Dear Educators,

Thank you for taking the time to teach your students about insects and other pests through the use of the "Creepy Crawling Neighbors" lesson plan. We hope it serves as a valuable tool in your classroom and helps to encourage students to explore their world and discover the different kinds of pests that surround them.

These lessons are designed to introduce students to the influence insects, rodents, and weeds have on their surroundings – both positive and negative. At the same time, students will use classification and observation skills while embarking on a fun adventure of discovery. With the knowledge they gain, they can build understanding about the different kinds of pests, both helpful and harmful, and even help their parents "de-bug" their homes.

We look forward to hearing back from you on how the lessons went and would welcome any feedback that you may have to share with us. A feedback form is included in the lesson plan packet to help you let us know how the lessons worked in your classroom.

Thanks and enjoy the bug discovery!
Sincerely,

Karen Reardon
Director of Communications
RISE (Responsible Industry for a Sound Environment)

Debug THE Myths

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How "Creepy Crawling Neighbors" Was Developed

"Creepy Crawling Neighbors" was designed and tested by Shannon C'de Baca, a high school science teacher with depths of lesson plan development experience.

In addition to her 30-plus years of teaching, Shannon is also the host of the Annenberg Public Broadcasting System television series, "The Missing Link in Mathematics." Shannon has written lessons for the PBS science series "NOVA" and has served as a consultant for the National Education and the Economy, PBS, the Council of Chief State School Officers, the National Education Association, the National Science Teachers Association (NSTA) and the U.S. Department of State. Shannon was one of two Citizen Ambassadors to Bahrain.

Known for using her classroom as a living laboratory to implement innovations and research-based strategies, Shannon has received awards from the Milken Family Foundation, Sertoma International, the Iowa Department of Education and NSTA for her work in the classroom.

Shannon is a member of The Teacher Training Corps of the Teacher-to-Teacher Initiative, which was created by and for America's teachers in 2004. The Initiative supports teachers' efforts in the classroom through professional development workshops, digital workshops and podcasts. The corps consists of teachers and practitioners who have demonstrated effectiveness in scientifically based instruction in their classrooms and districts.

Shannoon C'de Baca,
lesson plan developer

I. Lesson Plan Flow
"Creepy Crawling Neighbors"

Step 1: Engaging the students

The teacher starts the lesson with a conversation with students asking them to describe bugs that they have seen. The teacher draws descriptions on the board or notes descriptive words.

(Key concept: describing things)

Step 2: Formative pre-assessment

The teacher has students sort a set of animal/plant cards (enclosed or available for download) to see what misconceptions the students may have about the concept of insects.

Step 3: Refining observations

A. The teacher holds up photos of insects and asks the students to give good describing words to describe the insects. New words should be written on the board or added to the classroom word wall.

B. Students brainstorm where bugs are found. There should be an inside and an outside list. You can have the students re-sort the piles into insects or animals that are considered pests and those that are not.

(Key concepts: description, observation and habitat)

Step 4: Read aloud

The teacher reads aloud the book, "What's Bugging You?." The students will be able to interject stories where they or their parents have dealt with pests in their home. Words that are new to the students should be written on the board or placed on the word wall in the classroom.

During the read aloud the students will help compile a list of good things and bad things that insects do for our environment. This is to focus their listening skills during the read aloud. Post the good things, bad things list in the room.

Step 5: Sticky traps

The teacher (and students) set sticky traps and leave them for two days to collect some insect samples.

Using the traps, the students examine the bugs caught with hand lenses and use description cards to identify what these insects look like.

Step 6: What is an insect?

The students learn that insects have three body parts – head, thorax (chest area where the legs and wings are attached), and abdomen (the tail end) – and six legs.They may or may not have wings, and they always have antennae. To help the students remember these three parts have them stand and point up when you call out "head". Have them point to their chest when you call out "thorax" and point down when you call out "abdomen". The students will chant with the teacher as well to remember these three words.

They will return to the book and each student will use a post-it note to identify one body part on an illustration in the book. Several illustrations will be used so that each child can place their sticky note. A poster of a large bug is also included in the lesson plans (or available for download) to use when reviewing the head, thorax, and abdomen.

