Differentiated Instruction for Math

What is Differentiated Instruction?

Differentiated instruction, also called differentiation, is a process through which teachers enhance learning by matching student characteristics to instruction and assessment. Differentiated instruction allows all students to access the same classroom curriculum by providing entry points, learning tasks, and outcomes that are tailored to students' needs (Hall, Strangman, & Meyer, 2003). Differentiated instruction is not a single strategy, but rather an approach to instruction that incorporates a variety of strategies.

Teachers can differentiate content, process, and/or product for students (Tomlinson, 1999). Differentiation of content refers to a change in the material being learned by a student. For example, if the classroom objective is for all students to subtract using renaming, some of the students may learn to subtract two-digit numbers, while others may learn to subtract larger numbers in the context of word problems. Differentiation of process refers to the way in which a student accesses material. One student may explore a learning center, while another student collects information from the web. Differentiation of product refers to the way in which a student shows what he or she has learned. For example, to demonstrate understanding of a geometric concept, one student may solve a problem set, while another builds a model.

When teachers differentiate, they do so in response to a student's readiness, interest, and/or learning profile. Readiness refers to the skill level and background knowledge of the child. Interest refers to topics that the student may want to explore or that will motivate the student. This can include interests relevant to the content area as well as outside interests of the student. Finally, a student's learning profile includes learning style (i.e., a visual, auditory, tactile, or kinesthetic learner), grouping preferences (i.e., individual, small group, or large group), and environmental preferences (i.e., lots of space or a quiet area to work). A teacher may differentiate based on any one of these factors or any combination of factors (Tomlinson, 1999).

How Is it Implemented?

Implementation looks different for each student and each assignment. Before beginning instruction, teachers should do three things:

1. Use diagnostic assessments to determine student readiness. These assessments can be formal or informal. Teachers can give pre-tests, question students about their background knowledge, or use KWL charts (charts that ask students to identify what they already **K**now, what they **W**ant to know, and what they have **L**earned about a topic).

2. Determine student interest. This can be done by using interest inventories and/or including students in the planning process. Teachers can ask students to tell them what specific interests they have in a particular topic, and then teachers can try to incorporate these interests into their lessons.

3. Identify student learning styles and environmental preferences. Learning styles can be measured using learning style inventories. Teachers can also get information about student learning styles by asking students how they learn best and by observing student activities. Identifying environmental preferences includes determining whether students work best in large or small groups and what environmental factors might contribute to or inhibit student learning. For example, a student might need to be free from distraction or have extra lighting while he or she works.

Teachers incorporate different instructional strategies based on the assessed needs of their students. Throughout a unit of study, teachers should assess students on a regular basis. This assessment can be formal, but is often informal and can include taking anecdotal notes on student progress, examining students' work, and asking the student questions about his or her understanding of the topic. The results of the assessment could then be used to drive further instruction.

What Does it Look Like for Math?

Math instruction can be differentiated to allow students to work on skills appropriate to their readiness level and to explore mathematics applications.
Math games are a very good and easy way to differentiate learning. Played correctly students can experience fun activities while learning.
Another way is to tier the group/Individual activities after a mini lesson.