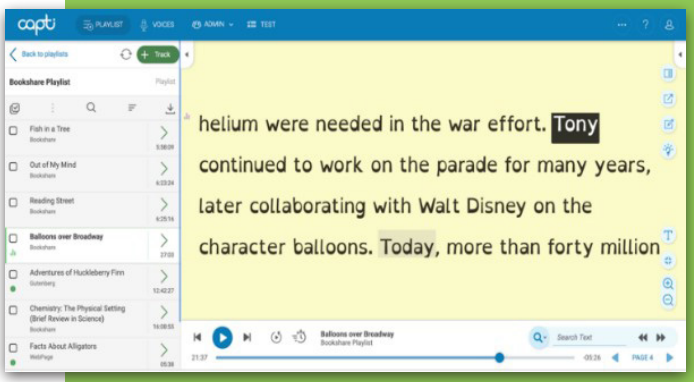
15. **Lens on Science** (**Video Demo**) is an adaptive science summative assessment for preschool to measure children's knowledge of three science content areas, such as life science, earth and space science and physical and energy science, and science processing skills. Developed by researchers at the University of Miami with a **2009** IES/ NCER grant. Contact: Daryl Greenfield (**dgreenfield@miami.edu**)

SPECIAL EDUCATION

(A few learning games and technologies listed under other areas of focus may also be appropriate for some special education students. If so, they are marked as such.)

16. The **KinderTEK** (**Video Demo**) app engages pre-K to grade three children in kindergarten-level math instruction with vividly illustrated animals all over the world. The app provides individualized instruction, feedback, and assessment for teachers working with children identified with math learning disabilities. Developed by the **University of Oregon's Center on Teaching and Learning** with a **2011** IES award, a 2014 OSEP award, and is currently being evaluated through a **2017** IES award. Contact: Mari Strand Cary (**mscary@uoregon.edu**)

17. **NumberShire** **(Video Demo)** is a math game focusing on critical whole number concepts and skills that uses a narrative arc to motivate and teach students in kindergarten through grade two, especially those at risk for mathematical difficulties. The game provides individualized instruction and assessment and provides feedback to teachers. Developed with **2011**, **2012**, and **2013** ED/IES SBIR awards; **2012** and **2016** IES awards; and a **2016** OSEP award to the University of Oregon. Contact: Nancy Nelson (**nnelson3@uoregon.edu**).



***Capti Voice** is a literacy learning platform to improve the comprehension and fluency of struggling readers with or at risk for disabilities.*

18. **In Go Phonics** (**Video Demo**), available as **Early Reading Skills Builder**, students in special education learn to read through phonics instruction aligned to third grade. Developed by the Attainment Company through a **2011** ED/IES SBIR, Contact: Carol Stanger (**cstanger@attainmentcompany.com**).

19. In **Access Language Arts (Video Demo),** secondary special education students have access to adapted literature and language arts instruction, grade-aligned to middle school. Developed by the Attainment Company through a **2014** ED/IES SBIR award. Contact: Carol Stanger (**cstanger@attainmentcompany.com**).

20. **myASLTech (Video Demo)** supports teachers in creating educational content and quizzes in American Sign Language (ASL). Developed with a **2011** ED/IES SBIR award. Contact: Corinne Vinopol (**corinne@idrt.com**)

21. **EdMod** (**Video Demo**) is a special education platform to support the implementation of IEPs and 504s in the classroom that provides K–12 educators with instant access to learning needs classification information, research-based instructional strategies, and progress monitoring workflow tools. Developed by **Education Modified** with a **2019** ED/IES SBIR award. Contact: Melissa Corto (**melissa@educationmodified.com**)

22. **SNUDLE** is a web-based science notebook based on Universal Design for Learning principles to facilitate inquiry science for students with or at risk for learning disabilities. It is currently being evaluated through a **2016** award from NCSER/IES. Main contact: Jose Blackorby (**jblackorby@cast.org**);

23. **Strategies for Online Academic Reading** (*SOAR) (***Video Demo***)* is a web-based curriculum for middle school students with learning disabilities to promote student competency when reading and researching online. The tool supports student efforts to search for, find, evaluate, read, and use appropriate and relevant online information. Developed at the **University of Oregon** with a **2012** ED/OSEP award. Contact: Fatima Terrazas-Arellanes (**fatima@uoregon.edu**)

24. **Etext Supports for Collaborative Online Learning and Academic Reading (Project ESCOLAR)** (**Video Demo**) supports middle-school students, including those with learning disabilities, in learning science in an engaging environment. Developed at the University of Oregon with a 2013 OSEP award. Contact: Fatima Terrazas-Arellanes (**fatima@uoregon.edu**)

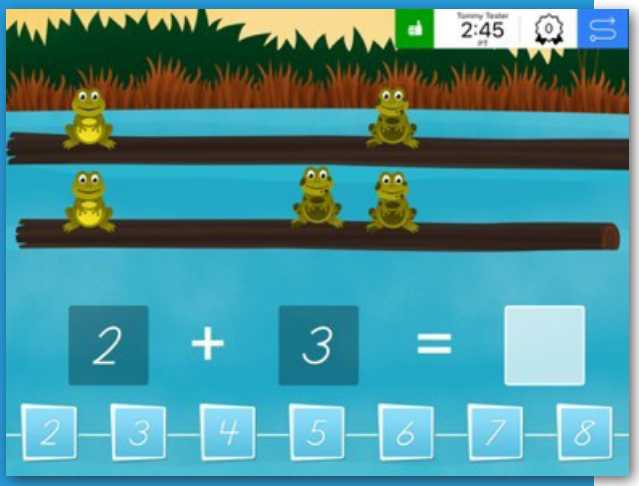
25. **WEGO-RIITE** (Writing Efficiently with Graphic Organizers) is a tool for teachers to support students with or at risk for disabilities in grades four to six in writing essays. Developed at George Mason University with 2012 and 2018 awards from OSEP. Main contact: Anna Evmenova (**aevmenov@gmu.edu**)

26. **Future Quest Island-Explorations** (**Video Demo**) is a game and Universal Design for Learning-based college and career awareness curriculum for students with and without disability in grades three to five. Students create e-portfolios of their hopes, dreams, and goals as a person, learner, worker, and friend, which are then used by IEP teams to develop postsecondary goals for students. Developed at the University of Massachusetts Boston through a **2018** OSEP award. Contact: Lori Cooney (**lori.cooney@umb.edu**)

27. **The Center for Improving Software for Learning** is developing a suite of tools to adapt and customize instruction for students with disabilities, including a reader (Clusive) and an authoring and a discovery tool that is accessible and adaptive to allow individualized instruction for students. Developed by CAST with a **2017** OSEP award. Contact: Jose Blackorby (**jblackorby@cast.org)**

28. **Capti Voice** is a literacy learning platform to improve the comprehension and fluency of struggling readers with or at risk for disabilities. The technology supports teachers in accommodating these students. Developed with a **2012** award from NIDILRR SBIR. Main contact: Yevgen Borodin (**yevgen.borodin@team.captivoice.com)**

