# Similar or Different

(Spatial Comparison)

# Background

- The process of comparison is a simple but powerful form of spatial thinking, one that human brains do "naturally" as they try to find ways of learning and communicating about places. The basic approach is simple: try to put information about a new place in perspective by explicitly comparing it with a familiar place. Some comparisons are quantitative.

## Materials

- a shallow cardboard or wooden box with roughly the same proportions as the classroom
- cardboard rectangles at roughly the same size relative to the model as a desk is to the room.
- coins, poker chips, blocks, flags, or other objects that can be used to depict quantities

# Vocabulary

**Review:** "put this room in a shrinking machine," model, symbol, stand for, represent

Concentrate on: compare, larger, smaller, more, fewer, more crowded, less crowded, etc.

Introduce: count, amount, symbol map

#### Procedures

- show pictures of different environments and have students describe the differences
- show pictures of different environments and have students identify features that are in both pictures, only in the left one, or only the right one
- put four books or plates on one table and two on another. Ask students to describe the difference between the tables. Repeat with variations until the concept of more and less is clear
- review the concept of representation by putting a book on a desk and asking students to put a block on the appropriate cardboard square in the classroom model (or the appropriate rectangle on the classroom map, if students have become familiar with representing things on that map)
- put two or three books on one desk and one book on another; give three or four blocks to a group of students and ask them to put the blocks in the right place to represent the books (doing this with a group at first is advised because the conceptual leap from one-to-one representation and making a map that shows numbers is quite large – it may take some time and cause some embarrassment!)
- EXTENSION: put several towels or large pieces of cardboard in various parts of the room, hide a card, certificate, or other treasure under one, put different numbers of blocks on the towels, and tell students that the treasure is under the towel that has four blocks on it. Then repeat that task, but give students a map that shows the treasure under one of several towels that have the same number of blocks. (An intermediate step is to have several towels with the same number of blocks but verbally announce that the treasure is under the towel with four blocks near the east wall.)
- EXTENSION: talk about differences between feature maps and number maps when appropriate; for example, if the paper has an interesting rainfall map, you might discuss it with students

#### Learner outcomes

- increasing awareness that the color of symbols, the number of symbols, the size of symbols, or the brightness of color in various parts of a map can communicate comparative information about different places
- enhanced ability to describe relative locations of things and to give and interpret directions

## Issues to be resolved

- As noted above, there can be a conceptual gap between simple representation of features and depiction of number information - counts or amounts. It helps (a lot) to position this lesson at roughly the same time as students are learning about correspondence in their math lessons.

# More or Less - 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 for every child, 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: Students examine two desks or photos and decide if they are the same or different.

Stage 2: Students examine two desks or photos and try to make a comparative generalization.

A Venn diagram is a standard way (albeit with *many* forms) to organize this kind of information – students try to list features that occur on both photos, only one, or only the other.

EXTENSION: Have students compare places on a field trip or as a homework project, where the task is to think of a sentence to describe the differences between places.

Stage 3: Students *evaluate* quantities in different places and decide which has more or less.

This can begin with books or other objects piled on two desks, rugs, or towels that are chosen to be visually similar, so that the focus of attention is on the objects rather than the desks.

VARIATION: Take a field trip to an area with many trees and one with few trees. Ask students to make a comparative generalization – which place has more trees? Or focus on buildings in an urban area – which of these two areas has bigger buildings?

Stage 4: Students try to *represent* quantities observed in a simple setting.

Teacher points to two desks that have unequal numbers of books on them and asks students to use symbols and pieces of cardboard and make a map that shows the different number on each desk.

Stage 5: Students try to represent features that differ in size but cannot simply be counted.

Teacher places a large book on one desk and a small one on another, gives the student two pieces of cardboard for the desks and two unequal-sized blocks to represent the books.

Teacher leads students on a walking trip, and at several places they note a quantitative difference that is very obvious – really noisy versus quiet, crowded vs. empty, tall trees vs. short ones, etc.

VARIATION: Have students mark this information on a journey scroll (see the description of spatial transitions in the unit Sooner or Later).

CAUTION: The specific instructions depend in part on the arrangement of furniture in the room or the features in the local community.

**Assessment game:** Hide an object (e.g., a photo of a bear, a coin or chip, a "treasure card") under a towel or pail, and put unequal numbers of blocks (or books of different sizes) on a number of similar towels. Then describe the location of the treasure by using comparative language ("it's under the towel with the most blocks on it" or "it's under the pail with a small block on it" or "it's under the towel with three cards on it). Reverse the process: students hide a treasure and describe its location to others.

**Forward:** repeat the process for larger areas – corridor, playground, park, neighborhood – as appropriate. This activity is building a foundation for future representation of topics as dissimilar as rainfall, temperature, crop yields, population density, average income, refugees from Afghanistan, and percent who voted Republican in the last election. It helps, therefore, to follow the standard cartographic rules: twice as big indicates twice as much, darker colors indicate more, etc. In other words, do not arbitrarily decide that a purple flag is one, a green flag is two, and a red flag is three – students will have to "unlearn" that color association later when they are taught the standard conventions for making quantitative maps. In short, this is another case where a primary teacher should honor the educational equivalent of the doctor's Hippocratic Oath: first of all, do no harm!









Feature	List	s	5
Stand in one p what you see	lace o e.	and try to d	escribe
Would you say	that	this place i	is (circle one*):
bright large noisy crowded dirty	or or or or	dark small quiet empty clean	Right - it is difficult to describe a place without using some kind of comparison terminology to calibrate your responses
More or Less - Descriptive Words	→ do New	n't circle a wor York Center for Geographic L	d if you think it is in between

Comparison Lists 6
Stand in a second place and try to describe what you see. Compared to the first place, would you say that this place is (circle one*):
brighter or darker (or about larger or smaller the same) noisier or quieter more crowded or less crowded
dirtier or cleaner



