

Earth's Population and Resources: Concepts for K-2

Population Connection

“POPULATION EDUCATION” is all about people—how the human race has grown and shaped the world around us. The world population has quadrupled in the past century, changing the way we use natural resources and function as societies. Population education is the ultimate multi-disciplinary field; calling upon ecology, human geography, anthropology, economics, biology, public health, sociology, environmental studies, history and civics all rolled into one. It also uses a good bit of mathematics to help us understand where we've come from and where we might be headed.

Since 1975, Population Connection's Education Program has developed age-appropriate curricula to complement pre-K -12 students' science and social studies instruction about human population trends and their impacts on natural resources, environmental quality, and human well-being. The classroom activities emphasize hands-on learning and balanced discussion of different viewpoints. Population Connection curriculum materials are classroom-tested, rigorously evaluated, and frequently updated. They are interdisciplinary and classroom-ready. They can be used in a traditional setting, but are well suited for a cooperative learning environment.

Fitting with Curricula

Population studies are explicitly included in many national and state content standards for science, geography, and environmental education. The latest math standards emphasize drawing connections to real-world situations and integrating math with other subject areas.¹

Questions about population growth and density intersect with each of the ten thematic strands of the social studies.² With regard to ❶ CULTURE, for example, a student could not get far in understanding modern Japanese culture—or, in contrast, traditional South African Bushman culture—without considering the influence of population density on those societies. And questions about the use of natural resources and the demands of large, urban populations are central to the challenges facing local, national, and world governing bodies (strands ❷ through ❸).

The two lesson plans included in this Pullout are aligned with standards that have been established by professional associations in social studies, science, math, and the discipline of geography. They are a sampling of more than 100 classroom activities, most of which feature a student-centered, hands-on approach to learning.³

Population dynamics, resource use and human impact on the environment may seem like issues that are too complex for the K-2 classroom. Yet, there are ways that even very young students may be helped to understand these concepts by drawing on personal

experiences and by interacting with each other under the guidance of teachers using hands-on activities that are innovative, informative and fun.

“Go Fish” Lesson

Future survival in an interconnected, global society will require sharing and compromise between individuals and among nations. In this activity, students share a bowl of goldfish crackers to simulate even and uneven consumption of limited resources. Since sharing and cooperation are already common themes in the early elementary classroom, this activity can reinforce positive interpersonal behaviors and demonstrate the need to think of others when consuming limited resources.

“Earth Cookie” Lesson

Only a small part of the Earth's land is available to grow crops to feed the world's people. Personal decisions and actions can help conserve farmland. In this activity, students will help decorate a cookie that represents the basic geographic portions of the Earth and develop an appreciation for the limited amount of farmland available on the planet.

About Population Connection

Population Connection is the national grassroots population organization that educates young people and advocates progressive action to stabilize world population at a level that can be sustained by Earth's resources.⁴ We believe that overpopulation threatens the quality of life for people everywhere. We seek to protect the environment and ensure a high quality of life for present and future generations. Population Connection's advocacy programs aim to influence public policies, attitudes, and behavior on national and global population issues and related concerns. 🌐

Notes

1. “Population Education: Meeting the Standards,” at www.populationeducation.org.
2. National Council for the Social Studies, *Expectations of Excellence: Curriculum Standards for Social Studies* (Washington, DC: NCSS, 1994).
3. Other Population Connection resources include (a) Educational Products and Media: Population Connections has produced a variety of teaching kits and other resources for K-12 classrooms. In the award-winning “dot” video, *World Population*, students see (in over just seven minutes) a simulation of 2,000 years of population growth, and watch in awe as our numbers grow from 170 million in 1 CE to over 6 billion humans today; (b) Teacher Workshops: We provide hands-on training to more than 12,000 teachers and student teachers annually in North America. Tens of thousands of teachers are introducing important population concepts to their students using these outstanding resources. Visit www.populationeducation.org to learn more.
4. Formerly ZPG, for Zero Population Growth.