29. **Teaching It Right** is an app and multi-sensory social skill program for children with Autism Spectrum Disorder. The app includes customizable features, integration of original music, video, facial recognition technology, and tracking tools to create a powerful modeling, learning, and practicing environment. Developed by Teaching It Right with a **2017** NSF SBIR. Contact Andrea Johnson (**andrea@teachingitright.com**)



*The **KinderTEK** app engages pre-K to grade three children in kindergarten-level math instruction with vividly illustrated animals all over the world.*

30. **ibestt** (Implementing Behavior Supports and Team Technology) (**Video Overview**) is for elementary and middle school and district-level teams (i.e., administrators, counselors, general and special education teachers). The tool focuses on implementing behavior supports for students with chronic, challenging behaviors. It facilitates communication and collaboration among teams and provides ongoing coaching. Developed at the University of Washington with a **2013** OSEP award. Contact: Carol A. Davis (**cadavis1@uw.edu**)

31. **Bridge Multimedia** provides captioning and description in the television broadcast space in the music, theater, and broadcast communities. The project's products address the full range of disabilities and are grounded in principles of child development and learning. Developer with support from OSEP. Point of contact: Matt Kaplowitz (**mkaplowitz@bridgemultimedia.com**)

32. **Railway Hero** is an adventure game for students with and without disabilities to learn math with the characters from the PBS KIDS series, Cyberchase. The game uses in-game learning supports such as caption controls and audio descriptions. Developed by **Bridge Multimedia** and WNET Thirteen, with support from OSEP. Point of Contact: Matt Kaplowitz (**mkaplowitz@bridgemultimedia.com**)

33. C-CAL, the Career-Centered Social Skills and Active Listening app, is a game-based assessment and training program for students with disabilities transitioning into the work environment that provides scenarios on active listening to better develop social skills in the workplace. Developed by **Bridge Multimedia** with support from OSEP and **FHI360**. Point of Contact: Matt Kaplowitz (**mkaplowitz@bridgemultimedia.com**)

34. **Film Detective** is a game for adolescents on the autism spectrum to teach a virtual agent about theory of mind, or the ability to ascribe mental states (such as beliefs, desires, and emotions) to other people and to use these concepts in interpreting others' actions. In development at Vanderbilt with a **2018** IES/NCSER grant, and based on an adaptation of the **Betty's Brain** science education platform, also developed at Vanderbilt with a **2006** IES/NCER grant. Main contact: Maithilee Kunda (**mkunda@vanderbilt.Edu**)

35. The **DIAGRAM Center** identifies and creates accessible digital and multimedia educational materials for individuals with or at risk for disabilities. Support provided to Benetech with a 2015 OSEP award . Contact: Lisa Waders (**lisaw@benetech.org**).

36. **MoBeGo (Video Demo)** is a self-monitoring app for students with or at risk for disabilities to be aware of their behavior and then record if the behavior is occurring. Teachers complete the same procedures in the app, which then delivers data-based recommendations to guide them on how to adapt the self-monitoring to support student success. Developed with a **2016** IES/NCSER grant to researchers at University of Iowa and Vanderbilt University. Contact: Allison Bruhn (**allison-bruhn@uiowa.edu)**

*In **Access Language Arts** secondary special education students have access to adapted literature and language arts instruction, grade-aligned to middle school.*

***NumberShire** is a math game focusing on critical whole number concepts and skills that uses a narrative arc to motivate and teach students in kindergarten through grade two, especially those at risk for mathematical difficulties.*

SCIENCE

37. In **HoloLab Champions (Video Demo)**, middle and high school students perform experiments to learn chemistry in an immersive virtual reality game environment. Developed by **Schell Games** through a **2016** ED/IES SBIR award. Contact: Brooke Morrill (**bmorrill@schellgames.com**)

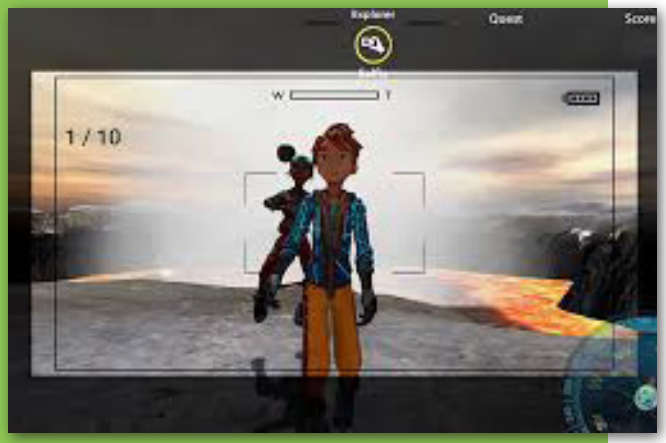
38. **Tablecraft (Video Demo)** is a physical sciences virtual reality learning game designed to introduce middle-schoolers to the periodic table of elements. Students are teleported to a playful and fully interactable 3-D treehouse lab. There, they can combine the elements to craft common household objects and feed those objects to their virtual pet blobs, engineering their growth, poop, and offspring! Developed by Not Suspicious with a **2019** NSF SBIR. Contact Rafael Brochado (**rafael@notsuspicious.biz**)

39. **Speak Agent** (**Video Demo**) is a playful learning program for bridging the academic language gap for diverse students in kindergarten through eighth grade, including English learners, to accelerate reading and STEM core content vocabulary growth. Developed by **Speak Agent** with NSF SBIR and a **2015** ED/IES SBIR award. Contact: Ben Grimley (**ben@speakagent.com**)

40. In **LifeCraft** (**Video Demo**) students beaming into the center of a cell, whether animal, plant, or bacterium, explore the surfaces and interior of the cells, learn about cell structures, and guide core processes in the cell. Developed by **Lighthaus** and Smart Sparrow with support from the **2017** EdSim Challenge from OCTAE. Contact: David Sarno (**david@lighthaus.us**).

41. **Mission HydroSci** (**Video Demo**) is a 3-D game for middle school students to learn water systems' science and scientific argumentation. Developed by MULE Games and the University of Missouri **2015** IES and a **2016** i3 grants from ED. Contact: Troy Sadler (**sadlert@missouri.edu**)

42. In **Martha Madison** (**Video Demo**) middle school students join meerkat scientist Martha Madison on quests to help her community, while learning physical science and 21st century skills. Jump, fly, slide, and bang through game levels built on a side-scrolling platform that plays like a video game. Developed by Second Avenue Learning with a **2012** NSF SBIR award. Contact: Tory VanVoorhis (**Tory@SecondAvenueLearning.com**)



*In **Space Scouts** elementary students earn badges and mindset rewards as they play five space-themed engineering design and science inquiry games.*

43. **Physics Playground (Video Demo)** is a 2-D problem solving puzzle game for middle and high school students to understand Newton's laws of force and motion via stealth assessment. Developed originally by Valerie Shute and Matthew Ventura (2011), with support from **2016** NSF and **2017** IES awards. Contact: Valerie Shute (**vshute@admin.fsu.edu**)

44. The **Mechanisms** and **ModelAR** apps (**Video demo**) bring game-based interactivity to the learning of college-level general and organic chemistry. Developed by **Alchemie** through a **2017** NSF SBIR award. Contact: Julia Winter (**julia@alchem.ie**)

45. In **Space Scouts** elementary students earn badges and mindset rewards as they play five space-themed engineering design and science inquiry games. Developed by PBS Kids through a **2015** ED/Ready to Learn grant. Contact: David Lowenstein (**dmlowenstein@pbs.org**).

