

Sol y Agua Prototype

Overview

The goal of the proposed game is to engage students in learning about water sustainability issues and stewardship through immersive technologies. The game will be strategy based; it aims to have students or a team of students gain a perspective regarding water consumption and sustainability by assuming a particular role and performing particular tasks, e.g., plan a neighborhood or determine the impact of a particular change on sustainability. Note students may assume a persona and they may or may not agree with the perspectives of that persona.

The students will acquire information and gain knowledge as they move from one level to another in the game. Teachers will structure activities based on the modules provided through the project. For example, students (teams) may be required to defend a position by presenting what they learned, listen to other viewpoints, and reach an agreement that reconciles the various viewpoints. Students may be required to return to the game to gather additional information and to define a sustainability plan. The project team will create the in-class modules and activities.

Roles

Possible roles that can be assigned are as follows:

1. Scientist (can specify which type of scientist)
2. Farmer (Pecans)
3. Land Developer
4. Ecologist
5. Government official

Learning Outcomes

This section presents learning outcomes that map to the TACS¹ science-based outcomes based on “scientific investigation and reasoning,” in which the student uses scientific inquiry methods during laboratory and field investigations. The modules will aim to map to one or more of the learning outcomes.

The student is expected to:

- A. plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;
- B. design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology;

¹ Source: The provisions of this §112.18 adopted to be effective August 4, 2009, 34 TexReg 5063. §112.19. Science, Grade 7, Beginning with School Year 2010-2011.

- C. collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- D. construct tables and graphs, using repeated trials and means, to organize data and identify patterns; and
- E. analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

The following TEKS learning outcomes are in the area of English Language Arts and Reading Subchapter B. Middle School.

Research/Research Plan. Students ask open-ended research questions and develop a plan for answering them. Students are expected to:

- A. brainstorm, consult with others, decide upon a topic, and formulate open-ended questions to address the major research topic; and
- B. generate a research plan for gathering relevant information about the major research question.

Research/Gathering Sources. Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather. Students are expected to:

- A. follow the research plan to collect data from a range of print and electronic resources (e.g., reference texts, periodicals, web pages, online sources) and data from experts;
- B. differentiate between primary and secondary sources;
- C. record data, utilizing available technology (e.g., word processors) in order to see the relationships between ideas, and convert graphic/visual data (e.g., charts, diagrams, timelines) into written notes;

Research/Synthesizing Information. Students clarify research questions and evaluate and synthesize collected information. Students are expected to:

- A. refine the major research question, if necessary, guided by the answers to a secondary set of questions; and
- B. evaluate the relevance and reliability of sources for the research.

Research/Organizing and Presenting Ideas. Students organize and present their ideas and information according to the purpose of the research and their audience. Students are expected to synthesize the research into a written or an oral presentation that:

- A. compiles important information from multiple sources;
- B. develops a topic sentence, summarizes findings, and uses evidence to support conclusions;
- C. presents the findings in a consistent format; and
- D. uses quotations to support ideas and an appropriate form of documentation to acknowledge sources (e.g., bibliography, works cited).

Listening and Speaking/Listening. Students will use comprehension skills to listen attentively to others in formal and informal settings. Students will continue to apply earlier standards with greater complexity. Students are expected to:

- A. listen to and interpret a speaker's messages (both verbal and nonverbal) and ask questions to clarify the speaker's purpose and perspective;
- B. follow and give oral instructions that include multiple action steps; and
- C. paraphrase the major ideas and supporting evidence in formal and informal presentations.

Listening and Speaking/Speaking. Students speak clearly and to the point, using the conventions of language. Students will continue to apply earlier standards with greater complexity. Students are expected to give an organized presentation with a specific point of view, employing eye contact, speaking rate, volume, enunciation, natural gestures, and conventions of language to communicate ideas effectively.

Listening and Speaking/Teamwork. Students work productively with others in teams. Students will continue to apply earlier standards with greater complexity. Students are expected to participate in student-led discussions by eliciting and considering suggestions from other group members and by identifying points of agreement and disagreement.

An additional learning outcome follows:

The student is expected to be able to compare and contrast their own discourse communities with others (geographical, cultural, and disciplinary).