Considerations for Grade-Level Accomplishments in Kindergarten

The most important mathematical skills and concepts for children in Kindergarten to acquire are:

- Counting to 20
- Representing numerals
- Writing numerals
- Comparing and ordering numbers
- Learning the days of the week

So You’re Teaching Kindergarten . . .

An Introduction to the Social, Physical, and Cognitive Development of Kindergarteners

Welcome! Kindergarten is an exciting grade level where opportunities abound to make everlasting impressions upon young children. Be aware that some 4- and 5-year-olds are just embarking upon their first formal educational experience. For this reason, Kindergarten serves as an important bridge from the informal instruction that children have received at home or in preschool to the increasingly structured learning they will experience in elementary school.

Social Development

In terms of social development, Kindergarteners are learning to share, cooperate in small groups, and follow simple rules and requests. Despite their growing ability to work cooperatively with others, 5- and 6-year-olds still need some redirection when interacting with peers or when playing games. Nevertheless, be aware that young children will respond well when the desired, appropriate behavior is modeled within the context of an actual social situation.

Throughout the year, a Kindergartener’s attention span generally expands from about 15 minutes of uninterrupted instruction to 25 minutes. To help children focus more attentively to instruction, include periods of active learning, incorporating music and movement whenever possible.

Physical Development

Children between ages 4- and 7-years of age are undergoing tremendous maturation in physical development. Such accelerated growth is due primarily to a physiological process known as lateralization in which both right and left hemispheres of the brain are making stronger cross-circuitry connections (Bredenkamp, S. & Copple, C., Eds., 1997). This development accounts for the child’s accelerating physical coordination—walking backward, running, jumping, skipping, etc.—as well as increasing fine motor control and greater eye-hand coordination. Sometimes, however, Kindergartners may invert numerals or have difficulty representing the corners and straight lines of two-dimensional figures.
What Kindergarteners Should Know
To prepare students for an appropriate and engaging level of rigor in math, most core curriculums outline the following content standards.

Number Sense and Operations
Quantitative reasoning is an important knowledge and skill that children must develop in order to reasonably estimate amounts. A prerequisite to this skill is being able to understand the magnitude of smaller numbers. In addition to conserving whole numbers, Kindergartners are learning to count and produce sets of objects of up to 20. This latter ability involves a coordination and self-regulation of two procedures—rote counting (reciting the correct sequence of number words) and one-to-one correspondence (tagging each item in a set of objects only once without skipping or double counting).

In addition, due to the complexity of counting, many Kindergartners will focus their attention almost exclusively to enumerating each item in a set of objects, often forgetting which number they landed on or counting past the requested target. Children make an important discovery when they realize that the last number they say after counting a collection of objects tells how many are in the set. This concept, termed cardinality (Barody, A. J. & Wilkins, J.L.M., 1999), should be a focus of instruction during counting activities.

Patterns, Relationships, and Algebraic Thinking
Also during the Kindergarten year, students should focus on identifying, describing, and copying patterns. Since mathematics is essentially the science of patterns, understanding them helps children to make generalizations. Generalizing, in turn, is a prerequisite to algebra. When they focus on the rule by which a series of elements are ordered—e.g. in a green-red/green-red pattern, green comes first, and red comes last—children can figure out what comes next in the sequence. Moreover, by conceptualizing on how patterns work, Kindergarteners are building a rudimentary understanding of functions.

Geometry
In geometry, Kindergarteners focus on identifying shapes in the environment and describing these two- and three-dimensional figures in terms of geometrical attributes—e.g. straight lines, vertices, and sides. Also critical in geometry is being able to describe and locate objects in terms of their relative position and location in space e.g. above, below, and beside.

Measurement
Before being able to quantify measurements by counting and repeating non-standard units, children need to understand the measurable attributes of objects, such as length. Once they are able to visualize length as the distance between two endpoints, students can begin to make informal measurements by directly comparing two items or ordering them by size—shortest to tallest. Kindergarteners can also begin to sequence a series of events by time—before and after. The measurable attribute of weight is also introduced in Kindergarten, but is less visual and concrete than length.

Lifelong Learners
Whatever the activity is, meaningful and relevant learning is the key to making any Kindergarten program successful. Regardless of whatever challenges you encounter in your classroom, always keep in mind that Kindergarteners are very impressionable. The experiences that a Kindergartener has in school can guide him or her in becoming a lifelong learner and in developing a positive disposition toward mathematics.

References

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