

Science Curriculum Inc.

L A K E W O O D , C O L O R A D O

What is Learning

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At a recent meeting of the Illinois Science Teachers Association, a well-meaning teacher made this comment about our new Force, Motion, and Energy textbook: "The kids are not going to like this book. They are used to having more color and pictures in their textbooks." On another occasion, a teacher looking at our Introductory Physical Science textbook said, "My ninth graders could not possibly handle this material."

What these comments reveal about these two teachers is that they have a common misunderstanding of the meaning of learning. They feel that their job is easier when students are used to what is in front of them, and can absorb whatever is demanded of them with the least effort. In our grade-conscious society, popular courses are often those in which most students can get an "A" with very little effort. This is possible if the students already know the facts and possess the skills called for in the course. But have the students learned anything in such a course?

Learning means acquiring an understanding of something one did not understand before, or developing the ability to do something one could not do before. Consider the following example. A student is assigned to learn a new composition for her next violin lesson. Instead of practicing the piece she sight-reads it to her teacher's satisfaction, and is praised for her playing. Has the student learned anything? Would not her parents be right in claiming that this lesson was a waste of time and money?

Seasoned IPS or FM&E teachers know how much learning takes place during the very first few weeks of these courses, precisely because the students had neither prior knowledge of the material nor command of the experimental and reasoning skills acquired in those weeks. An experienced IPS teacher told me of the following experience: Realizing that his students were not aware of how much they had learned in the course, he asked them, after the class had completed the Sludge Test, "Do you think that you could have done this test on the first day of school?" The unanimous answer was "No way!" This class obviously had learned a lot.

Returning to the comment in the first paragraph about the limited use of color and pictures, it is worth pointing out that although the pilot edition of FM&E was simply black and white, there were no complaints from either students or teachers. This is not really surprising. The students were busy collecting and analyzing data, acquiring new skills, and gaining new information. They were reading the text for understanding and for guidance in solving problems, so they did not miss "cute" pictures. This is not to say that

the use of full color cannot enhance learning. Indeed, the published edition of FM&E makes judicious use of four-color printing for clarity in both drawing and photographs.