46. **Crystal Island** (**Video Demo**) is a game-based virtual learning environment for middle grade science and literacy where students play the role of a medical field detective investigating a mysterious infectious disease outbreak affecting a team of scientists on a remote island. Developed at North Carolina State University with a **2017** NIH SEPA. Contact: James Lester (**lester@ncsu.edu**)

47. In **Mission KT: Episode 1 of THE STARDUST MYSTERY** four middle school players collaboratively find, photograph, clone, and analyze objects in the era where dinosaurs became extinct (66 million years ago) to discover how "we are made of Stardust that was once in the body of Albert Einstein and the Last T-Rex." Developed by TheBeamer LLC through a **2017** NSF SBIR award. Contact: Peter Solomon (**prsolomon@thebeamer.com**)

48. In the **FAMILY TEAM ADVENTURE** edition of Mission KT parents and grandparents join with young family members to create a game team of up to four players ages 8 to 13. They collaborate to find, photograph, clone, and analyze objects in the era where dinosaurs become extinct 66 million years ago. Developed by TheBeamer LLC through a **2017** NSF SBIR award. Contact: Peter Solomon (**prsolomon@thebeamer.com**)

***Speak Agent** is a playful learning program for bridging the academic language gap for diverse students in kindergarten through eighth grade, including English learners, to accelerate reading*

49. In **Building the Universe: Episode 2 of THE STARDUST MYSTERY** middle and high school students start from Quarks and electrons formed in the Big Bang, and assemble the first light atoms, then stars, then the heavy atoms formed in star supernova explosions (STARDUST), eventually building our own Solar System with planet Earth. Developed by TheBeamer LLC through a **2017** NSF SBIR award. Contact: Peter Solomon (**prsolomon@thebeamer.com**)

50. With the **Curio Classroom** (**Video demo**), students create their own scientific illustrations with colored pencils, markers, and crayons, and then use toy-like scientific instruments and classic game controllers to bring their drawings to life as interactive simulations to learn topics in STEM. Developed by Curio Interactive through a **2019** NSF SBIR award. Contact: Barry Boone (**barry@curiointeractive.com**)

51. **PocketLab (Video Demo)** includes hardware, apps, and software for middle school and high school students to conduct investigations in physical science, chemistry, and earth science. PocketLab sensors collect data like motion, temperature, and light and then connect to the software for lab notebook features. Developed by Myriad Sensors with a **2015** NSF SBIR and **2018** ED/IES SBIR award. Contact: Clifton Roozeboom (**clifton@thepocketlab.com)**

52. **Happy Atoms** (**Video Demo**) is a game-based magnetic molecular modeling set and a companion app designed to teach chemistry to students in grade four and up, using the vision-recognition-based app to take a picture of what model was built, and exploring how it fits into the world of molecules and the real world. Developed by **Schell Games** through a **2015** ED/IES SBIR award. Contact: Brooke Morrill (**bmorrill@schellgames.com**)

53. **Inq-ITS (Video Demo)** personalized online labs that score themselves help students in grades five to 10 learn and apply science practices across physical, life, and earth science. Developed by Apprendis, Rutgers Graduate School of Education, and Worcester Polytechnic Institute with **2007**, **2010**, **2013**, and **2016** NSF research grants, **2009** and **2012** ED/IES research grants, and **2015**, **2016**, and **2018** ED/IES SBIR awards. Contact Mike Sao Pedro (**mikesp@apprendis.com**)

54. **Assassins of the Sea** (**Video Demo**) is a strategic card game for students in grades five to 12 in which players are scientists learning about the biodiversity of venomous marine snails and competing to build the winning venom arsenal of potentially life-saving peptide compounds. Developed by **Killer Snails** with support by a **2016** NSF SBIR. Contact: Jessica Ochoa Hendrix: (**jessica@killersnails.com)**

55. In **BioDive (Video Demo)**, middle and high school students are marine biologists using Google Cardboard VR headsets to make observations and using laptops to manipulate data and synthesize their observations to demonstrate learning in personalized digital science journals. Developed by **Killer Snails** with support by a **2017** NSF SBIR. Contact: Jessica Ochoa Hendrix: (**jessica@killersnails.com**)

56. In **Scuba Adventure (Video Demo),** students race again the clock as scientists, tagging creatures before their oxygen tanks runs out of air. Earn extra points for tagging venomous creatures whose deadly toxins may unlock the secrets to saving human lives. Developed by **Killer Snails** with support by a **2017** NSF SBIR. Contact: Jessica Ochoa Hendrix: (**jessica@killersnails.com**)

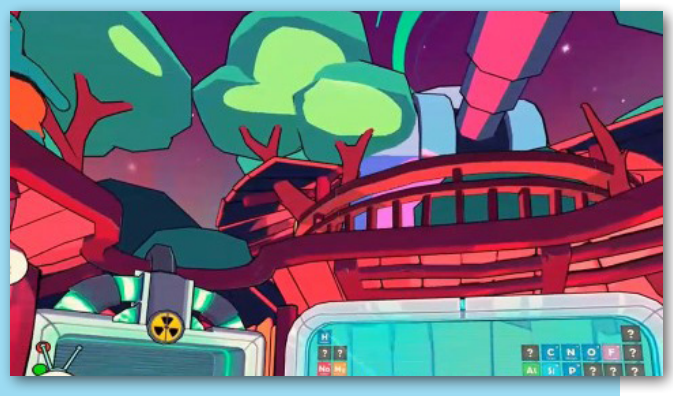
57. **Looking Inside** (**Video Demo**) is a set of collaborative mixed reality simulations to learn about middle school cell biology. In one simulation, players use cards with markers to add organelles to a simulation and then assemble a plant cell or animal cell. Developed by New York University's CREATE Lab and Future Reality Lab with partial support from a 2016 NSF MRI award to New York University. Contact: Jan Plass (**jan.plass@nyu.edu**)

58. **Scoutlier (Video Demo)** is a platform for middle and high school that generates activity templates to embed formative assessments of 21st century learning skills and Next Generation Science Standards-style 3-D science. Developed with support from the **Junior Researchers** STEM program and a **2018** from the Office of Naval Research Education and Workforce Naval STEM. Contact: Claire Pontbriand (**claire@aecern.com**)

59. In **NIH Scientist Launch Game App** students age 10 and up learn about science, getting a grant, and overcoming challenges researchers often face. Along the way, players learn about diseases, experimental design, and the life and career of being a successful scientist. Developed by NIH. Contact: Don Luckett (**luckettd@csr.nih.gov**)

60. **Sama's Virtual Reality Learning Platform** (**Video Demo**) presents first-year college chemistry students visualizations of hard-to-learn STEM subjects. Developed by Sama Learning through a **2019** NSF SBIR award. Contact Barbara DeHart (**Barb@samalearning.net**)

61. **Meta!Blast** (**Video Demo**) is a 3-D action-adventure cell and metabolic biology game for high schoolers and undergraduates where players shrink down to microscopic size and explore the vivid, dynamic world to discover how important plants are to the survival of the human race. Developed by Iowa State University through a **2008 NIH SEPA award. Contact: Eve Wurtele (mash@iastate.edu**)



