



Introducing Classroom Games

There are many ways to modify your instruction to meet your children's needs. For individuals who are struggling, individual tutoring on the computer can be particularly effective. When you help children with certain skills and concepts, such as specific counting competencies, research shows specific interventions are particularly helpful. With individuals, small groups, or the whole class, direct teaching can help if other strategies have been exhausted. Finally, many activities can be modified for children with special needs. Each of these is addressed in this section.

Helping Struggling Children at the Computer

If a child is having difficulty with a concept or skill, make sure an adult sits next to the child and works through the software activities with the child, starting at the first activity with which the child had difficulty. The adult should give just enough help that the child can do the activity by himself or herself. That is, asking questions and giving hints (including the "Specific Help" in the following section) are effective. Doing the task for the child does not lead to learning and provides erroneous information to the computer management system.

Direct Teaching of Concepts

Some children require a more structured approach to learning shapes and their attributes. Research shows this sequence is effective. We illustrate it with *triangle*, but it can be adapted for any shape or, indeed, any mathematical idea.⁴

| General Teaching Sequence | Illustration: Teaching "Triangle" |
|--|---|
| Session 1 | |
| 1. Describe the defining attributes of the shape and illustrate them with examples and non-examples. | Show shapes including triangles and other shapes, such as four-sided shapes (quadrilaterals), including shapes that <i>look like</i> triangles but are not!. Say that a triangle has <i>3 straight sides</i> (run your fingers along the sides) and <i>3 angles</i> (touch the corners, or vertices as you count them) and is <i>closed</i> —no "gaps." |
| 2. Draw each attribute (if necessary, but connecting figures outline with dots) | Have children trace various triangles with their fingers, discussing the 3 sides and the 3 angles. |
| 3. Show shapes and have children indicate whether each has a particular defining attribute. Provide feedback immediately | Again show the variety of shapes. Ask children to tell whether each is a triangle and defend their decision. Make sure they mention all the attributes— <i>3 straight sides, 3 angles, and closed</i> . |

| Session 2 | |
|--|---|
| 1. Review all session 1 work | Review the above. |
| 2. Children draw or build with manipulatives examples of the shape. | Have children draw or make triangles. Ask them how they know they are triangles! |
| 3. Show paired shapes, one with a defining attribute and one without it. Have children identify which is an example of the shape and which not, explaining their answer. | <p>Show a “fooler” (shape that looks like a triangle but is not), such as a chevron  , next to a triangle. Ask why one is and one is not a triangle. Do this with all the</p> <p>attributes (e.g., a triangular “fooler”  with sides that are not straight next to a triangle that does have straight sides; or</p> <p>an open shape  next to an actual triangle ).</p> |
| 4. Show figures and model asking if all the defining attributes are present. Have students do the same for new figures. | <p>“Is this a shape that has 3 straight sides <i>and</i> 3 angles <i>and</i> is closed? Yes, so it is a triangle!” Have children ask these questions themselves to decide on more triangles and “foolers.”</p> <p>Math Note: Triangles are 3-sided polygons, and to be a polygon, a figure has to be a plane (flat) figure <i>and</i> be closed <i>and</i> be simple (no crossed lines) <i>and</i> be made up of just straight sides. We assume these characteristics, but if they emerge in conversations, they can be added to the list of necessary attributes!</p> |
| <i>Repeat in session 2 as necessary</i> | |