

Career Gaming

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Milestone 1: Entry Event

Situation: The United States Department of Agriculture (USDA) anticipates more annual job openings in food, agriculture, renewable natural resources, and the environment than can be filled by U.S. graduates. Due to the favorable employment opportunities, teachers would like ideas to help their students learn more about agricultural careers.

Driving Question (Teacher Guided, Student Constructed): How can we design games that will assist others with identifying a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career?

Key Student Questions:

- What are examples of agricultural careers?
- What type of education is required for agricultural careers?
- How can games help us remember or learn?
- What are possible game formats?

Formative Assessment:

- List of possible game formats

Materials:

- [Living Science Career Cards](#)
- [Career Activity Scenario](#) sheet
- [Emerging Agricultural Technologies](#) handout
- [Career Gaming Webpage](#)

Teacher Preparation:

Obtain the [Living Science Career Cards](#). Laminate the cards, punch a hole in the upper left corner, and organize them into 14 groups as suggested below. Not all the cards will be used in this activity. Use small book rings to keep the following groups together:

- **Group 1:** Soil Scientist, Forester
- **Group 2:** Hydrologist, Renewable Energy Specialist
- **Group 3:** Virologist, Plant Geneticist, Fisheries Scientist
- **Group 4:** Biotechnologist, Environmental Scientist
- **Group 5:** Toxicologist, Forest Engineer, Food Safety Specialist

- **Group 6:** Entomologist, Wildlife Biologist
- **Group 7:** Food Process Engineer, Nematologist
- **Group 8:** Weed Scientist, Plant Pathologist
- **Group 9:** Plant Physiologist, Aquaculturist
- **Group 10:** Remote Sensing Specialist, Horticulturist, Range Manager
- **Group 11:** Food Scientist, Turf Scientist
- **Group 12:** Nutritionist/Dietitian, Florist, Conservation Biologist
- **Group 13:** Animal Nutritionist, Wood Scientist
- **Group 14:** Veterinarian, Agronomist

Day 1 Instructional Procedures:

1. Ask students to create a list of agricultural careers on the board.
2. Add the careers cited on the [Living Science Career Cards](#) to display the science-related careers in agriculture you will be discussing.
3. Divide the class into 14 groups. Give each group a set of the ringed career cards. Ask the students to take five minutes to read the backs of the cards they have received to familiarize themselves with the careers, what roles they play in the agricultural community, and what education is necessary for each profession. (Teachers may wish to highlight or underline key points to assist students in synthesizing this information.) The education required for each career is listed on the backs of the cards, and the explanation emphasizes that students should study science, math, and English in high school in order to prepare themselves for similar subjects at the university level. Remind students that there will be entry- and mid-level occupations that support the highly skilled occupations.
4. Read the [Career Activity Scenario](#) sheet and ask students to raise their hands if they think they have the career that correctly fills the blank. After each profession is answered correctly ask, "What other cards are in your group? What courses do they need to complete to get their degrees?"
5. Share with the students the [Emerging Agricultural Technologies](#) handout.

Day 2 Instructional Procedures:

1. Ask the students if they think games help them to remember or learn things. Ask for examples.
2. Tell the students that the United States Department of Agriculture (USDA) anticipates more annual job openings in food, agriculture, renewable natural resources, and the environment than can be filled by U.S. graduates. Due to the favorable employment opportunities, teachers would like ideas to help their students learn more about agricultural careers. Ask the students if they think games could be designed to explore careers.
3. Guide students to construct a question similar to, "How can we design games that will assist others with identifying a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career?"

4. Divide the class into teams of two to four students. Inform the teams that they will be creating a game that helps other students (their same age) identify a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career. As in all engineering/design projects, there are some limitations. In this case, time and resources. Tell students that they may create any type of game their group agrees upon provided that the only resources used are the computer/Internet tools, paper/poster board, index cards, sticky notes, and other office supplies. (If you do not have a computer or Internet in your classroom, restrict students to games created with the other resources. It is possible to create board and card games online at a later date.)
5. Brainstorm with students the possible game formats—online games, PowerPoint games, card games, board games, etc. For more ideas and links to game development tools, visit the [Career Gaming Webpage](#). Let the students know they do not have the resources or time needed to create video games.

