

Helper Ants

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Grade Level K-1
Duration 1-2 class periods

National Standards

GEOGRAPHY

Element 1: The World In Spatial Terms

3. How to analyze the spatial organization of people, places, and environments on Earth's surface.

Element 4: Human Systems:

13. How the forces of cooperation and conflict among people influence the division and control of Earth's surface.

NEXT GENERATION OF SCIENCE STANDARDS

From Molecules to Organisms: Structures and Processes

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

AZ Standards

ELA

Writing

Speaking and Listening Comprehension and Collaboration

K.SL.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.

1.SL.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

Language

Conventions of Standard English

K.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

e. Use the most frequently occurring prepositions (e.g., to, from, in, out, on, off, for, of, by, with).

1.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

h. Use frequently occurring prepositions (e.g., during, beyond, toward).

Arizona Social Science Standards

GEOGRAPHY

The use of geographic representations and tools help individuals understand their world.

K.G1.1 Use, explore, and construct maps, graphs and other geographical representations to support content focus.

Examining human population and movement helps individuals understand past, present, and future conditions on Earth's surface.

1.G3.1 Explain why and how people, goods, and ideas move from place to place.

HISTORY

Cycles of conflict and cooperation have shaped relations among people, places, and environments.

K.H2.1 Explain the benefits of cooperation and compromise as ways to solve problems.

CIVICS

Civic virtues and democratic principles are key components of the American political system.

K.C1.1 Apply values of respect, responsibility, equality, and fairness within schools and communities.

K.C1.2 Follow agreed upon rules for discussions when responding to others and making decisions as a group.

K.C1.3 Compare one's own thoughts and opinions with those of others.

1.C1.1 Apply values of respect, responsibility, equality, and fairness as a member of a community.

1.C1.2 Follow agreed upon rules for discussions when responding to others and making decisions including consensus building procedures.

1.C1.3 Compare one's own thoughts and opinions with others' perspectives.



SIOP Elements		
Preparation Adapting content Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Arizona English Language Proficiency Standards
Stage I Writing Applications
Standard 1: The student will express his or her thinking and ideas in a variety of writing genres. The student will express his or her thinking and ideas by using a variety of writing genres, as demonstrated by:
 B3: participating in shared writing to provide directions or information related to real world tasks.
Stage I Language
Standard 1: The student will identify and apply conventions of standard English in his or her communications. The student will demonstrate knowledge of parts of speech by:
 B-2: naming prepositions of direction (*e.g., up, down, over*) from a given prompt.

Overview

Cooperation is essential in society. Ants are a great example when they work together so they can survive the winter. From looking at ants, students can learn much about this valuable trait.

Purpose

In this lesson students will learn how to work together as a team and build a bridge for the ants to cross. They will also be practicing prepositions that denote location. This lesson includes strategies for diverse learners (ELLs).

Key Vocabulary

cooperation: working together

bridge: something that connects one place to another

relative location words such as:

- nearby, far away
- under, over
- above, below
- corner
- middle

on top of, underneath
 next to, between

Materials

- Marshmallows
- Toothpicks
- Scoring Guide for Bridge Building
- Plastic bug that is fairly heavy
- Two objects that the bridge must span (books, desks, etc.)
- The Sonoran Desert map
- Engineering Design Process visual
- Vocabulary cards and Test
- Location Flashcards
- Relationship Word Observation Checklist
- Writing Assignment

Objectives

The student will be able to:

1. Create a bridge that is strong.
2. Cooperate with their team in order to complete a project.
3. Identify relative location of an object.

Procedures

Prerequisite Knowledge:

In this lesson students should have prior knowledge of the plants and animals of the Sonoran Desert. A good lesson for building this background is the kindergarten lesson called **The Sonoran Desert** found at <http://geoalliance.asu.edu/azga/>

Prior to Lesson: Teacher needs to read article about ants in the Sonoran Desert found at http://www.desertmuseum.org/books/nhsd_ants.php

SESSION ONE

Engage:

- Begin the lesson by showing a map of the Sonoran Desert. Have students discuss their prior knowledge about animals and plants in the Sonoran Desert. Then ask how various desert animals get food during different times of the year. **(Preparation: Linking to Past Learning)** Share several of the different kinds of ants found in the Sonoran Desert and how ants get their food (eating seeds, fungus, meat, nectar of plants, the “juice” of other insects) from the Arizona-Sonora Desert Museum article.
- Read aloud the book, *Two Bad Ants* by Chris Van Allsburg. **(Integrating Processes: Listening)**

Explore:

- Talk to the students about cooperation (how friends should work together) instead of hurting feelings. Give them several examples of how to help one another in different situations. Have them share their ideas on how to cooperate. **(Scaffolding: Modeling) (Application: Linked to Objectives)**
- Show students the YouTube video Children Learn about Ants (5.19 min). <https://www.youtube.com/watch?v=cXUCUvcscXs> **(Integrating Processes: Listening) (Scaffolding: Comprehensible input)**