***Tablecraft** is a physical sciences virtual reality learning game designed to introduce middle-schoolers to the periodic table of elements.*

62. **Mol Chemistry** (**Video Demo**) is mobile game for undergraduate organic chemistry students that combines visualizations of complex 3-D molecules and exercises. Developed by Substrate Games with **2017 and 2019 NIH SBIR awards. Contact: Will Schneller (will@substrategames.com**)

63. **iNeuron** (**Video Demo**) introduces basic neuroscience to middle and high school students by transforming a set of mobile devices into functionally connected neurons. Developed by **Andamio Games** through a **2011** NIH SBIR award. Contact: Adam Gordon (**adam.gordon@andamiogames.com**)

64. **CellEnergy Photosynthesis Labs** (**Video Demo**) uses interactive challenges and virtual labs with an experimental playground to engage high school students and deepen understanding of photosynthesis and cell respiration. Developed by **Andamio Games** through a **2017** NSF SBIR award. Contact: Adam Gordon (**adam.gordon@andamiogames.com)**

65. **Immune Defense** (**Video Demo**) is a real-time strategy game for grades five to 12 biology. Students use proteins and phagocyte cells to eat bacteria, learning cellular behavior and the role of protein receptors in an engaging, problem-based format. Developed by Molecular Jig with a **2009** R25 grant from **NIH NIAID**. Contact: Melanie Stegman (**Melanie@MolecularJig.com**).

66. In **LightUp Studio** (**Video Demo**) middle and high school students explore the world's scientific wonders in true-to-life 3-D, and create augmented reality videos to share what they learn with each other. Developed by **LightUp** with support from a **2015** NSF SBIR award. Contact: Tarun Pondicherry (**hello@lightup.io**)

67. In **Journey through an Exploded Star** middle and high school students adventure through the full spectrum of radiant energy of a dying star as it blossoms out in 360° in this never-before-seen 3-D view of a supernova remnant. Built with real scientific data, this interactive allows the user to visualize the electromagnetic spectrum. Developed by the Smithsonian Institution. Contact: Cody Coltharp (**ColtharpC@si.edu**)

68. In **Coral Explorer,** primary students explore a patch of coral from the perspective of a fish, interacting with the community of sea life that make their home there and learning about the interdependent relationships the species share through narration from marine biologist Nancy Knowlton. Developed by the Smithsonian Institution. Contact: Cody Coltharp (**ColtharpC@si.edu**)

69. **SciStarter** (**Video Demo**) is a digital platform for students during citizens science projects, to track and earn credit for participating, to record observations, and reflect on what is learned. Students hear from real scientists at leading academic institutions and fulfill community service requirement credits via citizen science and teachers receive training and PD materials. Developed with **2015** and **2019** NSF/AISL grants. Contact **Darlene@SciStarter.com**

MATHEMATICS

70. **Cyberchase Fractions Quest** (**Video Demo**), based on PBS Kids math series Cyberchase, is an immersive game combining a high-stakes adventure story with a research-based approach to fractions learning for students in grades three and four. Developed by **FableVision Studios** with WNET New York Public Media with a **2017** ED/IES SBIR award. Contact: Gary Goldberger (**gary@fablevision.com**)

71. **Zoombinis** (**Video Demo**) is a level-based puzzle game for elementary and middle school students that uses logic, data analysis, pattern finding, and problem solving skills within entertaining environments. Developed by TERC, FableVision Studios, Learning Games Network with a **2015** award from NSF. Contact: Contact: David Libby (**David_Libby@terc.edu**)

72. **Addimals (Video demo)**, **Subtractimals** (**Video Demo)**, **Mt. Multiplis (Video Demo)** and **Fact Flyer** (**Video Demo)** support fact fluency and promote math strategy development for students in kindergarten to grade five. Developed by Teachley through a **2013** ED/IES SBIR award. Contact: Kara Carpenter (**Kara@Teachley.com**)

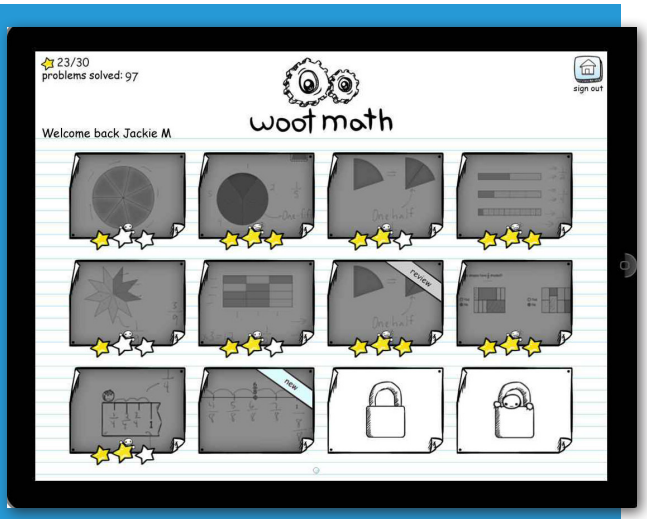
73. **Fractions Boost** (**Video Demo)** and **Boost 2** (in beta) are 3-D games for students in grades three to five to develop conceptual understanding of the meaning of fractions, while emphasizing social relationships with a track builder that allows students to build levels for their classmates. Developed by Teachley through a **2015** NSF SBIR award. Kara Carpenter (**Kara@Teachley.com**)

74. **Market Bay** (in beta) is a classroom-based game economy for kindergarten to grade five where students buy and sell virtual objects with their classmates while minigames and the digital currency promote deep math learning. Developed by Teachley through a **2019** NIH SBIR award. Kara Carpenter (**Kara@Teachley.com**)

75. **Muzology** (**Video Demo**) is a gamified learning platform that uses music videos (created by hit songwriters!) to get middle school students algebra-ready. Developed by Muzology with a **2018** NSF SBIR award. Contact: Leah Lowrance (**leah@muzology.com**)

76. **Math Snacks (Video Demo)** is a suite of games for middle school students including **Agrinautica** on expression building, **Curse Reverse** on variables, **Game Over Gopher** on coordinate points, **Ratio Rumble** on ratios, **Gate** on place value, **Monster School Bus** on ten-frames and fractions, and **Pearl Diver** on number sense. Developed by **New Mexico State University** with a **2009** NSF DRK12 and a **2015** NSF DRK12 award. Contact: Barbara Chamberlin (**bchamber@nmsu.edu**)

77. **Woot Math (Video Demo)** provides students grades three to 12 with engaging activities and teachers with actionable data, a formative assessment platform, and interactive content to address gaps in student understanding. Developed with a **2015 NSF SBIR award,** and a **2018** ED/IES SBIR award. Contact Krista Marks **krista.marks@wootmath.com**)