Go Fish!

The world's natural resources are limited. Future survival in an interconnected, global society will require sharing and compromise between individuals and among nations. In this activity, students share a bowl of goldfish crackers to simulate even and uneven consumption of limited resources. Since sharing and cooperation are already common themes in the early elementary classroom, this activity can reinforce positive interpersonal behaviors and demonstrate the need to think of others when consuming limited resources.

Objectives

The student will be able to: List three resources that may be shared; Identify three ways to promote sharing.

Grade Level

Pre-K–2

Standards

- Math I
- Science F
- Social Studies IX-b, e

Skills

Sharing, Describing, Number-sense and counting, Critical Thinking, Cause and Effect, Dividing, Observing, Prioritizing

Duration

Preparation: 30 minutes; Activity: 30 minutes

Vocabulary

- Resource—A resource is a supply or source of support.
- Share—To share is to divide and distribute something among others.

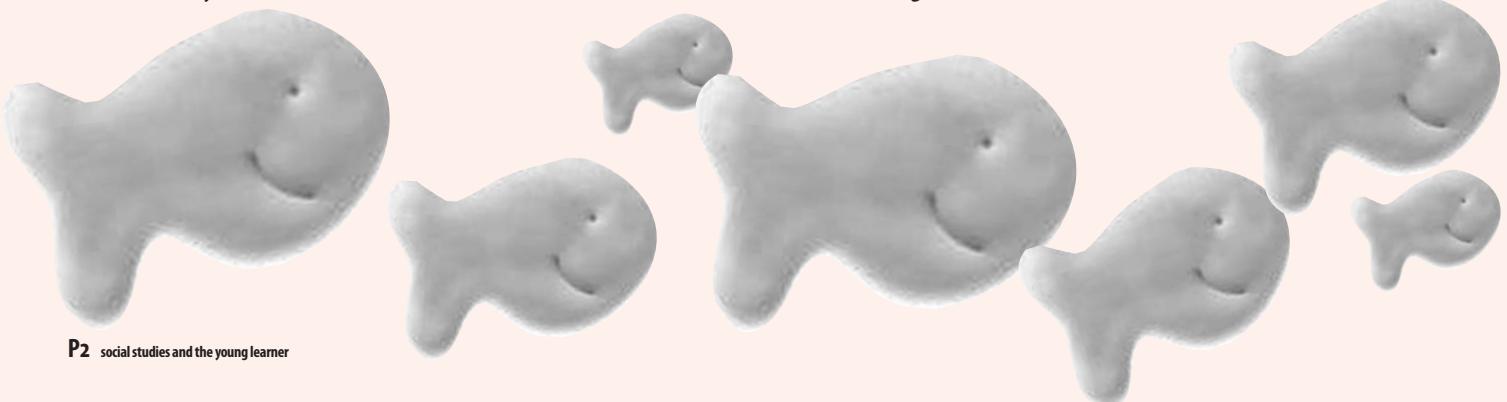
Materials

- Goldfish (shaped) crackers— Enough to pass a bowl of crackers around to all the students and enough to fill a small plastic baggie (or other standardized measure) with equal numbers of crackers for each student. (About 300 total crackers per 15 students; e.g., a bowl of 150 crackers and 10 crackers in a pre-portioned baggie for each of 15 students.)
- Napkins—one per student
- Plastic baggies (snack size)—one per student
- Serving bowl
- Chalkboard or other writing surface

NOTE: Instead of crackers you could use other objects that the students would want and which could be manipulated in a similar way.

