

# SimScientists Games

Development of Simulation-Based Game Designs to Enhance Formative Assessment and Deep Science Learning in Middle School



PI: Edys Quellmalz, Co-PIs: Daniel Brenner, Andrew Grillo-Hill, Matt Silbergitt (WestEd)

Contact [equellm@wested.org](mailto:equellm@wested.org)

[www.simscientists.org](http://www.simscientists.org)

Game Design: Jody Underwood, Lisa Holt (IAI)

## CURRICULUM EMBEDDED ASSESSMENTS AND PROGRESS REPORTS



**Make a food web diagram. Draw arrows to show the transfer of matter between organisms.**

- To draw an arrow, click and drag from one dot to another dot.
- To delete an arrow, double click on it.

You can review the animation and then return to this diagram.

**Ecosystem Rules**

Organisms, but organisms or organisms are dependent on their environment (resources and other living things) and each other.

**Interactions**

Producers (plants) may receive the transfer of substances or energy (such as photosynthesis). Usually, however, they produce their own food. They are the source of energy for all other organisms in the system. Although the system receives energy from the sun, energy is not recycled. Energy flows through the system from producers to consumers. Energy is transferred from producers to consumers through feeding relationships. Energy is transferred from producers to consumers through feeding relationships. Energy is transferred from producers to consumers through feeding relationships.

**Developing and Using Models**

Scientists observe the world and use all the tools of science to build models of the world. Models are used to represent real-world objects or events. Models are used to represent real-world objects or events. Models are used to represent real-world objects or events.

## SIMSCIENTISTS CURRICULUM INTEGRATION

### DIFFERENTIATED CHALLENGE ACTIVITIES in SIMSCIENTISTS GAMES



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## SUMMATIVE ASSESSMENT AND REPORT



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## What are SimScientists Games?

Academic games that engage students in differentiated challenge activities within simulated science systems

SimScientists Games reinforce, extend, and assess the science practices and core ideas taught in a middle school ecosystems curriculum unit.

- ### Project Goals
- Create games that assess and promote student learning
  - Document effectiveness, feasibility, and utility
  - Explore potential to measure and support collaboration
  - Document design principles for additional science systems

- ### Research Design
- Game Development (2015–16)*
- Design and develop two 45-minute games
  - Alignment to learning performances and assessment targets
  - Play testing, focus groups, think-aloud studies; revisions
- Feasibility Testing (2016–17)*
- Integrate into instruction in the classrooms of six teachers
- Pilot Testing (2017–19)*
- Two rounds of revision and subsequent pilot testing
  - Comparison group using SimScientists without the games

