SimCityEDU: Pollution Challenge
Available at glasslabgames.org
SimCityEDU: The Award-winning Game Goes to School!

With SimCityEDU, educators have more than digital games, they have the tools and content they need to making learning come alive for all students.

In the game, students play the role of mayor, doing the challenging work of addressing environmental impact while balancing the employment needs of the city and the happiness of the citizens.

Designed by GlassLab in partnership with the assessment experts from ETS and Pearson, SimCityEDU: Pollution Challenge! also provides formative assessment information about students’ ability to problem solve and explain the relationships in complex systems.

Lesson plans and teacher and student dashboards, along with student data reporting, complete the SimCityEDU experience, delivering personalized learning to every student.

Game Components
SimCityEDU: Pollution Challenge! is made of 4 different missions. Missions include gameplay challenges and in-class activities, each with a standards-aligned instructional focus. A mission is paced for approximately two periods of instruction.

Mission & Instructional Focus
- **School Is In:**
  Systems Thinking: Designing an interconnected city

- **We Need Jobs:**
  Critical Thinking: Maximizing productive resources

- **Pollution Problems:**
  Cause and Effect: Measuring human impact on the environment

- **It’s Complicated:**
  System Modeling: Re-balance productivity and environmental health (interdependent variables) within the city ecosystem

Standards Alignment
SimCityEDU is aligned to specific standards from the following sources:
- Framework for 21st Century Learning
- Next Generation Science Standards (NGSS)
- Common Core State Standards (CCSS)
- Council for Economic Education (CEE)

Create a free account on glasslabgames.org to access lesson plans and find more information about using the game in your classroom.
Welcome to Parktown!

The kids who live far away need to get to school. Find out how to build bus stops efficiently and enroll all kids in school. You have 10 minutes. Let’s see how good of a planner you are!

Learning Objectives

Students will be able to:

- Successfully access and operate the game’s basic tools, maps and other data sources as well as its navigational controls.
- Understand basic causal relationships within the game that will enable them to solve more complex gameplay missions.
- Find optimal solutions in a spatial problem-solving task by placing non-overlapping landmarks on a map.

Standards Alignment

**Framework for 21st Century Learning:**
Critical Thinking and Problem Solving

**Next Generation Science Standards (NGSS):**

Itemized Standards

- MS-LS2-5 (Evaluate interdependent relationships in ecosystems)
- MS-LS2-1 (Interdependent relationships in ecosystems: resource allocation)

Crosscutting Concepts

- Cause and Effect
- Systems and System Models

**Connections to Engineering, Technology, and Applications of Science**

- Influence of Science, Engineering, and Technology on Society and Nature

**Common Core Math Standards (CCSS):**

- CCSS.MATH.6.RP.A.1 (Understanding and identifying ratios)
- CCSS.MATH.7.RP.A.2 (Understanding and identifying ratios)

**Council for Economic Education (CEE):**

- CEE Standard 1 (Scarcity: Productive Resources)
Mission 2
We Need Jobs!

Welcome to Little Alexandria!

This city needs jobs...Now! Use the zoning tool to create new jobs along empty roads. How quickly can you solve this problem? You have 10 minutes. The clock is ticking!

Learning Objectives
Students will be able to:

- Successfully operate advanced game tools and maps in order to increase the number of jobs available.
- Consider efficient solutions.
- Understand differences between three distinct functional living areas and their relationships to employment.
- Understand basic causal relationships within the game that will enable them to solve more complex missions.

Standards Alignment

Framework for 21st Century Learning:
Critical Thinking and Problem Solving

Next Generation Science Standards (NGSS):

Itemized Standards
- MS-LS2-1 (Interdependent relationships in ecosystems: resource allocation)
- MS-ETS1-1 (Defining and delimiting the scope of a problem)
- MS-ETS1-2 (Designing and evaluating solutions)

Crosscutting Concepts
- Cause and Effect
- Systems and System Models

Connections to Engineering, Technology, and Applications of Science
- Influence of Science, Engineering, and Technology on Society and Nature

Council for Economic Education (CEE):
- CEE Standard 1 (Scarcity: Human Capital)
- CEE Standard 6 (Specialization and Trade: Division of Labor)
- CEE Standard 6 (Specialization and Trade: Employment/Unemployment)
Mission 3
Pollution Problems

Welcome to Sierra Madre!
This city has a problem with high air pollution. Find out how to lower pollution and keep the power level optimal. You have 10 minutes. Can you avoid power blackouts?