Procedure

1. Be sure you and the students wash your hands before the start of this activity.
2. Seat the students at tables, with a napkin placed in front of each child. Tell the students that you will be passing a bowl of goldfish crackers around and that they each may take as many goldfish as they want when the bowl comes to them. They should place them on their napkin, but they may not eat these particular crackers in this round. Hand the bowl to the first student and let the students pass it around, or facilitate passing it as necessary. Ask the students to count how many crackers they took. Keep a list of each child's cracker total on the board and note whether the crackers make it all the way around, or if the first few students take large handfuls, leaving little or nothing for the rest of the class.
3. Remind the students that they are not to eat these goldfish. Pass the bowl around again and ask them to put the crackers back in the bowl (save these for snack time or use in craft projects later).
4. Assure the students that they are all about to get an equal share of goldfish (this reassurance will be important for those who didn't get very many crackers in the first round).
5. Distribute equal size portions of crackers (that you have already divided into the plastic bags) to each child. How do these portions compare to the ones the students took for themselves in the first round? Point out that the total number of crackers in each round was the same—what differed was how many crackers each child took in the first round. Ask them to count the goldfish in the bag and record these numbers on the chalkboard below each child's total from the first round. Compare the two numbers for each child.
6. Tell the students that now they can eat the crackers.
7. Wrap up the activity by noting that: "We used crackers shaped like fish to play this game. People all over the world depend on real fish for food. Food is a resource that we all share. The oceans of the world are like a giant goldfish bowl and we all need to share so everyone gets some. Sharing fish is an example of sharing a natural resource."



Discussion Questions

1. Who was happy with the amount of crackers she/he received in the first round? Who was happy with what she/he received in the second round? How did it feel to be one of the students in the first round who got a small amount of crackers or who didn't get any crackers at all?
2. If you did take a large amount in the first round, how did it feel to get a smaller amount from the teacher in the second round?
3. In this activity we discovered that in order to share fairly, we might have to take a specific amount so that everyone else gets some too. We shared the crackers. What are some other things that you like to share? What are some things that you don't like to share? (Answers will vary.)
4. Are there items in the classroom that everyone needs to share? What are some things you and your classmates could do to make sure everyone gets a fair share of those resources in your classroom? (Possible answers: share often, rotate use of certain materials, use a sign-in system for borrowing resources)
5. What are some things you share at home? (Possible answers: room, food, toys, time with parents or other caretakers)
6. What are some things we share within our community? [You can refer to the activity "Our Town" if the students have trouble thinking of a reply.] (Possible answers: streets, parks, libraries, water supply, hospital, fire department, schools)

