Valentine's Day Party Plan

Ida the Iguanodon and Stan the Stegosaurus are having a Valentine's Day party.

They have invited the following friends:

Trisha and the 3 Triceratops
The 3 Little Diplodocons
Mr. Saltopus and Ms. Compsognathus
Archaeopteryx and the 7 Sauropods
Ann the Ankylosaurus

They are planning a sit down meal for their party. They have square tables that will fit 1 guest on each side. How many tables will they need to set up?

Show how they should arrange the tables and where each guest will sit.

Grade Levels Pre-K-2

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Context

With Valentine's Day on the way, and a Dinosaur unit in full swing, it made sense to blend the two. I found a similar task about a character who was having a holiday party with fairytale characters, and decided to adapt the problem using dinosaur names, which would reinforce the names for students, and would provide motivation for this timely topic.

What This Task Accomplishes

This task assesses students' sense of whole number operations and ability to use computation to solve problems. This task challenges students to identify the total number of prehistoric creatures, and assign them to a seat that fits the limitations of the problem. The task challenges them to spatially organize the tables and names.

What the Student Will Do

Many students will begin by creating some system of organization, whether it is picturing all of the animals or making a list of their names to check off as they are seated. Some students forget to place all seven Sauropods and all three Triceratops at tables and will place one instead. Some students forget Ida and Stan because they are not in the list of invited guests. Some students show the 20 creatures, but forget to place them at tables. Some students put more than four creatures at a table because they forget that a square has four sides, and that only one creature can sit on a side. Some students separate creatures by species, eating habits and/or groups with whom they came. Some students confuse the number of creatures with tables and end up with 20 tables, one for each creature.

Time Required

30 minutes

Interdisciplinary Links

Social Studies/Social Skills -

Children follow the lead of books they hear read aloud, and follow the language models of teachers and parents. Since most dinosaur books refer to all dinosaurs as males, this problem helps counter gender stereotypes in one area of science. Because carnivorous and violent dinosaurs are almost always referred to as males in the books, I made a conscious effort to balance the genders. Throughout the unit, we discuss the reason for dinosaur extinction and the gender issues created by scientists and authors who perpetuate the use of "he" to represent the species. When one of my students came up with theory that perhaps the reason for the dinosaurs going extinct was because there were not any female dinosaurs, I was convinced that making the effort to counter the standard books was absolutely necessary and scientifically realistic.

Science - This task reinforces names and spellings of dinosaurs.

Teaching Tips

After going over the names and brainstorming strategies as a class to keep track of each type, I erased or covered the chart so that the students would need to refer to their own copy of the problem. Present the problem to the class by reading it through and writing it down on a chart. Go through the names and have the class generate nicknames or shorten the names to make it easier. (My class came up with: Tri = Triceratops, Saur = Sauropods, Dip = Diplodocons, Mr. or Salt = Mr. Saltopus, Ms. or Comp = Ms. Compsognathus, Ann = Ankylosaurus.) After writing "Dip", "Saur" and "Tri", ask the students if there is only one of each of them and how to show the actual number. Both of the groups I worked with suggested writing the names multiple times when appropriate (seven times for seven dwarfs or seven Sauropods). It worked well for many students to follow another student's suggestion to circle the shortened names on their sheets to help them keep track as they plan/record the seating arrangement. Ask the group how many seats are at a table that is square and draw a square after they come up with the number four.

Suggested Materials

- Task written on paper
- Pencils
- Dinosaur models
- Posters around the room to help remind and reinforce names

Possible Solutions

Five tables are necessary if the students want to use as few tables as possible and fill them up.

One of many combinations would be:

Table 1 - Ida, Dip, Trish and Tri
Table 2 - Tri, Saur, Salt and Saur
Table 3 - Dip, Stan, Saur and Ank
Table 4 - Arch, Dip, Saur and Sau
Table 5 - Saur, Tri, Saur and Comp

Seven or eight tables are needed if the student wants to keep groups that come together at tables together:

Table 1 - Trish, Tri, Tri and Tri
Table 2 - Dip, Dip and Dip
Table 3 - Salt and Comp
Table 4 - Archaeopteryx
Table 5 - Saur, Saur, Saur and Saur
Table 6 - Saur, Saur and Saur
Table 7 - Ankylosaurus, Ida and Stan

Separate tables are needed to keep plant eaters and meat eaters separated so none of them eat any of the other guests:

Table 1 - Trisha, Tri, Tri and Tri
Table 2 - Dip, Dip, Dip and Saur
Table 3 - Stan, Ann, Arch and Saur
Table 4 - Saur, Saur and Saur
Table 5 - Saur and Saur
Table 6 - Ida, Saltopus and Compsognathus