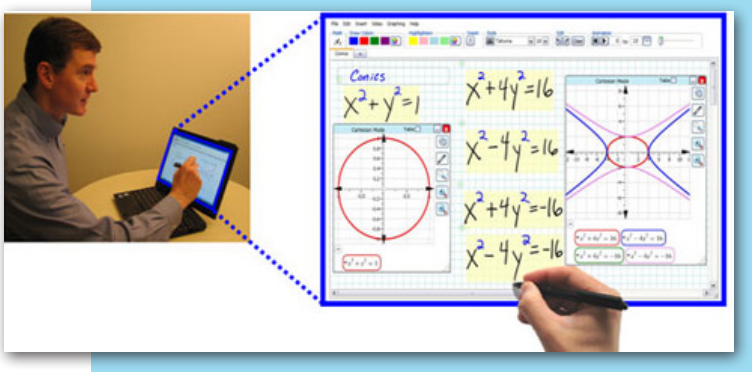


***Woot Math** provides students grades three to 12 with engaging activities and teachers with actionable data, a formative assessment platform, and interactive content to address gaps in student understanding.*

78. **Woot Math's Adaptive Learning Content (Video Demo)** provides instructional and remediation support to help students in grades three to seven understand and master key concepts including fractions, negative numbers, measurement on the number line, rate, ratio, and proportional thinking. Developed with a **2014** NSF SBIR award. Contact Krista Marks (**krista.marks@wootmath.com**)

79. **EMPIRES** (**Video Demo**) is a multiplayer game aligned to the Common Core Standards for seventh grade math, set in Ancient Mesopotamia and built around an epic story-based narrative that allows math to be coherently used within context. Developed by MidSchoolMath with **2013** ED/IES SBIR award. Contact: Scott Laidlaw (**scott@midschoolmath.com**)

80. **The Math Simulator** (**Video Demo**) is an online curriculum, using a rich, situational story where the math makes sense, alongside advanced math simulators to teach 146 Common Core Standards for grades five to eight. Developed by **MidSchoolMath** with a **2017** NSF SBIR award. Contact: Scott Laidlaw (**scott@midschoolmath.com**)



__FluidMath__ is a tablet-based algebra program that recognizes handwritten math formulae and sketches and generates solutions in the form of algebraic expressions, computations, graphs, and dynamic animations.

81. **ONPAR (Video Demo)** is a web-based tool to measure science and mathematics content, knowledge, and skills of middle school students, including English learners. Developed by researchers at the University of Wisconsin with a **2014** IES award and a **2015** OESE award. Contact: Laura Wright (**laura.wright@wisc.edu**).

82. **ASSISTments (Video Demo)** is an online tool that makes homework more effective by assisting students while helping teachers assess where to focus instructional time in mathematics. **Teachers** follow four simple steps. They create assignments, assist students, assess performance, and analyze answers. Developed with **a series** of awards from IES to researchers at Worcester Polytechnic Institute and partners. Contact Cristina Heffernan (**cristina.heffernan@assistments.org**)

83. **FluidMath (Video Math)** is a tablet-based algebra program for middle and high school that recognizes handwritten math formulae and sketches and generates solutions in the form of algebraic expressions, computations, graphs, and dynamic animations. Developed by Fluidity Software with a **2009** ED/IES SBIR award. Contact Don Carney (**donald.carney@fluiditysoftware.com**)

84. **ProblemScape** (**Video Demo**), developed by **RoundEd Learning**, is a series of adaptive adventure games to where middle school help characters in a virtual world by doing math. Developed with a **2018** NSF SBIR grant Contact: Vidya Raman (**vidya.raman@roundedlearning.com**)

85. **Graspable Math (Video Demo)** is an algebra notation tool for middle and high school students that turns math symbols into tactile virtual objects that can be explored and manipulated. Developed by researchers at Indiana University and Worcester Polytechnic Institute through a **2011** IES award and a **2019** award from ED/IES SBIR. Contact: Erik Weitnauer (**support@graspablemath.com**)

86. **From Here to There!** (Video Demo) is a game-based version of Graspable Math, where elementary to high school students complete puzzles by transforming an expression or equation into equivalent expressions using gestures and mathematical properties. Developed by researchers at the University of Richmond and Worcester Polytechnic Institute through **2011** and **2018** IES awards. Contact: Erin Ottmar (**erottmar@wpi.edu**)

87. **Variant** (**Video Demo**) is a 3-D adventure game for high school and college students to learn foundational calculus concepts. Developed by Texas A&M University and Triseum LLC with the support from a **2017** NSF SBIR award. Contact André Thomas (**athomas@triseum.com**)

88. **The Hidden Village** is an embodies game for high school students to make motions that correspond to key ideas behind proofs of geometry conjectures, which are imbedded in a storyline about crash landing on an alien planet. Developed by researchers at the University of Wisconsin and Southern Methodist University through a **2016** IES award. Contact: Candace Walkington (**cwalkington@smu.edu**)

89. In **APLUS** (**Video Demo**) students learn to solve equations by interactively teaching a synthetic teachable peer, called SimStudent, a machine-learning agent that learns cognitive skills through guided problem solving (aka peer tutoring). Developed at Texas A&M University with a **2018** ED/IES grant. Contact: Noboru Matsuda (**Noboru.Matsuda@ncsu.edu**)

90. **AzTech Games** (Video Demo) is a 3-D bilingual, virtual world game series for middle school students to learn basic statistics, measurement, and data, as well as Central American and U.S. Latino history. Developed by 7 Generation Games with a **2016** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com**)

91. In the **Making Camp** (Video Demo) game series, students in grades three to five review multiplication and division along with language arts while learning elements of Native American history, includes bilingual versions in English/Spanish and English/ Lakota. Developed by 7 Generation Games with a **2016** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com)**

ASSISTments *is an online tool that makes homework more effective by assisting students while helping teachers assess where to focus instructional time in mathematics.*

92. **Spirit Lake** (Video Demo) is a 3-D virtual world game for students in grades three to five that teaches multiplication and division and the history of the Dakota. Developed by 7 Generation Games with a **2013** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com**)

93. **Fish Lake** (Video Demo) is a 3-D virtual world game for students in grades four to six that teaches fractions and the history of the Ojibwe. Developed by 7 Generation Games with a **2013** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com**)

94. **Forgotten Trail** (Video Demo) is an adventure game for students in grades five to seven that teaches fractions, decimals, measurement, and multi-step problem solving along with Native American history. Developed by 7 Generation Games with a **2013** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com**)

ENGINEERING AND MAKING

95. **Tami's Tower: Let's Think About Engineering (Video Demo)** is a game where kindergarten to second grade students solve problems using basic engineering design principles. In the game, players help Tami, a golden lion tamarin, reach fruit on an overhanging branch by building a tower with blocks of simple geometric shapes. Developed in 2018 by the Smithsonian Institution. Main Contact: Reuben Brenner-Adams (**Brenner-AdamsR@si.edu**)

96. **Fab@School Maker Studio (Video Demo)** is a web-based design and fabrication tool for students in pre-K to grade eight to design, invent, and build their own geometric constructions, pop-ups, and working machines using low-cost materials like paper and cardstock and a wide range of tools from scissors to inexpensive 2-D cutters, 3-D printers, and laser cutters. Developed by **FableVision** Studios, Reynolds Center for Teaching, Learning and Creativity, with initial funding in **2010** by ED/IES SBIR. Contact: Gary Goldberger (**gary@fablevision.com**)