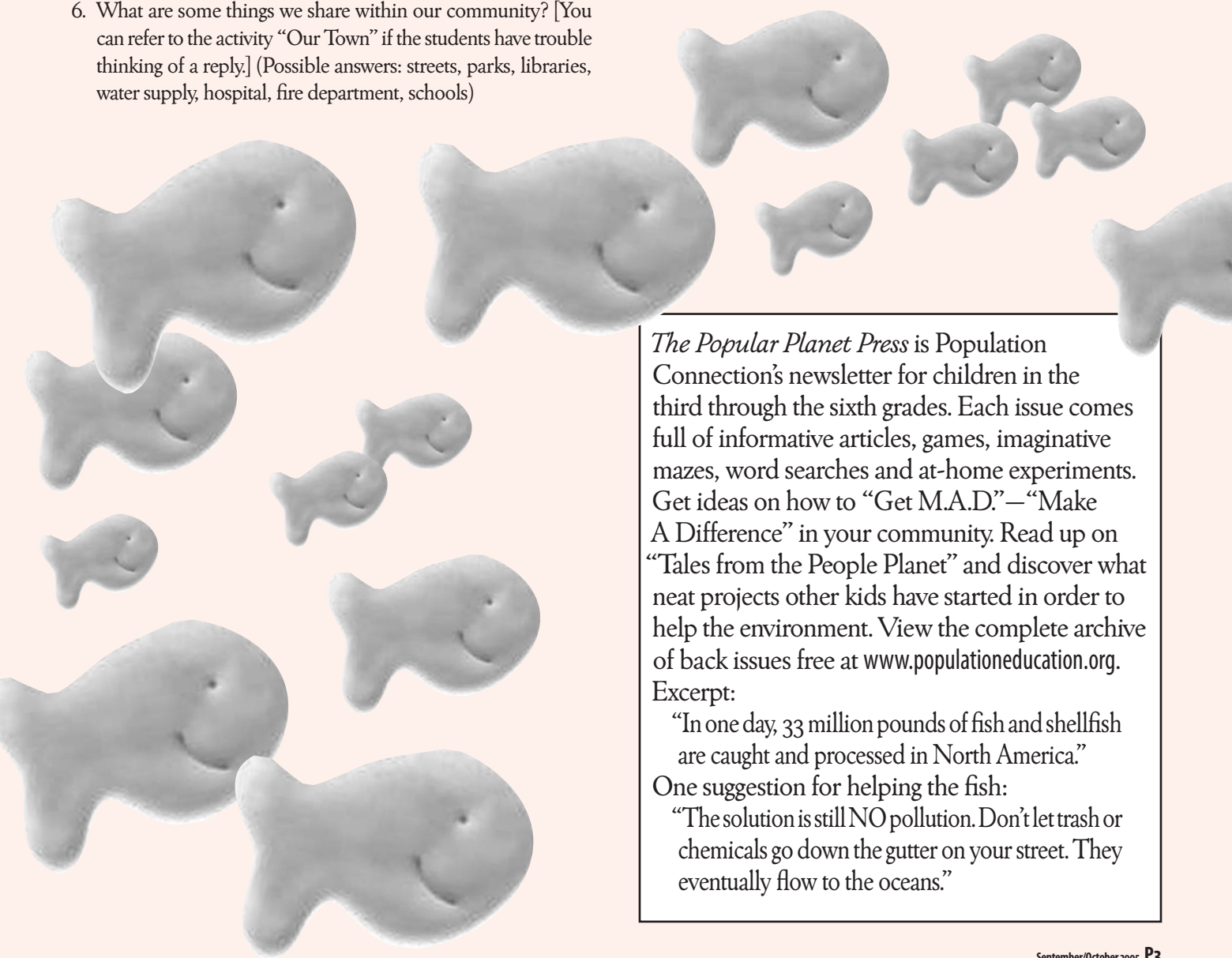
Bonus Questions

1. What would happen if there were twice as many students in your class and you did this activity again with the same number of crackers divided evenly among the bags? (Answer: The amount in each bag would be half as large.)
2. What if there were only half as many students in your class when you did this activity again? (Answer: The amount in each bag would be twice as big.)

Exploration and Extension

1. Help students keep a list for the rest of the week of things that may be shared in the classroom or at home: How did it work out? How did it feel?
2. Ask the students to develop a list of rules for sharing resources in the classroom. Would these rules work at home? Would they work for a whole town? How might the rules need to change depending on the number of people involved?

This is one of many classroom activities free online at www.populationconnection.org



The Popular Planet Press is Population Connection's newsletter for children in the third through the sixth grades. Each issue comes full of informative articles, games, imaginative mazes, word searches and at-home experiments. Get ideas on how to "Get M.A.D."—"Make A Difference" in your community. Read up on "Tales from the People Planet" and discover what neat projects other kids have started in order to help the environment. View the complete archive of back issues free at www.populationeducation.org.

Excerpt:

"In one day, 33 million pounds of fish and shellfish are caught and processed in North America."

One suggestion for helping the fish:

"The solution is still NO pollution. Don't let trash or chemicals go down the gutter on your street. They eventually flow to the oceans."

Earth Cookie

Only a small part of the Earth's land is available to grow crops to feed the world's people. Personal decisions and actions can help conserve farmland. In this activity, students will help decorate a cookie that represents the basic geographic portions of the Earth and develop an appreciation for the limited amount of farmland available on the planet.

