

Creek Geek Knowledgey - Groundwater Version

Adapted from: An original Creek Connections activity.
Creek Connections, Box 10, Allegheny College, Meadville, Pennsylvania, 16335

Grade Level: Intermediate

Duration: 35-45 minutes

Setting: Classroom

Summary: Students play a Creek Connections version of Jeopardy to review the main concepts/facts presented in the Groundwater Module.

Objectives:

Students will review what they have learned in other module activities by answering a series of game show questions.

Vocabulary:

Related Module Resources:

- Other Module activities
- Posters and visual aids
- Fact sheets

Materials (Included in Module):

- Link to game website
- Paper version of Creek Geek Knowledgey (envelopes)
- Creek Geek Knowledgey Rules overhead transparency
- "Question" key

Additional Materials (NOT Included in Module):

- Computer with Internet access and optional volume
- Projection unit
- Tape and/or thumbtacks
- Watch or clock w/ second hand

ACADEMIC STANDARDS (ENVIRONMENT AND ECOLOGY)

7th Grade

- 4.1.7.B Understand the role of the watershed.
- Explain factors that affect water quality and flow through a watershed.
- 4.1.7.C Explain the effects of water on the life of organisms in a watershed.
- Explain how the physical components of aquatic systems influence the organisms that live there in terms of size, shape and physical adaptations
- 4.1.7.D Explain and describe characteristics of groundwater.
- Identify specific characteristics of groundwater.
 - Recognize the common types of groundwater components.
 - Describe different types of groundwater.
- 4.1.7.E Describe the impact of watersheds and groundwater on people.
- Explain the impact of watersheds and groundwater in flood control, wildlife habitats and pollution abatement.
- 4.6.7.A Explain the flows of energy and matter from organism to organism within an ecosystem.
- Describe and explain the adaptations of plants and animals to their environment
- 4.7.7.A Describe diversity of plants and animals in ecosystems.
- Identify adaptations in plants and animals
- 4.8.7.D Explain the importance of maintaining the natural resources at the local, state and national levels.
- Define the roles of Pennsylvania agencies that deal with natural resources.
- 4.9.7.A Explain the role of environmental laws and regulations.
- Identify and explain environmental laws and regulations (e.g., Clean Air Act, Clean Water Act, Recycling and Waste Reduction Act, Act 26 on Agricultural Education)
 - Explain the role of local and state agencies in enforcing environmental laws and regulations (e.g., Department of Environmental Protection, Department of Agriculture, Game Commission)

10th Grade

- 4.1.10.B Explain the relationship among landforms, vegetation and the amount and speed of water.
- Explain how vegetation affects storm water runoff.
- 4.1.10.D Describe the multiple functions of groundwater.
- Describe groundwater in terms of their effects (e.g., habitat, flood, buffer zones, prevention areas, nurseries, food production areas).
 - Explain how a groundwater influences water quality, wildlife and water retention.
 - Analyze groundwater through their indicators (e. g., soils, plants, hydrology).
- 4.7.10.B Explain how structure, function and behavior of plants and animals affect their ability to survive.
- Describe an organism's adaptations for survival in its habitat

12th Grade

- 4.1.12.B Explain the relationships that exist within watersheds in the United States.
- Understand that various ecosystems may be contained in a watershed.
 - Examine and describe the ecosystems contained within a specific watershed.
- 4.1.12.D Analyze the complex and diverse ecosystems of groundwater.
- Explain the functions of habitat, nutrient production, migration stopover and groundwater recharge as it relates to groundwater.
 - Describe and analyze different types of groundwater.

BACKGROUND: The other activities in this module have given an opportunity to learn what groundwater is and issues concerning groundwater in Pennsylvania.

Groundwater provides many valuable services to both animal life and humans; therefore, it is essential that we understand and protect it. A fun, interactive, and educational way to review and wrap up this unit theme is to play Creek Geek Knowledgey, the Creek Connections version of Jeopardy. In Creek Geek Knowledgey, as with the TV show Jeopardy, student teams try to guess the question that corresponds to a given statement about a groundwater related topic.

OVERVIEW:

Students work in pairs or teams to play Creek Geek Knowledgey, the Creek Connections version of Jeopardy. During the game, the students review what they've learned in other module activities and through their research about groundwater.

PROCEDURE:

There are two versions of Creek Geek Knowledgey: a computer-based version that requires that you have access to a computer with Internet capabilities and a projection unit to show the game on a screen, and a paper-based version that you need only have a wall or chalkboard and tape to play. The computer-based version is more reminiscent of the real Jeopardy TV game show and is a bit more exciting. If you have access to a computer with Internet capabilities and a projection unit, proceed to "Computer-Based Creek Geek Knowledgey" below. If you don't have this equipment or simply prefer to play the paper-based version, go to "Paper-Based Creek Geek Knowledgey" below.