97. In **DESCARTES (Video Demo)** students in grades three to five use engineering design, apply math and science concepts, simulate in a sandbox game, and 3-D print their own prototypes (submersibles, boats, gliders, and other machines) using a standards-aligned design platform and curricula. Developed by **Parametric Studio** through a **2017** IES/SBIR award. Contact: Chris Whitmer (**whitmer@parametricstudioinc.com**)

98. In **EDISON (Video Demo)** students in grades six to nine solve real engineering problems with gamified engineering design software; make and test designs involving structures, electronics, and RC cars; and simulate and visualize designs in virtual reality and augmented reality. Teachers can customize and create their own unique project-based learning activities in EDISON. In development by **Parametric Studio** through a **2018** NSF/SBIR award. Contact: Chris Whitmer (**whitmer@parametricstudioinc.com**)

99. In **CodeSpark Academy's Story Mode** (**Video Demo**), kindergarten to grade five students learn the ABCs of computer science with a highly accessible word-free approach. Students program lovable characters called The Foos to create their own interactive stories, learning core computer science concepts in the process. Developed by CodeSpark through a 2019 ED/IES SBIR award. Contact: Joe Shochet (**joe@codespark.com**)

100. **Future Engineers** (**Video Demo**) uses its online, multi-challenge platform to conduct STEM contests for kindergarten to grade 12 students. Each challenge is developed with an industry partner and offered free to students and classrooms. In **2019** the Future Engineers platform was used to implement NASA's Mars 2020 "Name The Rover" national student competition. Developed by Future Engineers with a **2017** ED/IES SBIR award. Contact Deanne Bell: (**deanne.bell@futureengineers.org**)

101. The **Ghost School** (**Video Demo**) is an online community of practice where students learn essential industry- and standards-aligned programming skills, while engaging in software development through the creation of games. Developed by the **School of Interactive Arts** with a **2018** Education Innovation and Research grant at ED. Contact: Kevin Wright (**kevin.wright@urbanarts.org**)

*In **Ghost School** students learn essential industry skills while engaging in software development through the creation of games.*

102. **May's Journey** (**Video Demo**) is a narrative puzzle game world in which the main character May asks the student to help as strange things are happening, and the code is breaking. Players need to use beginning programming skills to solve puzzles and help May find her friend and discover what is happening to her world. Developed at Northeastern University with a **2018** NSF AISL award. Contact: Chaima Jemmali (**jemmali.c@husky.neu.edu**)

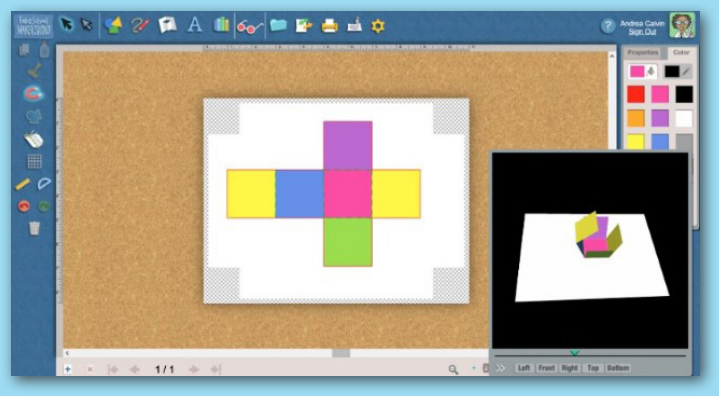
103. In **FLEET (Video Demo)** students of all ages engineer ships for a variety of naval missions, test their designs, gather data, and then compete in nationwide naval engineering challenges. Developed by Navatek, Ltd. and the American Society of Naval Engineers with a **2016** award from the U.S. Navy's Office of Naval Research. Contact Mike Briscoe (**fleet@navalengineers.org**)

104. **Muzzy Lane Author** (**Video Demo**) is a cloud based platform for authoring learning games and simulations without requiring any programming skills. Developed by **Muzzy Lane Software** and based in part on learnings from a number of SBIR/STTR grants including a **2013** Department of Defense award. Contact: Dave McCool (**dave@muzzylame.com**)

105. In the **Wright's First Flight** middle and high schools students learn the basics of engineering a plane through hands-on and online activities, then get a firsthand look at what it looked (and felt) like to fly it through a virtual reality simulation. Developed by the Smithsonian Institution. Contact: Cody Coltharp (**ColtharpC@si.edu**)

May's Journey *is a narrative puzzle game world in which the main character May asks the student to help as strange things are happening, and the code is breaking.*

FabMaker Studio *is a web-based design and fabrication tool.*



READING, WRITING, SPEAKING

106. **A2i platform** or **Assessment to Instruction** (**Video Demo**) provides individualized literacy instruction for students in pre-K to third grade and data driven feedback to inform teacher instruction. Results from several efficacy trials demonstrate the impact of the A2i for improving learning compared to control conditions. Developed by Learning Ovations and at the University of California Irvine a **2015 ED/IES SBIR award** and several IES Research Grants. Contact: Jay Connor (**jcrubicon@gmail.com**)

107. **Tutoring With the Lightning Squad (Video Demo)** is a web and in-person intervention with game-based elements that teach phonics, fluency, and comprehension as children in grades one to three read with a peer partner, alternating roles as "coach" and "player." Developed by **Sirius Thinking, LTD**, **Success for All Foundation,** and Sesame Workshop, through a **2015** ED/IES SBIR award, and is currently being evaluated through a **2019** ED/IES Education Research grant. Contact: Christopher Cerf (**chris@siriusthinking.com**)

108. **Reading Roots II: Reading "Between the Lions"** (**Video Demo**) is a multimedia classroom intervention that uses systematically targeted videos and game-like technology-assisted partner practice activities to personalize literacy education for grade one students. Developed by **Sirius Thinking**, LTD, in collaboration with the **Success for All Foundation** and the WGBH Educational Foundation, through a **2019** ED/IES SBIR award. Contact: Christopher Cerf (**chris@siriusthinking.com**)

109. **MOCCA and MOCCA-College (Video Demo)** are reading comprehension assessments that identify students who rely too much on specific reading comprehension strategic processes. MOCCA is designed for students in grades three to five, and MOCCA-College is designed for students entering or in college. Developed at the University of Oregon, University of Minnesota, California State University, Georgia State University, and the University of North Dakota with **2014** and **2018** IES/NCER grants. Contact Gina Biancarosa (**ginab@uoregon.edu**)

110. **Walden, a Game** (**Video Demo**) is a first person exploratory game about the life of American philosopher Henry David Thoreau during his experiment in self-reliant living at Walden Pond in 1845. The game allows players of all ages to walk in Thoreau's virtual footsteps, discover his ideas and writings, engage with historical characters such as Ralph Waldo Emerson, and experience the changing seasons of Walden Woods. Developed by Tracy Fullerton and the **Game Innovation Lab**, with support from **NEH** and NEA. Contact: **uscgameinnovationlab@gmail.com**

111. **Opus App** (**Video Demo)** automates the mass collaboration of music and literature to automate reading and writing lessons for classroom instruction in middle and high school English language arts, history, and social studies courses. In four steps any teacher, parent, or student can create a robust set of lesson plans to integrate into their reading and writing curriculum. Developed by Words Liive with support from the US Department of State Department. Contact: Sage Salvo (**sage.salvo@wordsliive.org**)

