Space Creatures

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Draw your creatures and make a graph for each creature's features.

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Grade Levels Pre-K-2

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Context

We are in the beginning of an interdisciplinary theme about the solar system. This task was in collaboration with my multi-age first and second grade classroom because they wanted a space related task to try out. We had been working on attributes with robots and space creatures for several days in combination with a variety of art materials.

What This Task Accomplishes

This task assesses several skill areas. The students will have the experience of taking data in the form of attributes and constructing graphs of their own to examine their space creatures. Students have the opportunity to practice number formation, record data and construct a graph, interpret highest/lowest numbers, and demonstrate an understanding of the concept of more.

What the Student Will Do

The students will begin by creating and drawing their space creatures. They will need to keep track of the attributes provided for eyes, horns, legs and arms. Some will accurately represent their creatures with their graphing information with or without the use of manipulatives. Others may demonstrate errors in counting the features or not be accurate in constructing their graph representations. Everyone will differ with the number of space creatures they create.

Time Required for Task

60 minutes

Note:

The investigation in cooperative groups, partners and independent practice with modeling and observation takes two to three days.

Interdisciplinary Links

The students are very engaged in this theme on the solar system. We have been using a beautiful big book called *A Tour of the Planets* by Ranger Rick. The students are also going

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down to the computer lab two times a week to design space pictures and write their own stories. They also are learning to identify the planets and label them for their science portfolio. We will be investigating the distance and size of the planets using the gym and different sizes of fruits and balls. "Toss A Planet" will involve the fruits and balls when students call out clues for their planets. A space race will involve teams constructing balloon-powered rockets to carry a sheet of paper as far as possible and to measure the distance traveled.

The students will participate in a space traveler weigh-in to better understand how each person's weight will change on other planets by constructing a bar graph. Moon watching will be included with families to keep track of the phases of the moon over a period of time. "Greetings From Earth" will involve small cooperative groups making ads about life on Earth, using blank tapes or design a travel brochure to convey information to other intelligent life forms.

There are endless possibilities of activities that can be incorporated through the solar system theme!

Teaching Tips

It is important for the children to have practice in sorting attributes with a variety of manipulatives before using more traditional paper/pencil tools. The students also need many opportunities to design different graphs and learn how to record data on them. The students had lots of experience creating and sorting a variety of attributes with robots and space creatures they had made with many kinds of art materials. These activities provided students with lots of prior experience to approach this task successfully.

Suggested Materials

- Clay in three colors
- Attribute blocks
- Pattern blocks
- Drawings of space creatures with a variety of attributes
- Venn diagrams
- Hand puppets of robots the students have made
- Variety of art materials collected from recycled "stuff" the students brought into the classroom
- A variety of graphing models for students to use in cooperative groups, partners and independently.

Possible Solutions

The solution must include the attributes of a total of 15 eyes, 3 horns, 12 legs, and 7 arms with their space creatures. The solution should also show the representation of an accurate graph for each creature's features. Each student will have a different number of creatures they chose to draw.

Benchmark Descriptors

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Novice
This student had a limited understanding of the task. S/he was taking all the features and putting them on each creature. The graph did represent one creature, but in communicating the problem s/he felt s/he was done. This student does not understand the concepts of it all, graph each creature, and the vocabulary of more.

Apprentice
This student has some understanding of the problem. His/her strategy with graphing the features was started, but did not lead to a complete solution. S/he does not demonstrate clear number sense in the mathematical representation. There was not clear communication of the understanding of more scales than fur. His/her graphs are confusing.

Practitioner
This student understood the task. The space creatures and graphing strategy is clear and accurately leads to a solution. Even though the numbers are mostly represented on the non-traditional side of the graph they are accurate and needed because of spacing. There is appropriate use of mathematical notation and communication of ideas.

Expert
This student fully understood the problem and was very efficient in his/her procedures, which lead to the solution. S/he has an accurate use of number sense, and went beyond by using number sentences to further explain the space creatures' features. S/he explained that s/he had no creatures with fur to prove the concept of more.

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