Near or Far

(Spatial Aura)

Background

- Research shows that young children have an innate ability to estimate distances (for example, to find buried objects by gauging the proper relative distance from one end of a long sandbox). The concepts of near and far will become one basis for an emerging number sense, so it is important to provide early activities that reinforce and clarify their sense of distance.
- Students who don't get that idea in early grades may have a harder time with math concepts later.

Materials

- a classroom map or model on a table or desk in a fairly central location in the classroom
- small rectangles made out of masonite, foamboard, construction paper, etc. at roughly the same scale relationship to the classroom map as a real desk is to the room.
- dolls, boxes, etc. Some teachers use colored caps or construction-paper "crowns" for students to wear, and then represent those students with small circles of the same color on the classroom map

Vocabulary

Review: "put the room in a shrinking machine," model, map, stand for, represent, next to, here, there, point (verb)

Concentrate on: close to, far from, distance, estimate, measure, within range, too far

Introduce: closer, farther, compare

Procedures

- Have two students walk different distances away from a group, then ask which student is farther, closer, etc. Ask questions and listen – if they're at all fuzzy about this step, repeat with variations
- Put a small rectangle on a desk to represent the desk in the room (make sure it is in roughly the proper place, i.e. closer to the side if the desk is closer to that wall, etc.) Have a student walk away from the desk, and demonstrate by putting a doll in the right place, close or far
- VARIATION: use a color symbol to represent a student on the classroom map, then ask a student to put on the same color crown and move to the proper place in the room
- VARIATION: have two students put on different color crowns, move to specific places in the room, and then ask where to put symbols to represent those students in the room; or put three or four symbols on the map and ask which two properly represent the students
- VARIATION: direct students to different locations, and ask one of them which other students are "in range" or "too far" for something like a long foam stick, a nerf ball, or a paper airplane
- EXTENSION: put several pieces of paper on tables or the floor at different distances from the central table, hide a treasure such as a photo or certificate under one, represent all the papers on the map, mark one as the location of the treasure, and have students search for the treasure

Learner outcomes

- awareness that the spacing between abstract shapes on a map or model can represent distance between features in a room
- enhanced ability to describe relative locations of things and to give and interpret directions

Issues to be resolved

- A BIG ISSUE. At first, the differences in distance must be very great – e.g., one student at least twice as far as another, even though the task is simply to estimate which one is farther.
- A MEDIUM ISSUE. Inconsistency in language can also cause a problem. It doesn't really matter whether you call it a "desktop map" or a "room model" or a "model room," but stick with one term. Describe directions in terms of room features (e.g. "toward the window") rather than left and right. Be especially careful of "up" and "down" – it's better to just point and say "move it that way".

Near or Far - Developmental Sequence

Background: As with any statement of developmental sequence, this list is an indication of what *might* happen with a typical child. It is not a prescription of what *must* happen in precisely this order in a classroom, nor does it reflect the fact that some children may have already passed through all of these "stages" before the lesson starts, whereas others might need considerable coaching to get past stage 1.

Stage 1: Individuals walk away from the group (or a line), and others compare the distances they go.

Teacher asks one child to walk away from the group in a specified direction and to stop when asked. Teacher then asks another child to walk in the same direction and stop when asked. Teacher asks students whether the first child is farther or closer than the second child. Repeat with variations until the concept seems clear.

Stage 2: Students use a classroom map/model to show the locations of the group and individuals.

Teacher displays a number of small dolls and puts most of them together in a group in the appropriate place on a map/model of the classroom. Teacher then asks one child to walk away from the group in a specified direction, and then depicts that movement on the map/model.

Teacher asks one child to walk away from the group in a specified direction and to stop when asked. Teacher then asks other children to place a doll in the appropriate direction from the group to represent the individual.

VARIATION: Teacher asks one child to walk away from the group in a specified direction and to stop when asked. Teacher then places two dolls on the map/model, one in an appropriate direction and the other in a "wrong" direction, and asks students which doll correctly represents the student.

Stage 3: Students place several objects or dolls on a classroom map/model to show relative distance.

Teacher arranges a group of dolls to represent the group of students, asks two children (one at a time) to walk different distances in the same direction, places a doll in an appropriate location to represent one of the children, and asks children to place the second doll closer to, about the same distance away from, or farther from the group than the first child, as appropriate.

VARIATION: Teacher asks two children (one at a time) to walk different distances in the same direction. Teacher then places two dolls on the map/model and makes different kinds of "mistakes" for children to correct (e.g., by placing the dolls the same distance away when the children are different distances, or reversing the names, giving the farther child's name to the closer doll, etc.).

Stage 4: Students count steps to measure distance away from the group.