Computer-Based Creek Geek Knowledgey

Teacher Preparation:

1. Procure and set up a computer with Internet access and projection unit. Turn up the volume on the computer because there are some sounds to this game.
2. Go to the Creek Geek Knowledgey website by typing in <http://creekconnections.allegheny.edu/JeopardyGW/index2.html> or by going to <http://creekconnections.allegheny.edu> → Classroom Resources → Scroll down to "Contests/Games" and click on Creek Geek Knowledgey (Groundwater version). Have the computer at this point when you proceed to the student activity. **CAUTION: do not click on any of the game's links ahead of time. The game is designed so that when a category question is selected, the link disappears so you know it was used. To get these links to reappear, you may have to reboot the computer and clear the history on your web browser. You will have to do this between classes if using this game with multiple classes.**

Student Activity:

1. Explain to students that they will be playing a Jeopardy-like game called Creek Geek Knowledgey to review some of the major concepts and facts that they learned in other groundwater module activities.
2. Select one person to be the official score keeper and divide the rest of the class into teams. Have the scorekeeper draw a score table on the board.

3. Click on the “Begin” link below the Creek Connections logo or the logo itself to proceed.
4. If desired, click on “Read Rules” and quickly go over the rules with your students. You can set any rules you would like, but keep in mind:
 - a) You must find a way to have full groups to “buzz in” rather than just individuals. The best way is to have an entire group raise their hands. When all hands are up in a group, they have successfully buzzed in first. Call on them. If they are incorrect, say incorrect and other groups who know should raise their hands immediately. Pick on the next group to have all hands raised.
 - b) Decide if you will be reading the questions like Alex does on the show. Regardless of whether or not you read the cards, students should be allowed to “buzz in” as soon as they want.
 - c) You can decide how strict you want to be on whether the students responses need to be in the form of a question.
 - d) Set an official (get your watch out) or unofficial (wing it) time limit for buzzing in. If no one gets the answer correct or if no one buzzes in, the team with the previous correct answer should pick the next category and amount.
 - e) There are daily doubles in the game. Indicate that any amount a team has can be wagered. A maximum of \$500.00 can be wagered for teams with insufficient funds (< \$500.00).
 - f) Establish rules for final jeopardy. For the real game show, only those teams with positive amounts of money can play. A category for the question will be revealed and based on their feelings about this category, teams can wager any amount of money, but only of what money amount they actually have. They should write down their answers on a sheet of paper - no changing answers.

Make sure students understand the rules well before proceeding with the game.

5. Scroll down to the bottom of the screen and click on “Play Knowledgey” to begin the game.
6. Have the scorekeeper read the categories of the Creek Geek Knowledgey game.
7. You, the teacher, will be the game show host and should select the first “answer” to start the game. Click on this square. Read the question or have students read the question on their own. You should watch for the team that buzzes in first.
8. To return to the category page, you simply click the link labeled back on the bottom of the page or the “Back” button on your computer.

9. Play the game according to the rules until all the “answers” have been used or time is running out. Allow for 3 minutes to play “Final Knowledgey.”
10. The team with the most points at the end of the game wins.

Paper-Based Creek Geek Knowledgey

Teacher Preparation:

1. Locate the Groundwater Creek Geek Knowledgey activity envelope in the module. Inside the envelope are six sets of answers, each set containing five answers and a category title card. Answers within a given category are connected with yarn. There is also a small envelope in the activity envelope labeled “Used Questions Covers”. These will be used to cover up questions/answers that have already been used so that they are not duplicated. The other item in the activity envelope is the Final Knowledgey question card.
2. Determine where you will set up the game. (The chalkboard, a wall, or a bulletin board will work well.)
3. Find some tape or thumbtacks from *your* office supplies.
4. Each of the six categories has six folded 8.5x11 pieces of card stock paper in it, five of which correspond to the five dollar amount “answers” (\$100, \$200, \$300, \$400, and \$500), and one of which is the category title. These pieces of paper are attached together on a string. Simply tape the top of the string securely to the wall or chalkboard or secure with thumbtacks to a bulletin board. The dollar amounts should show. Use the diagram below to help you set up the game on the board or wall (the answer key is arranged in this category order!!!).

