Bugs In Boxes Math

Bugs are a high interest subject for kindergarteners, so this project draws them in without much effort.

Curriculum/State Standards
Students will:
1. Count forward to 20 and backward from 10 with or without objects using different starting points.
2. Recognize and compare the ordinal position of at least five objects.
3. Create word problems based on sums to 10 and differences with minuends to 10.
4. Construct simple displays of data using objects or pictures.
5. Ask and answer questions by counting, comparing quantities, and interpreting simple displays of data.
6. Sort, classify, count, and represent up to 20 objects and justify the sorting rule.
7. Recognize, describe, extend, create, and record simple repeating patterns.
8. Recognize, describe, extend, and record simple growing patterns.
9. Build, draw, compare, describe, and sort 2-dimensional figures (including irregular figures) using attributes.
10. Compare and order objects according to observable and measurable attributes.
11. Use the attribute of length to describe and compare objects using non-standard units.

Overview
This project was designed to bring a high interest subject, bugs, into my kindergarten classroom to teach math. It is important to have enough resources and materials to meet the needs of each student. Because of this grant I was able to purchase and create the essential items to make these lessons come to life, literally. I began with math but extended the lessons to science and language. I used the umbrella word bugs because we included spiders, insects, and worms. The Bugs in Boxes books, by David A. Carter, have large, bold, and bright illustrations that often pop right out of the books. I used the books to introduce each concept then provided some pretty exciting manipulatives for student practice!

Materials
Beach Bugs: A Sunny Pop-up Book by David A. Carter
Bugs in Space: Starring Captain Bug Rogers by David A. Carter
Alpha Bugs: A pop-up Alphabet by David A. Carter
Bedtime Bugs by David A. Carter
Counting: A Bugs Pop-up Concept Book by David A. Carter
How Many Bugs in a Box? A Pop-up Counting Book by David A. Carter
Birthday Bugs: A Pop-up Party Book by David A. Carter
Up & Down: A Bugs Pop-up Concept Book by David A. Carter
Colors: A Bugs Pop-up Concept Book by David A. Carter
Love Bugs by David A. Carter
Opposites: A Bugs Pop-up Concept Book By David A Carter
Big Bug Little Bug a Book of Opposites by Paul Stickland
Ten Busy Buzzy Bugs by Ruth Galloway
Felt Bugs Play and Count (www.thebookcompany.com.au)
Ten Little Ladybugs by Melanie Gerth Ill. By Laura Huliska-Beith
Ten Friendly Fireflies by Roseanne Thong Ill. By Amy Schimler
Ten Beads Tall By Pam Adams
plush bugs (assortment of 48) bucket of plastic bugs

THIS WINNING PROJECT IDEA SUBMITTED BY:
Shirley Gillette
St. David Schools
St. David, AZ
Bed Bugs game
Ants in the Pants game
butterfly pavilion
Bug Alphabet Mats (Scholastic)

Art supplies: pipe cleaners, felt, fabric glue, glue dots, wiggly eyes, fiber fill, clay, toothpicks, beads, buttons, paint

Readiness Activity
We took several walks around school to look for bugs. We informally counted, played with, and discussed the world of bugs around us. We discussed the importance of knowing which bugs are approachable and which ones to stay away from.

Strategies/Activities
Start the butterfly pavilion early so you have time to order the caterpillars.
Create interest in the project by taking a walk around school looking for bugs. Collect a few to take back and observe.

1. Students will count forward to 20 and backward from 10 with or without objects using different starting points.
2. Students recognize and compare the ordinal position of at least five objects.

Read How Many Bugs in a Box?, Counting, Ten Little Ladybugs, Ten Busy Buzzy Bugs and Ten Friendly Fireflies

Give the students 20 plastic bugs or manipulatives representing bugs to count.
Make bug counting bracelets by putting 10 pony beads on a pipe cleaner then join the ends to make a bracelet. Make 2 for each student so they have twenty to count.

3. Students will create word problems based on sums to 10 and differences with minuends to 10.
I began this activity by using the book, Felt Bugs. I told stories and manipulated the bugs around.
Give each student 10 plastic bugs or manipulatives and two different colored papers (I cut mine to look like flowers). Give the students word problems and have them manipulate the bugs between the two papers for example: There are nine bugs on the red paper flower and 1 bug on the yellow paper flower. Three bugs from the red paper flower moved to the yellow paper flower. How many are left on the red paper flower?
4. Students will construct simple displays of data using objects or pictures.
For this activity I used the caterpillar to butterfly transformation from the butterfly pavilion. I gave students pictures of the caterpillars growth and had them put them in order.
5. Students will ask and answer questions by counting, comparing quantities, and interpreting simple displays of data.
Have students draw pictures of their 3 favorite bugs. Have them glue these to a class graph. Use the graph for class discussion.
6. Students will sort, classify, count, and represent up to 20 objects and justify the sorting rule.
Begin by reading the book, Colors by David A. Carter. Put 20 different plastic bugs out and have students sort them by color. Read the book, Big Bug, Little Bug by Paul Stickland and, Opposites by David A. Carter. Put a handful of plastic bugs out and have students count them then sort them and justify the rule.
7. Student will recognize, describe, extend, create, and record simple repeating patterns.
8. Student will recognize, describe, extend, and record simple growing patterns.

Give students art supplies to make 6 each of 3 different kinds of bugs. (I gave mine 6 each of 3 different colored pom poms and let them decorate them.) Have students make patterns using their bugs. I started a pattern and had them continue it. Give them paper and have them record their patterns.

9. Student will build, draw, compare, describe, and sort 2-dimensional figures (including irregular figures) using attributes.

10. Student will compare and order objects according to observable and measureable attributes.

Read Alpha Bugs, Beach Bugs, Birthday Bugs, Bedtime Bugs, Valentine Bugs, and Space Bugs by David A. Carter.
Give students a variety of art supplies. I used clay as the body base for this activity. Have each student choose which book they want to use for its attributes. If, for example, if the student chooses Birthday Bugs, the student will build bugs that go with that attribute such as candle bugs, cake bugs, present bugs etc. Have the class look at each collection and guess which attribute each student chose.

11. Student will use the attribute of length to describe and
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compare objects using non-
standard units.
Read the book, Ten Beads Tall
by Pam Adams. Give students a
pipe cleaner with 10 beads on it.
Provide students with a variety of
containers, boxes, jars, cans etc
and a variety of different sized
toy bugs. Have students use the
beads to measure the containers
and decide which bugs will fit in
which containers. Do the same
activity using rulers.

Culminating Activity
Students make simple headbands
depicting their favorite bug. They
have to measure their heads in
order to make the headbands fit.
Students design wings using color
and shape patterns.
Students play bug toss by tossing
the right sized bug into the right
sized container.
Students play Ants in the Pants,
Alphabet Mats and Bed Bugs.
Students create a bug from a
variety of art supplies and make a
habitat for it. Then describe the
bug and how it grows and lives.
Students use “Create-A-Bug” fruit
snacks (Betty Crocker) to build a
buggy snack.
Students classify teacher created
bugs into groups: flying bugs,
crawling bugs and sliders

Evaluation Method
Pre-test: Teacher one on one oral
evaluation of skills
On-going Evaluation: Teacher
one on one oral evaluation
of specific skill and teacher
observations
Post-test: Teacher one on one
oral evaluation of skills