112. **Moby.Read** (**Video Demo)** is an engaging voice-interactive digital oral reading fluency assessment for students in kindergarten through grade five. Students use their own voices to read passages aloud, retell key details, and answer short-answer questions for real-time practice and assessment. Developed by **Analytic Measures Inc**. through a **2017** ED/IES SBIR award, with initial support from IES/NCES. Main contact: Mike Crepeau (**Mike.Crepeau@analyticmeasures.com**)

113. **STORYWORLD™** (**Video Demo**) is a game-based platform for kindergarten to grade five students, especially English learners, that presents interactive stories to reinforce vocabulary, reading, and listening comprehension to teach English (also Spanish and Chinese) with bilingual audio and text scaffolds. Students record their voices and write answers online, and a teacher dashboard tracks language proficiency and progress by student and class. Developed by **StoryWorld International Corporation** through a **2018** ED/IES SBIR award. Contact: Cynthia Harrison Barbera (**cynthia@storyworld.com**)

SOCIAL, BEHAVIORAL, AND HEALTHY DEVELOPMENT

114. **Table Points** (**Video Demo**) is a classroom behavior game in which teachers use an app-based group contingency model to award points to groups of students as they meet classroom behavioral expectations. Table Points aims to increase rates of positive behavioral feedback, monitor group progress toward behavioral goals, or to facilitate positive behavior games during instruction. Developed by LiveSchool Inc. through a **2018** IES SBIR award. Contact: Matt Rubinstein (**matt@liveschoolinc.com**)

115. **Chef Koochooloo (Video Demo)** is a gamified educational platform that teaches kindergarten through fifth grade students cultural sensitivity, STEAM (science, technology, engineering, arts, and math) concepts (assessed as per national standards), and sustainability through healthy cooking in schools. Developed in part through a **2019** NSF SBIR award. Contact Layla Sabourian (**layla@chefkoochooloo.com**)

116. **Healthy U** is a virtual health app where young men ages 14 to 19 learn sexual health basics, build social and emotional skills, test their knowledge and connect to their future through games. Developed by Efficacity through an **2015** HHS/Office of Adolescent Health grant, with a current evaluation by WestED at the Oregon Youth Authority. Contact Beth Wachter (**bethwachter@gmail.com**)

117. In **Hemonauts** (**Video Demo**) upper elementary and middle school students learn by doing about nanobots, STEM stuff, and how the body works (#HealthLiteracy #DiseaseLiteracy). Developed by **Thrust Interactive** in partnership with Children's Healthcare of Atlanta, Emory University, and Georgia Institute of Technology through a **2018** NIH SBIR award. Contact: Jesse Lindsley (**jesse@th.ru.st**)

118. In **End of Imperial** middle and high school students explore sleep health, prescription drug abuse, and STEM careers, as they play the role of a police detective to uncover the cause of a fatal auto collision in this point-and-click adventure. Developed by **Indelible Learning** through a **2019** NIH SBIR award. Contact: Jasminka Criley, MD (**jasminka@indl.com**)

119. In **Recovery Runner** *(***Video Demo***)* is a game controlled by body motions to prevent initiation and progression of drug use and for relapse prevention in young people recovering from substance use disorders. It uses a form of motion and voice control to allow youths **age 15 and up** to verbally rehearse their drug refusal language while collecting the positive things in life they want in life and avoiding/destroying their drugs of addiction. *Developed by MediaRez with a* **2014** *National Institute on Drug Abuse SBIR award. Contact: Gabriel Ralte (***recovery@mediarez.com***)*

120. **Crossroads: A Game of Choices** (**Video Trailer**) is a series of game apps to inform tribal youths ages 11 to 19 in areas disproportionately impacted by high-risk of drug and alcohol abuse about healthy decision making in drug and alcohol use, dating relationships, and vulnerable situations. Developed by 7 Generation Games with a **2016** USDA SBIR award. Contact: Maria Ortiz Burns (**maria@7generationgames.com**)

121. **SoberSloth** (**Video Demo**) delivers game-based neurobiology psychoeducation to adolescents and young adults to advance their readiness for addiction treatment. It examines the role of the dopamine reward pathway in recovery from substance use disorder. In development by **Andamio Games** through a **2018** NIH SBIR. Contact: Katrina Schleisman (**katrina.schleisman@andamiogames.com**)

*Students demo **PocketLab** at the 2019 ED Games Expo.breaking.*

SOCIAL STUDIES

122. **Pick Your Plate!** A Global Guide to Nutrition is a game in which middle school students (and beyond) explore the cultures present in various countries around the world through food. In each country, the player is tasked with selecting foods out of a preset list to create healthy morning, midday, and evening meals. Developed by the Smithsonian Institution in 2019. Main Contact: Reuben Brenner-Adams (**Brenner-AdamsR@si.edu**)

123. **Mission US** is a multimedia game that immerses students in grades four and up in U.S. history, in topics such as the **Revolutionary War**, **the Great Depression**, and **immigration**. Developed by Electric Funstuff with awards in **2013** from ED/IES SBIR award and from NEH. Contact: David Langendoen (**david@electricfunstuff.com**)

124. **TimeSnap** is a game-based virtual reality experience to immerse high school students in U.S. history. In development by Electric Funstuff with support of a **2018** ED/IES SBIR award. Contact: David Langendoen (**david@electricfunstuff.com**)

125. **Eagle Eye Citizen** (**Video Demo)** engages middle and high school students in solving and creating interactive challenges on American history, civics, and government with Library of Congress primary sources to develop civic understanding and historical thinking skills. Developed by George Mason University with a **2016** award from the Library of Congress. Contact: Nathan Sleeter (**nsleete1@masonlive.gmu.edu**)

126. **Engaging Congress** (**Video Demo**) is game-based learning activity on the basic tenets of representative government and the challenges that it faces in contemporary society. Primary source documents are used to examine the history and evolution of issues that confront Congress today. Developed by **Half Full Nelson** with support from the Library of Congress. Contact Andrew Nelson (**andrew@hfnelson.com**)

127. The **The Fiscal Ship** game helps students age 10 and above with no prior experience with the federal budget to learn what will and won't work. Designed to be whimsical and nonpartisan but grounded in the fiscal facts, the game highlights that small changes to spending and taxes won't suffice. To win the game, you need to find a combination of policies that match your values and priorities AND set the budget on a sustainable course. Developed by The Wilson Center. Contact Elizabeth Newbury (**Elizabeth.Newbury@wilsoncenter.org**)

128. In **Outbreak™ Squad** (**Video Demo**), middle and high school classes explore how to prevent, mitigate, and treat foodborne illness outbreaks from a social studies perspective. Developed by the **Learning Games Lab at New Mexico State University**, in collaboration with the University of Tennessee Knoxville, through a **2015** USDA SPECA award. Contact: Barbara Chamberlin (**bchamber@nmsu.edu**)

129. **KidCitizen** provides a growing set of interactive episodes where kindergarten through fifth grade students work with primary source photographs to explore civic engagement and Congress. Developed by **Snow & Co.**, the **USF College of Education**, and **Muzzy Lane**, through a **2015** grant from the Library of Congress as part of the Congress, Civic Participation, and Primary Sources project. Contact: Bert Snow (**snow.bert@gmail.com**)

