



# Instructional Phases

There are three instructional phases for each of the instructional levels of SIMs™. Curricular objectives often determine when the use of the Drill Phase is appropriate.

**Introduction Phase:** In this phase students are engaged in first watching the teacher explain and demonstrate the mathematical concept, and then they model the actions of the teacher.

**Practice Phase:** The opportunity to reflect about the concepts, procedures, algorithms, attributes, and/or strategies connected to a problem or task is characteristic of this phase. In effect, learners are provided with ample time and instructional experiences to actively explore various aspects of what the teacher is asking the learners to do. The purpose of practice is to allow learners to think about, act upon, and form relationships between and among different elements associated with their instructional experiences. Mistakes will occur and indicate that students need to refine their understandings. During this phase, a teacher's use of questioning is essential in focusing students' attention to the critical aspects of a task. Also, appropriate teacher questions are influential in developing meaningful ordering, operational, and structural relationships - the core ingredients of mathematics. In this phase, students are first asked to predict, using appropriate mathematical terminology, what will occur, then to perform the actions to verify their prediction, and finally to describe what occurred.

**Drill Phase:** When a learner has developed the necessary conceptual understandings of a concept at a particular mode and has practiced them frequently, an automatic response is many times acquired and desired. The purpose of drill in an experience-based approach is to speed up the reaction time so that the important basic mathematics concepts and skills are easily retrieved for the resolution of other related problems. Unlike the Introduction and Practice Phases, drill is not required for the development of all mathematical concepts and algorithms. However, the appropriate use of this phase may be beneficial in developing certain concepts and algorithmic skills. For instance, a student's ability to automatically respond to basic multiplication facts is most helpful for dealing with experiences in estimation, statistics, probability, measurement, fractions, percentages, etc. Tests are typically a form of drill since they usually provide a limited time for completion. Since efficiency of time is the major emphasis of this phase, drill is considered reflexive in nature.

A number of workbooks and texts refer to sections as "Drill and Practice." This is understandable in rote instruction. Since little emphasis is given to meaningful learning, the order in which these phases occur is of no great importance in rote instruction. However, if instruction is based on meaningful and deliberate connections the order in which these phases occur is important. In summary, for an experience-based program, the three instructional phases occur as follows:

## **INTRODUCTION - PRACTICE - DRILL**

**Practice never precedes Introduction. Drill never precedes Practice.**