Benchmark Descriptors

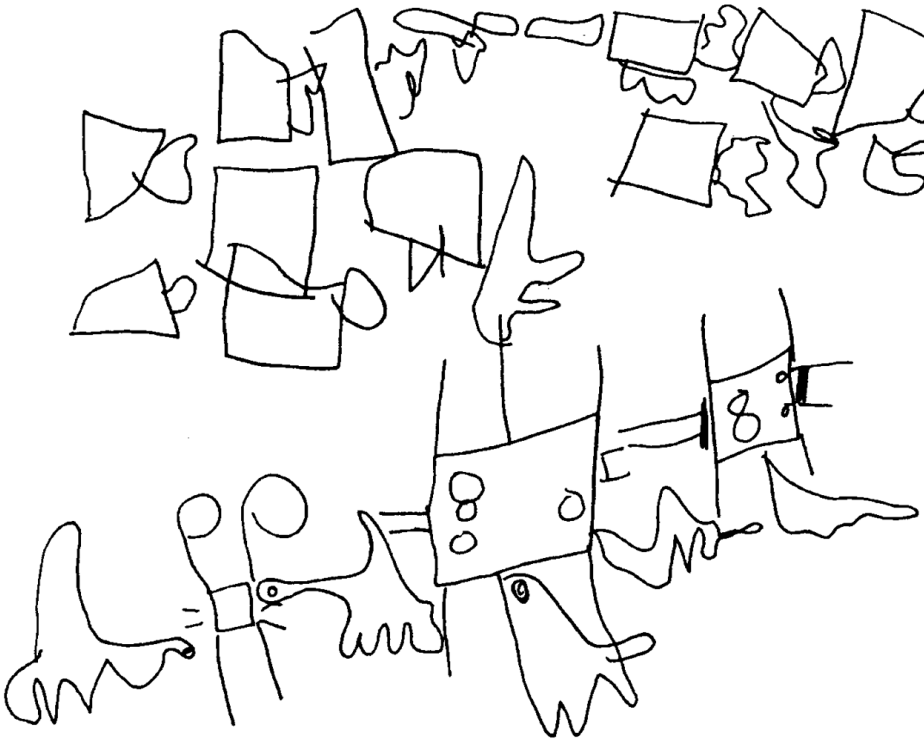
Novice
A Novice has difficulty keeping track of the rule (square table holds four) and gets confused by the information and names. A Novice may forget to seat several creatures, especially the groups with more than one (seven Sauropods, three Triceratops and three Diplodocons). The Novice attempts to do the task without any strategy for how to begin. The organization of the solution is weak in relation to the task.

Apprentice
An Apprentice shows understanding of part of the problem. The Apprentice seats more than four creatures at a square table or attempts to keep track of all the characters, but leaves out several in the solution. The strategy is partially useful, but does not result in a correct solution.

Practitioner
A Practitioner has a clear understanding of the problem and is able to find a correct solution. A Practitioner is able to describe his/her strategy. A Practitioner uses effective mathematical reasoning. When the Practitioner was asked if all the creatures are seated, s/he is able to recognize who was missing and place them in a seat that stays within the limitations of the problem.

Expert
An Expert's solution reflects deep understanding of the problem and is able to clearly describe his/her strategy. The Expert experiments successfully to create multiple solutions. An Expert is able to solve the problem in his/her head, and explain and record the solutions. An Expert's explanation is detailed and specific.