The Water Cycle	Groundwater Pollution	Layers of Earth	Layers of Water	Mining Groundwater	Groundwater Phenomena
\$100	\$100	\$100	\$100	\$100	\$100
\$200	\$200	\$200	\$200	\$200	\$200
\$300	\$300	\$300	\$300	\$300	\$300
\$400	\$400	\$400	\$400	\$400	\$400
\$500	\$500	\$500	\$500	\$500	\$500

Student Activity:

1. Explain to students that they will be playing a Jeopardy-like game called Creek Geek Knowledgey to review some of the major concepts they learned in other module activities. Quickly brainstorm some of these concepts/topics.
2. Select one person to be the official score keeper and divide the rest of the class into teams of two or more students. Have the scorekeeper draw a score table on the board.
3. Go over the rules at the end of this activity write-up. An overhead transparency of the rules is also included for your use. Also look at instruction #4 from the above computer-based version instructions. Make sure students understand the rules well before proceeding with the game.
4. Have the scorekeeper read the categories of the Creek Geek Knowledgey game.
5. You, the teacher, will be the game show host and you should select the first “answer” to start the game. Flip up the folded piece of paper. It will be up to the students to read the text on the card on their own - unless the room setting is too big and students cannot read the print, then you will need to read the card. As soon as a team knows the answer, they can “buzz in”. You should watch for the team that buzzes in first. Since you will be reading, you might want the scorekeeper to watch for the team who buzzed in first or have some other student be the official reader while you remain the judge.
6. Once a given “answer” has been used, cover the dollar amount with a “Used Question Cover”.
7. Play the game according to the rules until all the “answers” have been used or time is running out. Allow for 3 minutes to play “Final Knowledgey.”
8. The team with the most points at the end of the game wins.

DISCUSSION:

Discuss any questions or unclear concepts as they arise during the course of the game.

EVALUATION:

- Students have accurately answered most of the Creek Geek Knowledgey questions.

EXTENSIONS AND MODIFICATIONS:

- Have students create even more Creek Geek Knowledgey categories and questions.
- Use Creek Geek Knowledgey as a quiz or exam and have students work individually and right down their answers on pieces of paper.

Activity Version: Fall 2003

NOTES (PLEASE WRITE ANY SUGGESTIONS YOU HAVE FOR TEACHERS USING THIS ACTIVITY IN THE FUTURE):



OVERHEAD : CREEK GEEK KNOWLEDGY RULES

Knowledgey Rules

- All answers must be in the form of questions (optional).
- The teacher will not be reading the questions like Alex does on the show, so teams can “buzz in” as soon as they want.
- There will be a time limit for a team to “buzz in”.
- To “buzz in” will be defined as follows: ALL team members must raise their hand. The first team with all members with hands raised will be picked to answer the question. Judgment of who is first is at the discretion of the teacher.
- Once a team buzzes in, they will only have 10 seconds to respond to the question. You can talk it over with your team before responding, but once a response has been “shouted out,” that response will be considered the team’s answer.
- If a response is incorrect, the teacher will say “incorrect” and another group can buzz in (first group to have ALL team members hands raised). Your team can only "buzz in" once per every answer screen.
- Correct responses are awarded the amount of points that the screen shows. The scorekeeper will add this amount to your score.
- Incorrect responses will result in the amount shown on the screen being subtracted from your score. The scorekeeper will do this.
- If nobody buzzes in or if nobody responds correctly, selection of the next category and amount goes to the team that responded correctly to the previous question.
- There are two daily doubles. Any amount a team has can be wagered. A maximum of \$500.00 can be wagered for teams with insufficient funds (< \$500.00). If the answer is incorrect, no other team can buzz in. The team that participated in the daily double picks the next category/amount.

Final Knowledgey

- Only those teams with positive amounts of money can play.
- A category for the question will be revealed and based on their feelings about this category, teams can wager any amount of money, but only of what money amount they actually have. Write this amount on a piece of paper.
- You will have roughly 30 seconds (until the song stops playing) to come up with a correct response written on paper, in the form of a question. You will not be able to change your answer after the 30 seconds has elapsed.
- Incorrect responses lose the amount wagered.
- Correct responses are awarded the amount wagered.

WINNER:

The team with the most money/points at the end of the game wins.

The Water Cycle	Groundwater Pollution	Layers of Earth	Layers of Water	Mining Groundwater	Groundwater Phenomena
What is precipitation?	What is potable water?	What is soil?	What is the groundwater table?	What are porosity and permeability?	What is a cave?
What is surface water?	What is hard water?	What is an aquifer?	What is the saturated zone?	What is an artesian well?	What is a sinkhole?
What is infiltration?	What is lead?	What is the aquitard?	What is the unsaturated zone?	What is a cone of depression?	What is a perched water table?
What is evapotranspiration?	<i>What is distilled or deionized water?</i>	What is the aquifuge or bedrock?	What is the head of a water table?	What is pure quartz sandstone?	What are meteoric waters?
What is the Hydrologic Cycle?	What is soil containing aromatic organic compounds and hydrogen sulfide?	What is a perched aquifer?	What is the hydraulic gradient?	What is 22 percent?	What is karst topography?

FINAL CREEK GEEK KNOWLEDGY ANSWER: What is the Ogallala Aquifer?