130. **VoxPop** (**Video Demo**) is a collaborative role-playing experience where high school teachers facilitate live-action simulations to give students the chance to explore different perspectives and work together to navigate defining moments in American history. Developed by **Gigantic Mechanic** through a **2019** ED/IES SBIR Award. Contact: Greg Trefry (**gtrefry@giganticmechanic.com**)

131. **In They Persisted** is a game to step into the shoes of various American citizens as they fight for equal representation in the 19th century. Join up with a suffragist group and decide how to best spread the message of suffrage using primary sources from the Library of Congress and others. Developed by Second Avenue Learning with a **2018** Library of Congress award. Contact: Tory VanVhoorhis (**Tory@SecondAvenueLearning.com**)

132. **Civics: An American Musical** is a game that integrates the Library of Congress's primary source curriculum and analysis tools into a real-world scenario: the production of a musical based on an important, civics-themed event in United States history. Developed by **FableVision Studios** with Maryland Public Television, CIRCLE, and Maryland Humanities through a Library of Congress award. Contact: Gary Goldberger (**gary@fablevision.com**)

133. **Race to Ratify (Video Demo)** teaches students history and civics through a game about the Federalists and Anti-Federalists between 1787 and 1789. It is designed to help students understand the key debates surrounding the ratification of the Constitution (including an extended republic, the House of Representatives, the Senate, executive power, the judiciary, and the Bill of Rights. Developed by iCivics with a **2017** award from the National Endowment for the Humanities. Contact Kelly Whitney (**kelly.whitney@icivics.org**)

134. **DBQuest** teaches history and civics by using primary source documents to reinforce evidence-based reasoning and document-based questioning by teaching students to identify and evaluate evidence, contextualize information, and write sound supporting arguments. Developed by iCivics with a **2018** Library of Congress award. Contact Kelly Whitney (**kelly.whitney@icivics.org**)

135. **History Maker VR** (**Video Demo**) is a playful virtual reality content-creation tool that allows students to embody historical characters in immersive settings, record performances featuring those characters, and share their performance files to demonstrate material mastery. Developed by Schell Games with a **2019** ED/IES SBIR award. Contact: Brooke Morrill (**brooke@schellgames.com**)

136. **GlobalED2** (**Video Demo**) is a role-playing simulation game where a class of students takes the role of a country to resolve a world-wide crisis, such as an oil spill. Developed by the University of Illinois at Urbana with a **2008** IES/NCER grant. Contact: Kimberly Lawless (**kimberly.lawless@gmail.com**)

137. In **Courtroom 600** (**Video Demo**) young adults interact with Thomas J. Dodd digital archives (which are located at the University of Connecticut) as part of an immersive virtual reality experience revolving around the histories and truths of the Nuremberg Trials. In development by Greenhouse Studios through a 2019 NEH Digital Projects for the Public Discovery Grant. Contact: Kenneth Thompson (**ken@uconn.edu**)

138. **Money Adventure** is a game-based app for students to learn about the security and design features of Federal Reserve notes, including tilting and tapping a digital $20 bill to discover its unique features and by teaming up with Buck the Time-Traveling Dog on a quest through the historical events illustrated on the backs of U.S. currency. Developed by the Federal Reserve Board's U.S. Currency Education Program. Contact: Eric Piegols (**IT-Android-Public-Dev@frb.gov**)

*In the **Making Camp** students in grades three to five review multiplication and division along with language arts while learning elements of Native American history.*

THINKING

139. **Smart Suite** includes three games to support the development of executive functions: updating: CrushStations (**Video Demo**); shifting: All You Can ET (**Video Demo**); and inhibition: Gwakkamole (**Video Demo**) for grades four and up. Developed by New York University's CREATE Lab with partial support from a **2016** IES research award. Contact: Jan Plass (**jan.plass@nyu.edu**)

140. **VR-ET** (**Video Demo)** is a virtual reality game that supports development of executive functions (switching) for grades six and up. Developed by New York University's CREATE Lab with partial support from a **2016** IES research award. Contact: Jan Plass (**jan.plass@nyu.edu**)

141. **The Tipsy Game (You Tube)** is an exploration of spatial reasoning skills using wearable augmented reality with a Magic Leap One headset for all ages of users. Developed by **Alchemie** through a **2017** NSF SBIR award. Contact: Julia Winter (**julia@alchem.ie**)

CAREERS AND TRAINING

142. **Hats & Ladders (Video Demo)** is a game-based app to empower youths ages 14 and up to explore in-demand careers that fit their strengths and interests and engage in real-world skill building to help prepare for success in the world of work. Developed by Hats & Ladders with a **2015** ED/IES SBIR award and a **2017** OCTAE award. Contact: Scott Brewster (**dr.brewster@gmail.com**)

143. **Osso VR** (**Video Demo**) is a virtual reality surgical training platform that helps students age 10 and up to explore careers in healthcare professions while teaching actual medical procedures through realistic, hands-on simulations in an operating room. Developed by OSSO, in part supported by a **2016** OCTAE award. Contact: Leif Goranson (**leif@ossovr.com**)

144. **STEM 360 Careers** (**Video Demo**) employs Live 360° virtual reality (VR) video to connect middle and high school learners in rural areas of North Carolina with STEM professionals and their environments. These VR experiences can reduce the psychological distance between students and the STEM fields by giving them a sense of presence in the STEM environment while also connecting directly with STEM professionals. Developed by LEVR Studios LLC through the **2018** NSF award. Contact: Mike Cuales (**mike@levrstudios.com**)

145. Teacher Talk (**Video Demo)** is a virtual training game to help first year teachers identify and respond to virtual students and improve conversational competency. This project was started by **Simiosys, LLC** with a **2006** award from ED/IES SBIR. Contact: Christopher Stapleton (**realworldlabs@me.com**)

146**. The Recruiter Montage**, is designed for experienced U. S. Army soldiers (age 20+), who perform the role of recruiters to learn proper recruiting methods and increase recruiter retention. Developed by Solers Research Group, Inc. through a 2019 asset request based on a 2018 contract award with the U. S. Army Mobile Division. Contact**:** Carolyn Kinsell (**ckinsell@solersrg.com**).

147. The **Augmented Reality Training System (Video Demo**) for postgraduates uses simulated hydrogel organs and augmented reality to deliver instruction and medical curricula in real time, guiding a training surgeon through a complete simulated procedure with zero risk to a patient's life. Developed by **Simulated Inanimate Models** LLC through a **2019** NSF SBIR award. Contact: Steven Griffith (**sgriffith@simsurgeries.com**).

148. **Building Momentum** is a training and teaching organization focusing on 3-D printing, laser cutting, drones, robots, and other 21st century technologies. Building Momentum is a contractor of the Department of Defense. Contact: Cheyanne Dwyer (**cheyanne@buildingmomentum.us**)

149. **HyperMock** (**Video Demo**) is an extended reality author, publish, and evaluation platform for high school teachers to create immersive content and explore careers in manufacturing as well as gain knowledge and skills. Developed by SimInsights with a **2017** NSF SBIR award. Contact: Rajesh Jha (**rkjha1@siminsights.com**)

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