Novice



This student does not understand that four dinosaurs can sit at each table

Novice

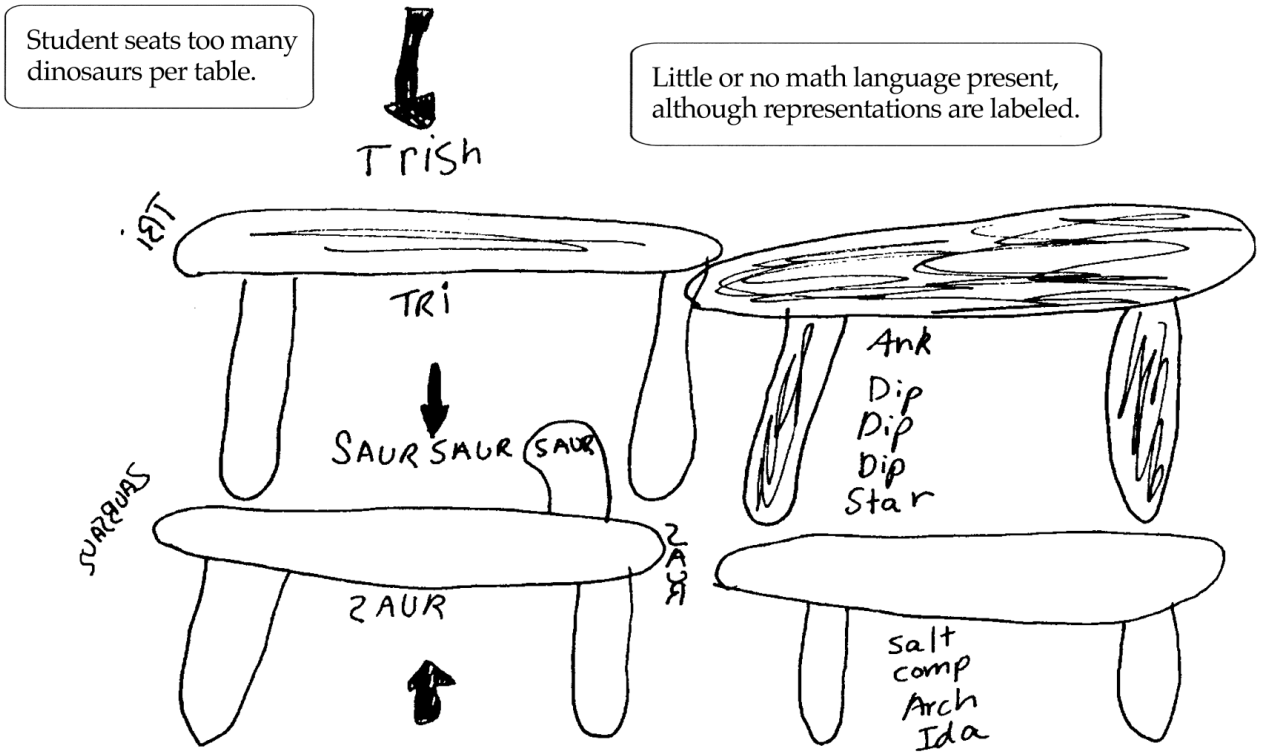
T: I asked R how many guests were at the party. and he counted 20 from the chart hanging in the room. I asked him how many tables he would need for the party.

and he answered twenty. His solution shows the tables with dinosaurs sitting at them.

There are twenty one tables drawn with 26 dinosaurs seated at them.

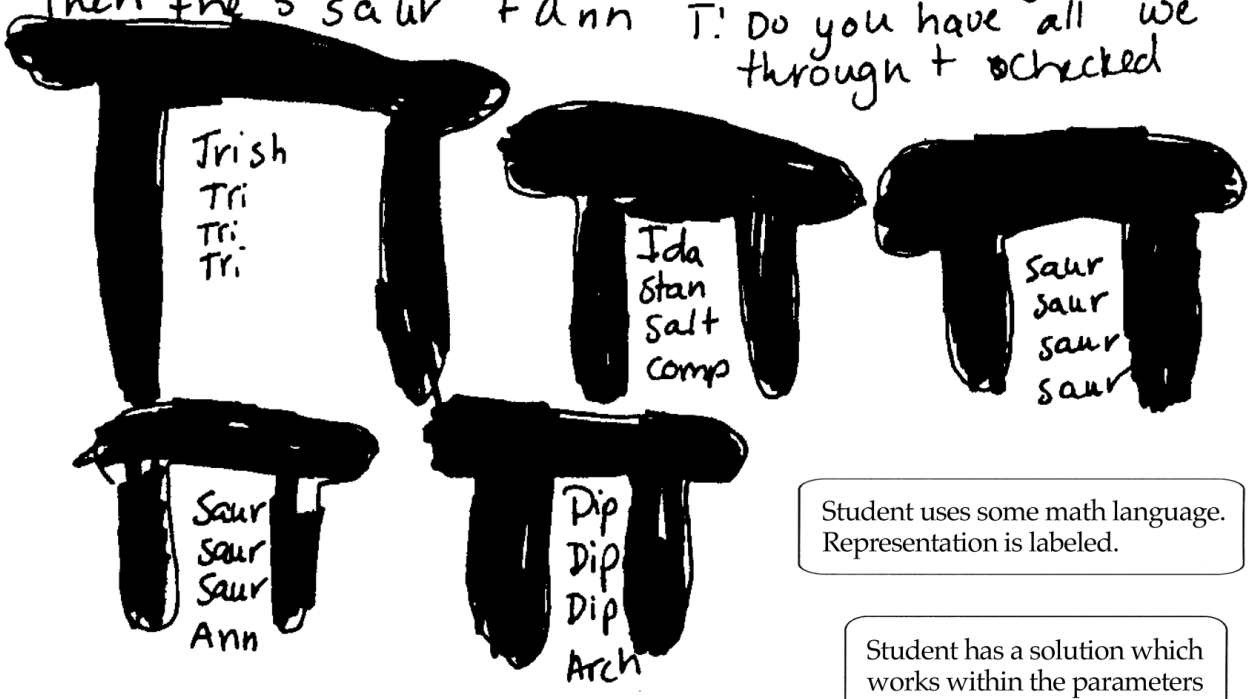
No evidence of math language. Labels lacking on representations.