Step 7: Assessment

The students will revisit the card sort and revise the rule they used for deciding when something was or was not an insect. They should be able to state the rule that those with a head, thorax and abdomen were placed in the insect pile while those without those parts were not. They should then be able to take another look at their sticky trap insects and refine their identification of those as well.

II. Lesson Plan Outline and Instructions "Creepy Crawling Neighbors"

National Science Standards:

Content Standard C

As a result of activities in grades K-4, all students should develop understanding of the characteristics of organisms.

Objectives:

Students will classify living things according to their similarities and differences. They will be able to identify the parts of an insect and use those to classify organisms as insects.

Assessment:

Given photographs and actual insects in sticky traps the student will be able to identify and describe the insects and explain the rule they used to decide which are insects.

Materials List

- Chart paper or white board
- Cut-apart organism cards
- "What's Bugging you?" book
- Bug Anatomy Poster
- Sticky traps
- "Pest Patrol" Poster
- Insect Anatomy Cards
- Tape
- Construction paper for Insect Anatomy Cards
- Hand lenses

Pests List

Indoor Insects

Termites
Cockroaches
Spiders
Ants
Silverfish
Beetle
House Mice
Rats
Fleas
Bed Bugs
Dust Mites
Lice
Stink Bugs
Earwig
Grub
Weeds

Outdoor Insects

Spiders
Butterflies
Ants
Mosquitoes
Bees
Flies
Beetle
Centipede
Millipede
Lady Bug
Rolly Polly
Caterpillar
Praying Mantis
Cricket
Firefly
Wasps
Ticks

Background:

The world is filled with insects and creepy crawlies. Some are harmful and some are beneficial to our environment. Often we need to balance the view of insects with proper pest management. This is never more true than when the insects invade our living space and cause problems either structurally or health wise.

Scientists who study insects and pests use careful observation and classification skills to identify these pests. In this activity the students will have a chance to examine bugs in their environment and to develop some observation, description and classification skills that will benefit them in this and future science lessons.

There are more than one million species of insects. They are the largest class of organisms on our planet. They fall under a group called arthropods (these have an exoskeleton, a segmented body, jointed legs and each side of their body is symmetrical). Insects are usually classified as such because they have a head, thorax, abdomen, and six legs attached to their thorax. They may also have wings attached to the thorax and two antennae attached to their head.

It All Starts With Observation (Brainstorm)

Ask the students:

"How many of you have ever seen an insect? Can you tell me what it looked like? On the white board, I will draw what you describe."

Children will offer their ideas describing what insects they remember seeing looked like. Continue the prompting with questions about the parts of the insect, such as the following:

- Was the head of the insect round, square, oval or a rectangle?
- Did its body look long or round?
- Did your insect have a tail or antennae?
- How many legs did your insect have?
- What color was your insect?
- Did your insect have a mouth, ears or eyes?

Formative Pre-Assessment (Sort)

After you draw a couple of insects from the student descriptions, give the kids a chance to add any other facts they know about insects. Record all the ideas as they will be important later.

Next, give the students the "Is it an insect?" deck of the cards (enclosed or available for download). Ask them to sort them into two piles, those they think are insects and those they do not think are insects. Wander around the room and look at what each student put in their piles. When you see an item that is not in the correct pile ask the student to explain the rule they used for deciding what went into the insect or not insect pile. Do not tell a student they are wrong, just observe their choices and listen to their rules for this part of the lesson. This rule will let you know any misconceptions the students hold about the classification of insects.

For this activity, use the pull-apart organism cards included in the packet or available for download. The cards each feature photos and labels of various animals and insects, including:

Card 1: photo of a butterfly with the word "butterfly"
Card 2: photo of a mouse with the word "mouse"
Card 3: photo of a ant with the word "ant"
Card 4: photo of a roach with the word "roach"
Card 5: photo of a dog with the word "dog"
Card 6: photo of a cat with the word "cat"
Card 7: photo of a bee with the word "bee"
Card 8: photo of a bird with the word "bird"
Card 9: photo of a spider with the word "spider"
Card 10: photo of a flower with the word "flower"

Read Aloud:

Ask the students. "What is a pest?". After the students have their definition of a "pest" on the board read aloud the book, "What's Bugging You?". Pause frequently to allow students to tell stories of pests their parents have found in their homes. To focus the students in this read aloud and help tune their listening skills have them help compile a list of good things and bad things that insects do for our environment. Post the good things, bad things list in the room.