Elaborate:’

- Have students make a list of jobs that ants might do to survive. Bring back the idea of cooperation and how ants need teamwork to complete their tasks and that they (the students) are going to use teamwork to build a bridge for the ants. **(Application: Linked to Objectives) (Scaffolding: Comprehensible input)**
- Divide the class into small groups and show them the video of ants building a bridge. (1.23 min) <http://www.youtube.com/watch?v=n71abhaadRs> **(Grouping Option: Small groups) (Scaffolding: Modeling)**

Explain:

- Show students the supplies available to build a bridge. Have the groups brainstorm what they will need from the available supplies. Then have them draw their plan on a piece of paper. (Use Scoring Guide to document drawing of bridge and points earned.) After you have approved their drawing, distribute the supplies needed to the small groups. **(Application: Hands on and Promotes engagement)**
- Explain to them that they cannot make any changes to their plan. They need to follow their drawing. **(Application: Hands On, Meaningful, Engaging)**
- Allow time to work. (Scoring Guide: building of bridge) As small groups finish, they should tell you what went wrong (Scoring Guide: pitfalls) and what worked well (Scoring Guide: positives). Ask each group member how he/she cooperated to make the bridge. (Scoring Guide: cooperation) At this time they can fix what they want and make their bridge better. (Scoring Guide: rebuild) **(Assessment: Oral, Group)** Ask each group, “What was the purpose of the bridge?” (so ants can carry food) (Scoring Guide: purpose of the bridge)

Evaluate:

- Have all groups stop working. One at a time take the groups’ bridges and have them span two objects (books, desks, etc) and place the plastic bug on the bridge. If bridge holds up, students can go on to explain orally to everyone why their bridge worked so well. If bridge did not support the plastic bug, have the group state what they would do differently next time. **(Application: Hands On, Meaningful, Engaging)**

SESSION TWO

- Review from yesterday what is cooperation and what is the function of a bridge. Then have students get into the same groups as yesterday and retrieve their bridge from the storage area. **(Preparation: Linking to Past Learning)**
- Explain that today they will be using words to show location. Demonstrate using one of their bridges, how the ant can be near/far, behind/in front, over/under, left/right, up/down, above/below, next to, etc. Add any other relative location words to this activity that your class has been learning. **(Scaffolding: Modeling)**
- Have students work in groups and move the bug as you call out the relationship words. Practice for several minutes. **(Application: Hands on and Promotes engagement)**



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d. Move around the room documenting on the Relationship Word Observation Checklist who is able to show the bug in the correct relationship.

(Assessment: Individual)

e. Distribute the Writing Assignment. Explain that the students will be drawing a bug using relationship words that they have been practicing. Write the relationship words on the whiteboard. Tell the students to pick one of the words and then draw a bug in that position in relationship to the bridge.

After they have drawn the bug, they need to write a sentence on the lines provided that describes where the bug is located. Model several sentences for them on the whiteboard. **(Scaffolding: Modeling)**

Then erase the models. **(Assessment: Individual)**

(Integrating Processes: Writing)

f. Have students match the picture of the vocabulary word (cooperation and bridge) to its definition.

Assessment

Social Science

Student groups will score 80% or higher on the Scoring Guide for Bridge Building.

ELA and Geography

Students will be able to correctly place the bug near/far, behind/in front, over/under, up/down, left/right, and near to with 90% accuracy on the Relationship Word Observation Checklist.

Students will use the relative location word correctly in their sentence as portrayed in their drawing. Mastery will be considered 100%.

Students will match the correct vocabulary picture card and definition. Mastery will be considered 100%.

Extensions

Have students make a bar graph answering the question which ant will win the race, the black ant or the red ant?

<http://www.youtube.com/watch?v=XiJc5pFCboE>

Sources

Ants building a bridge

<http://www.youtube.com/watch?v=n71abhaadRs>

The Sonoran Desert Ant

http://www.desertmuseum.org/books/nhsd_ants.php

Sonoran Desert map

https://geoalliance.asu.edu/sites/default/files/maps/Sonoran_Desert.pdf

Fun Facts about Ants

<https://pestworldforkids.org/pest-guide/ants/>

Two Bad Ants by Chris Van Allsburg

The engineering design process

<http://www.engr.ncsu.edu/theengineeringplace/media/graphics/design-process.png>

Children Learn about Ants (5.19 min).

<https://www.youtube.com/watch?v=cXUCUvcscXs>

Ask a Biologist Secrets of a Superorganism

<https://askabiologist.asu.edu/explore/secrets-superorganism>