Milestone 2: Planning and Design

Driving Question (Teacher Guided, Student Constructed): How can we design games that will assist others with identifying a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career?

Key Student Questions:

- What tasks/steps will need to be accomplished to complete the project?
- Which tasks will each team member be responsible for?
- How long will each task take to complete?

Formative Assessments:

- Daily Game Log

Materials:

- [Career Gaming Rubric](#)
- [Engineering Design Process](#) slideshow

Day 3 Instructional Procedures:

1. Share the game requirements with the students as noted on the [Career Gaming Rubric](#). Edit this rubric based on your time or resource restrictions.
2. Review the [Engineering Design Process](#) slideshow with the students and highlight the steps they will take to create their final game.
3. Tell the students that they will begin by creating a prototype, Version 1.0, for a peer review and then, based on feedback from their peer review, they will create Version 2.0.
4. Let the students know that, in addition to working on the game, they will need to keep a Daily Game Log each day (ask them to create a Google Doc, or provide them with the

materials to create a logbook), which must document what they did each day. Let the students know that the Daily Game Log, the game, the game instructions, and “testing” of their final game (Version 2.0) by their peers will all be part of their final score for the PBL experience.

5. Instruct the students to begin creating their career awareness game, being sure to address the criteria on the [Career Gaming Rubric](#). This will require that students have the resources needed (computer/Internet or printed lists) to research a variety of careers in each cluster/pathway. The resources (websites or printed materials) need to contain a description of the career, the type of education, knowledge, and skills required, and a salary range.
6. Review the project timeline with the students. This timeline (tasks, name of responsible person, and milestones/dates when a specific task needs to be accomplished) should be documented in their Game Log.

Milestone 3: Development and Prototype

Driving Question (Teacher Guided, Student Constructed): How can we design games that will assist others with identifying a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career?

Key Student Questions:

- How can we effectively communicate the instructions of the game in writing?
- How can we use peer feedback to improve our game?

Formative Assessment:

- Version 1.0 Game
- Peer Review
- Daily Game Log

Materials:

- [Make Your Own Board Game](#) video
- Paper/poster board
- Items that could be used as game markers
- Various office supplies: sticky notes, tape, colored pencils, markers, paper clips, binder clips, stickers, etc.
- Daily Game Log
- [Career Gaming Rubric](#)

Days 4-5 Instructional Procedures:

1. View the [Make Your Own Board Game](#) video for more ideas and inspiration. If possible, invite a game designer to be a guest speaker.

2. Allow time for the teams to create Version 1.0 of their game.
3. The teams are required to write up instructions for their game.
4. The teams should test their product before submitting Version 1.0 for peer review.

Day 6 Instructional Procedures:

1. Swap the games (Version 1.0) between teams for peer reviews. Each reviewer will complete the "Version 1.0 Review" section of the [Career Gaming Rubric](#). This score is for feedback purposes only and will not be part of the final grade.
2. If possible, invite a game designer to provide expert feedback to the groups.
3. Using the feedback provided, teams should begin making revisions for Version 2.0.

Milestone 4: Production and Final Product Presentation

Driving Question (Teacher Guided, Student Constructed): How can we design games that will assist others with identifying a variety of agricultural careers, possible emerging agricultural careers, the education required for agricultural career options, and the types of salaries that can be expected in each career?

Key Student Questions:

- How can we best present our product to our audience?

Summative Assessments:

- Version 2.0 Game
- Daily Game Log
- Peer Reviews

Materials:

- Paper/poster board
- Items that could be used as game markers
- Various office supplies: sticky notes, tape, colored pencils, markers, paper clips, binder clips, stickers, etc.
- Daily Game Log
- [Career Gaming Rubric](#)

Days 7-8 Instructional Procedures:

1. The teams should finalize production of their games and instructions for Version 2.0.
2. Each team should prepare to present their final product to the class.

Day 9 Instructional Procedures - Public Presentation*:

1. Each team will present their game (Version 2.0) to the class for peer reviews. Each reviewer will complete the "Version 2.0 Review" section of the [Career Gaming Rubric](#).
2. Each team will submit their Version 2.0 game, Daily Game Log, and Peer Reviews to the teacher for final scoring.

*A public presentation face-to-face or as a video may be presented to a client/stakeholder audience.