Learning Objectives
Students will be able to:
- Describe some of the trade-offs involved in eliminating sources of air pollution.
- Recognize that there are trade offs between the use of green power sources and coal power.
- Consider and intervene on multiple variables in order to change a complex system.
- Describe the importance of and some of the tensions involved in reducing human impact on the environment.

Standards Alignment

Framework for 21st Century Learning:
Critical Thinking and Problem Solving

Next Generation Science Standards (NGSS):
Itemized Standards
- MS-LS2-1 (Interdependent relationships in ecosystems: resource allocation)
- MS-LS2-5 (Evaluate interdependent relationships in ecosystems)
- MS-LS2-4 (Evaluate effect of resource changes on ecosystem population)
- MS-ETS1-2 (Designing and evaluating solutions)
- MS-ESS3-3 (Evaluating human impact on the environment)

Crosscutting Concepts
- Cause and Effect
- Systems and System Models
- Scale, Proportion, and Quantity
- Stability and Change

Connections to Engineering, Technology, and Applications of Science
- Influence of Science, Engineering, and Technology on Society and Nature

Council for Economic Education (CEE):
- CEE Standard 1 (Scarcity: Productive Resources)
- CEE Standard 1 (Scarcity: Human Capital)
- CEE Standard 2 (Marginal Cost/Benefit: Cost/Benefit Analysis)
Welcome to Jackson City!

We heard that you are an expert in big cities. This city needs your skills to lower pollution and increase jobs. You have 15 minutes. Ready for your hardest mission?

Learning Objectives

Students will be able to:

- Consider multiple variables when trying to intervene on complex systems.
- Explain how technology and planning can support effective solutions to reduce human impact on the environment.

Standards Alignment


Next Generation Science Standards (NGSS):

- MS-LS2-5 (Evaluating interdependent relationships in ecosystems)
- MS-LS2-4 (Evaluating effect of resource changes on ecosystem population)
- MS-ETS1-2 (Designing and evaluating solutions)
- MS-ETS1-3 (Optimizing solutions through systematic evaluation)
- MS-ESS3-3 (Evaluating human impact on the environment)

Crosscutting Concepts

- Cause and Effect
- Systems and System Models
- Scale, Proportion, and Quantity
- Stability and Change

Connections to Engineering, Technology, and Applications of Science

- Influence of Science, Engineering, and Technology on Society and Nature

Common Core Math Standards (CCSS):

- CCSS.MATH.7.EE.B.4 (Understanding/identifying variables)
- CCSS.MATH.6.EE.B.6 (Understanding/Identifying variables)

Council for Economic Education (CEE):

- CEE Standard 1 (Scarcity: Productive Resources)
- CEE Standard 1 (Scarcity: Human Capital)
- CEE Standard 2 (Marginal Cost/Benefit: Cost/Benefit Analysis)
SimCityEDU Reports on glasslabgames.org

See the Learning As It Happens
You will be able to track student learning and glean insights to inform instructional decision making by reviewing the SimCityEDU reports at glasslabgames.org.

Shout Out! Watch Out! Report
This report shows which students are in need of immediate intervention or reteaching and which students are excelling.

Game Progress Report
This overview report shows at a glance where students are in the game.

Complex Problem Solving Report
This report shows students’ current level of competency in the assessed skills of complex problem solving. Our learning analytics engine is able to parse student gameplay data and present that to teachers in a way that enables educators to quickly see how students are doing.

Consider using the Shout Outs! to identify “game ambassadors”, enabling mixed ability grouping and peer collaboration.

Partners

Supporters
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