Show me! The Importance of Visual Communication in Spatial Development

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Learning about locations in space often involves the use of visual representations. As an example, first listen to the following description that an 8-year-olds is giving of the layout of space she has just learned:

<hear audio file on webpage>

What do you think this space looks like? The boxes could be in rows in the space. They could be on shelves. They might be adjacent to one another or they might be spread apart. Now watch the gestures that accompany this description:

<see video file on webpage>

The space must be arranged something like this:

[image: space]

Visual representations, such as gestures and drawings, can enhance verbal communication when words are not enough. Visual communication may be especially useful for children, as the majority of 6 year-olds, 8-year-olds, and 10-year-olds in our studies have verbally described space in the same manner as the girl you just heard. Although gesture can be beneficial for enhancing their descriptions, many of the younger children (6-year-olds and 8-year-olds) never used their hands while describing the space. We've found two methods that encourage children to better communicate spatial information, and also gain a deeper, more integrated understanding of the space.

Maps: In one of our studies, half of the children saw a map of the animals' locations before entering the space. The other half saw photos of the animals (and received no spatial information). The children then navigated a route through the space and learned the locations of the animals. Then, they had to describe what they had learned to their parent, who had never seen the space before but would need to be able to find all of the animals later. The children who saw a map communicated more spatial information, mainly in gesture. The map may have provided them with a portable, tractable, representation of the space that was easy to convert to a gesture model. Gestures and maps are similar in that they both permit us to communicate spatial relations and scale large spaces to a more manageable size.

The children who saw a map also gained a deeper knowledge of the space. When later asked to make relational inferences about the locations of the animals (e.g., knowing who

was diagonal from the frog), children who saw a map made significantly more correct inferences than those who did not see a map. Maps often give us a perspective not normally found in navigation (Blaut, 1991; Woord, 1992) and can impact our representation of the space (Uttal, 2000, 2005).

Drawing: Children who make their own drawings of the space also show the same advantage as children who see maps. When asked to communicate the space to their parents, children were also given the chance to draw while they explained. Many children drew maps, which communicated the layout of the space and the locations of the animals. Like the children who saw a map, they also demonstrated a deeper knowledge of the space as evidenced by the inference questions.

[image: maps drawn by the kids]

In summary, visual representations play a critical role in helping children learn to think spatially. In SILC we investigate the role that these representations play in spatial learning and education more generally.

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