

strengths often were conflicting because of inappropriate statistical designs, poor analyses, misinterpretations of the findings, and/or faulty conclusions. Those investigators examined *group* mean gain scores—which are inappropriate for determining whether individuals achieve better, the same, or less well in comparison with their own baseline data when they are taught through their preferences. In addition, the words *tactile* and *kinesthetic* often were used interchangeably. *Tactile* suggests learning with hands through manipulation of resources, but writing is not tactile enough for children below 4th grade. *Kinesthetic* implies whole-body involvement, such as taking a trip, dramatizing, interviewing, or pantomiming. However, even when older studies identified tactile strengths, their treatments did not *introduce* the new material that way. Finally, studies that employed many diverse instruments, populations, methods, and statistical designs and that confused the terminology could not yield solid data.

On Sociological Preferences

The influence of students' social preferences also affects their achievement in school. Figure 3 shows that, in four of five studies, when students' sociological preferences were identified and the youngsters then were taught in multiple treatments both responsive and unresponsive to their diagnosed learning styles, they achieved significantly higher test scores in matched conditions and significantly lower test scores when mismatched.

How do sociological preferences interface with cooperative learning? The higher the grade level, the less teacher-motivated students become (Price 1980). Thus, there are more peer-oriented youngsters able to work in well-organized small groups than there are students willing to learn directly from their teachers. Nevertheless, in every class we have ever tested, there are students who prefer to learn by themselves with appropriate resources, others who prefer to learn with peers, and some who wish to work directly with their teachers (Price 1980).

Learning Styles and Student Diversity

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As a young teacher, I inherited a junior high classroom from a teacher who left in midyear. The students were totally out of control. I made it through the year, but I was not pleased with my performance.

I unloaded my feelings of frustration on Margaret Payne, who taught next door. She had a reputation for being able to teach even the worst students. In fact, she often tolerated them. Students liked learning in her class; she made them feel special and successful. Each time they succeeded, they wanted to try again.

Ms. Payne listened to my complaints, made sympathetic sounds, and proceeded to offer practical advice: that I teach my students the way they learned best; in other words, that I determine my students' preferred learning styles and provide activities to match them. She suggested that I use several methods of presenting material and include a variety of activities—individual and group projects—ranging from the replicative to the highly creative. Ms. Payne understood that different students learn in different ways, while teachers often teach as they have been taught (Dunn and Dunn 1978).

This was certainly true in my own case. Because I learn well auditorily, I tended to teach in a lecture format. Unfortunately, this tendency shortchanged the visual, kinesthetic, and tactile learners in my classroom. Because I am a self-directed learner, I assigned mostly individual projects to be completed by a certain date. These assignments were difficult for students who learned best in a group or with the help of an adult, or who needed encouragement, assistance, or prodding to finish a project. Furthermore, I didn't like gum chewing, foot tapping, or other extraneous movements or noise, yet I had students who *needed* those activities in order to learn (Dunn and Dunn 1978).

If a teacher teaches and evaluates in only one cognitive mode, he or she is adequately serving only those students who prefer to learn in that mode. To give every learner the opportunity to succeed, teachers can expand their repertoires to include a variety of cognitive modes. Teachers should also become aware of their own learning style preferences and of how those preferences affect their teaching methods. Yet another goal is to help students move from one preferred learning mode to a base of mixed preferences, so they can benefit from various instructional modes.

If we make these changes, we will improve our chances of success at educating a diverse student population.

Reference

Dunn, R., and K. Dunn. (1978). *Teaching Students Through Their Individual Learning Styles: A Practical Approach*. Reston, Va.: Reston Publishing.

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From practical experience, educators generally consider the junior high school years a period of strong peer influence. By the beginning of grade 9, however, educators should expect movement away from that preference; Price (1980) found that students in grades 9-12 experience a greater need to learn and study alone than during any other interval. The gifted also prefer to learn alone unless the material to be mastered is difficult for them; when that happens, they prefer to learn with other gifted children (see fig. 3). Thus, except among the gifted, many students in grades 3-8 will learn better in small, well-organized groups than either alone or with the teacher. After grade 8, however, more will learn better alone.

In a small group structure, children who are frequently chastised for not sitting quietly can move about and

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