Objectives

- Describe which material makes up more of the Earth's surface: land or water?
- List three food products that come from farms.
- Name two things that people can do to preserve farmland and soil.

Pre-K-2 Standards

- Geography III-8; V-14, 15, 16
- Social Studies III-h, k; IX-d, e
- Science F
- Math I; IV

Skills

Observing, Dividing, Imagining, Simulating, Classifying and Categorizing, Ordering and Arranging, Representing

Duration

Preparation: 30-60 minutes, depending on materials used; Activity: 30 minutes

Materials

- A large, pizza-sized sugar cookie (bake at home or purchase)
- An assortment of cookie toppings: raisins, dried fruit, sliced berries, miniature marshmallows, candies and sugar sprinkles, etc.
- Icing or cream cheese
- Food coloring in assorted colors
- A globe or map of the world (As an alternative you can use a beach ball or small pillow decorated as a globe)
- A plastic knife
- A round baking pan (e.g., pizza pan).

NOTE: If you would rather not use real food products, you could use modeling clay to make the cookie instead.

Procedure

1. Be sure everybody washes his or her hands before this activity.
2. Introduce the concept of the activity and show the students the large, plain cookie. "Today we are going to decorate a special cookie. Let's pretend that this big, round cookie represents the whole Earth. This cookie will show us how much land is available to grow food for all the world's people."
3. Cut the cookie into quarters.
4. Explain that most of the Earth is water. Point to $\frac{3}{4}$ of the cookie and ask a group of students to add blue-colored icing to that part of the cookie to represent the world's water. Ask the students to name some things that live in the water. Then they can add colored candies or fruits (or goldfish crackers!) to represent the living things that are in the oceans, lakes and rivers.

5. The remaining $\frac{1}{4}$ of the cookie represents the Earth's land. Cut that section in half (you'll have two $\frac{1}{8}$ pieces). Explain to the class that you are going to pretend that these two pieces of the cookie represent the land on the Earth.
6. Ask a different group of students to add marshmallows or white icing to $\frac{1}{8}$ of the cookie. Explain to them that this section represents areas of the Earth where people can't normally live, such as very icy regions, deserts, and very high and rocky mountains.
7. Take a moment to show the globe to the students and identify examples of the following types of regions: areas that are able to grow crops (farmland); areas that are densely populated, where there isn't much space to grow food (cities, coasts); areas with moderate climates where people can live; and areas where people can't live (deserts, high mountains, swamps, icy regions).
8. Carefully cut the remaining $\frac{1}{8}$ section of the cookie into four small pieces ($\frac{1}{32}$). Ask the students to spread icing and assorted toppings in a variety of colors on three of these pieces ($\frac{3}{32}$). Explain that these three pieces represent all the areas where people live: where we build our homes, roads, schools, shopping malls, factories and cities. We also have to share this area with other living things—all the plants and animals that need homes too. Finally, ask the students to put green colored icing on the last uncovered piece ($\frac{1}{32}$). Explain that this little piece represents all the farmland on Earth—this proportion of area produces all the (land-based) food for the world's people.
9. Discuss ways to keep the sections of the Earth that we live and farm on clean and healthy. Suggestions include planting trees to prevent soil erosion; keeping the ground and water clear of pollution by disposing of chemicals properly; conserving energy to help reduce pollution that leads to acid rain; and buying produce from local farmers.
10. Cut the cookie in small pieces. Everyone gets a bit to eat.

Discussion Questions

1. What are some foods you eat every day that come from the Earth? (Possible answers: grains like rice, wheat for bread, and corn for cereal; apples and other fruits that grow on trees; carrots and other vegetables; spinach and other green leafy plants)
2. Does all our food come from the land? (Answer: no) What do we eat that comes from the ocean? (Possible answers: fish, clams, shrimp, shellfish)
3. Were you surprised at what a small portion of our cookie represents farmland? Why or why not?

This is one of many classroom activities free online at www.populationconnection.org