Teacher takes advantage of many moments to have children count their steps for various distances, and repeats the activities of stages 1-3 with distances "measured" by step counting. Reinforce their growing number sense, as appropriate, with comments like "of course, Juan is farther than Keisha, because he is four steps away, and we know that 4 is a bigger number than 2."

VARIATION: Give two students cards with numbers on them, ask them to walk that many steps, and ask other students which one went farther.

Stage 5: Students count steps between pairs of objects.

One teacher had students "invent" a unit of distance called "one scholar" (a student with outstretched arms) and had students measure the widths of classrooms and lengths of corridors in "scholars."

Stage 6: Students make a small "step measure" that fits the scale of their classroom map/model.

Teacher "walks" fingers on an appropriate path from the central desk in a direction, and asks a student to walk the same distance.

Students from the central table to their individual desks or other features and use the step measure to represent the distance. CAUTION: this is going to be hard at first for some, very easy for others.

Assessment game: Hide an object (e.g., a bear, card, etc.) in the room, represent it in the model, and students search for it. Reverse the process: students hide a treasure and map its location.

Forward: repeat the process for larger areas – corridor, playground, park, etc. – as appropriate.

Near or Far

1

Distance is the amount of separation between the positions of two objects.

A and B are close to each other.

B and C are far from each other.

C

Near or Far - Basic Idea

New York Center for Geographic Learning

Near or Far

2

Distance is the amount of separation between the positions of two objects.

A is closer to B than to C.

B is farther away from C than from A.

C

A and B are about the same distance away from C.

Near or Far - Relative Terms

New York Center for Geographic Learning

Near or Far

3

Distance is the amount of separation between the positions of objects.

Keisha, walk toward the door and stop when I tell you to.

Carlos, walk toward the door and stop when I tell you to.

Which one is farther from the group?

Near or Far - Demonstration

New York Center for Geographic Learning

Near or Far

4

Distance is the amount of separation between the positions of two objects.

Keisha, walk five steps toward the door.

Carlos, walk three steps toward the door.

Which one is farther from the group?

Near or Far - Counting Steps

New York Center for Geographic Learning

Near or Far

5

Hand each student a card with a number on it.

Keisha, walk that number of steps toward the door.

Carlos, walk that number of steps toward the door.

Which person has a bigger number written on the card?

K

C

T B A J G E

Near or Far - Counting steps

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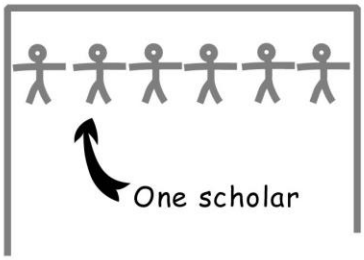
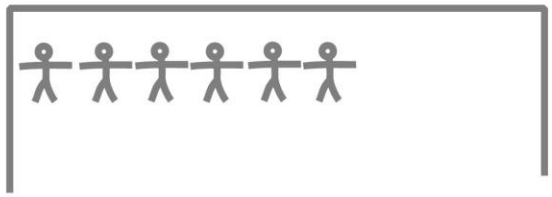
Near or Far

6





This room is six scholars wide.

One scholar = one student with outstretched arms.

The same six students cannot reach across another room.

Which room is bigger?

(Which walls are farther apart?)

Variant: rank three rooms from the biggest to the smallest.

Near or Far - Measuring distance

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Near or Far

7

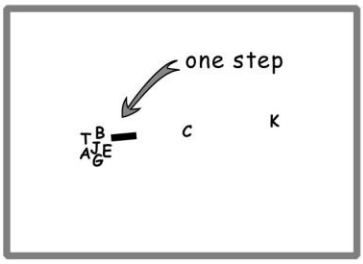
Hand out cards with numbers on them.

"Walk that number of steps toward the door."

C

K

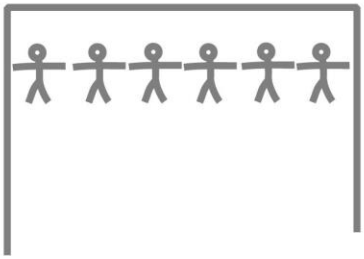
Use a step-measurer to mark the appropriate number of steps for the placement of symbols on a classroom map/model.



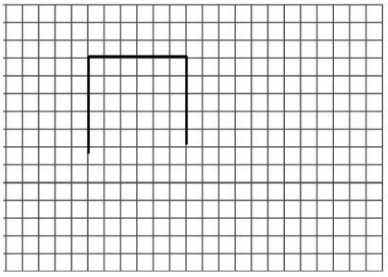
CAUTION: It might take a lot of time for students to make this idea their own.

Near or Far

8



Transfer measurements made with outstretched arms to graph paper, where each square on the graph is one outstretched arm long and wide.



This is obviously a middle-school objective, not one for first grade - but it is the goal, and we should be careful to avoid phrasing that may interfere with this goal later.