Apprentice



Practitioner

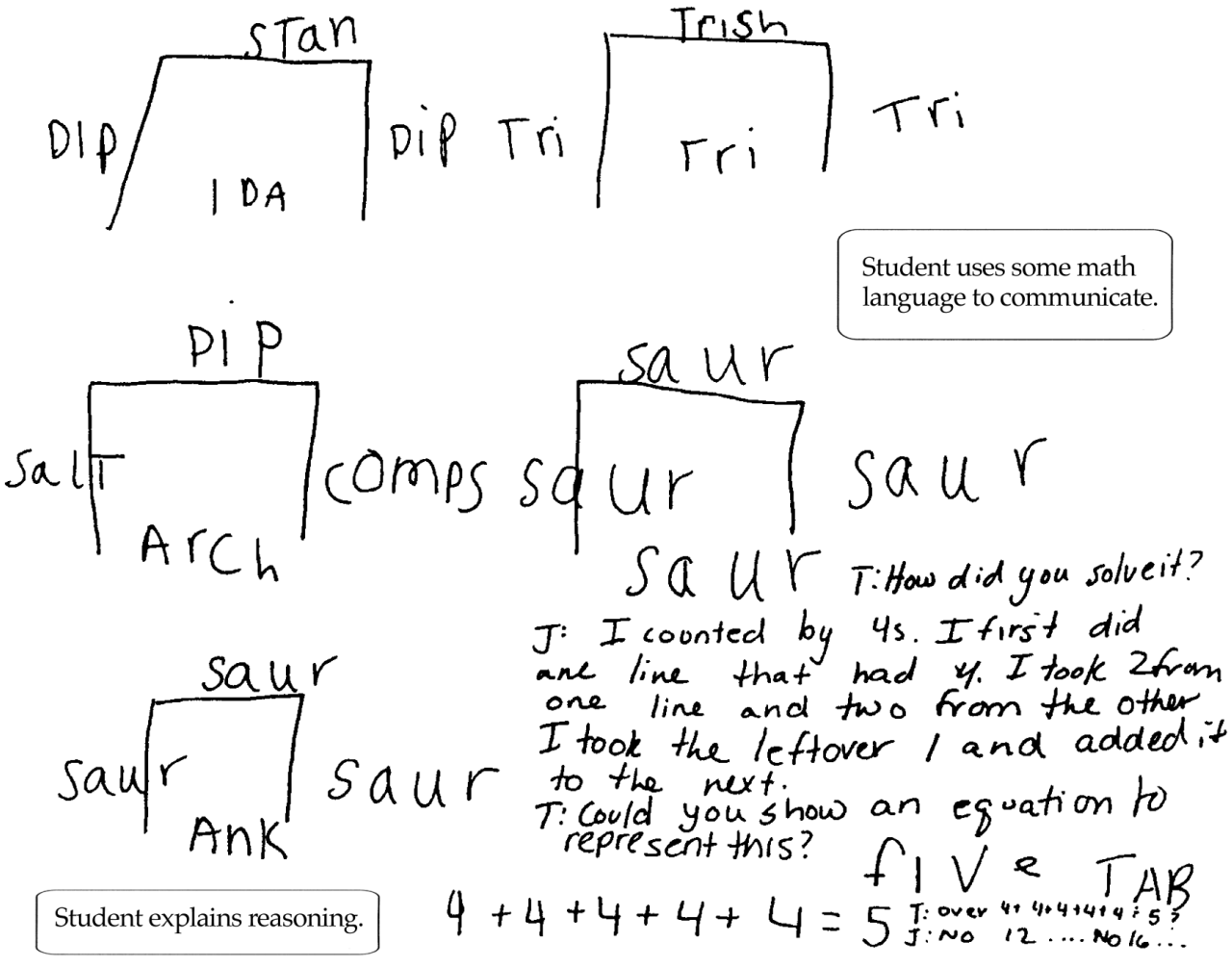
T: How many would you think are needed?
C: More than four probably. I figured out how it would work. The one and the 3 could sit at one table The second table would be the two and the other two. Then the seven... just put 4 Then the 3 saur + Ann T: Do you have all we through + checked



Student uses some math language. Representation is labeled.

Student has a solution which works within the parameters of the problem.

Expert



Expert

Student arrives at a second solution.