Working like a Detective (Observe)

Explain to the students that detectives are good at observing things. Show the students a photo of a bug from the flash cards or one from the book and ask them to give you good describing words for what they see. Some may point out the wings or the legs and others will notice more detail. It is ok to keep asking, "What else do you notice?"

Now ask the students to tell you where insects live. Record them in two lists, one inside and one outside. This is to prepare for the sticky traps activity.

Sticky Traps (Investigate)

You will need to obtain several "sticky" traps from your custodial staff. These are also available from any hardware store. You will be placing these traps in places around the school where bugs are likely to live. Basements and places near food sources are the best. The traps should sit in one location for at least two days. Your custodian can give you some good guidance. The idea is to place these traps and catch a variety of bugs that are found around the school. The students will use these traps to examine the bugs with hand lenses and classify them into several categories. This activity focuses on the skills of observing, describing and classifying.

(Modification/extension: You may ask the students to decide where to place the sticky trap)

Pick up the traps and place them on a table with hand lenses. Ask the students to look at the sticky traps and first do a count of the number of bugs caught in the trap. Record these numbers on the board. You can discuss why one trap had more bugs than another if there is a difference in the counts.

Place lots of description cards on the table and ask the students to select the words (with photos or drawings) to help describe the bugs they find. Have them tape the description cards to a piece of construction paper to describe two of the bugs they find.

Insect Anatomy Cards:

Card 1: Drawing of wings with the word "wings"
Card 2: Drawing of legs with the word "legs". This card should have the prompt "how many legs?"
Card 3: Drawing of eyes with the word "eyes"
Card 4: Drawing of antennae with the word "antennae"
Card 5: Drawing of round body with the words "round body"
Card 6: Drawing of square body with the words "square body"
Card 7: Drawing of oval body with the words "oval body"

What is an Insect (Remember)

Explain to the students that insects have three body parts -- head, thorax (chest area where the legs and wings are attached) and abdomen (the tail end) – and six legs. They may or may not have wings, and they always have antennae. To help the students remember these three parts have them stand and point up when you call out "head". Have them point to their chest when you say thorax and point down when you call out abdomen. Have the students will chant with you as well to remember these three words. Make sure these three words are written on the board or word wall.

Now, return to the book and give each student a small post it note with the word, head, abdomen or thorax. Allow each student to come to the front of the room and place their post it on one of the book insect pest illustrations where they see the correct body part.

Assessment (Sort and revise)

Have the students revisit the card sort and revise the rule they used for deciding when something was or was not an insect. They should be able to state the rule that those with a head, thorax and abdomen were placed in the insect pile while those without those parts were not. They should then be able to take another look at their sticky trap insects and refine their identification of those as well.

Extension

Ask the students to tell you what surprised them about the bugs they caught. Follow-up with questions such as, "What could you do if there were a lot of bugs on a trap? Did you see bugs on the traps you have not seen before?" The students may want to try traps in other areas or to identify the specific bugs caught with an identification key from a book or the web. You may want to have a representative from a local pest control company come in and help explain to the student how they identify the pests they find in homes and the importance of controlling them.

You can have the students re-sort the piles into insects or animals that are considered pests and those that are not.

Bulletin Board: "Most Wanted"

Use the "Pest Patrol" poster to document pests you might find in your environment. You may want to include mice, rats, spiders or roaches. You will want to include any pests you particularly want to warn the students about. This would include any dangerous pests like black widow or brown recluse spiders.

"What's Bugging You?" Feedback

Thank you for using "What's Bugging You?" in the classroom. To help us improve on this lesson plan and future lesson plans we may develop, please provide feedback using the form below, or simply e-mail us at becky.johnson@fleishman.com.

1. Using the scale below, how would you rate the effectiveness of the "What's Bugging You?" lesson plans?

1 = Very effective
2 = Effective
3 = Neutral
4 = Ineffective
5 = Very ineffective

2. Which activity in the lesson plans did you find to be the most popular with your students? Which activity did you, as an educator, find the most effective?

_____
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3. What suggestions do you have to improve on the lesson plans?

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