Dispelling Outmoded Beliefs About Student Learning

Students learn best when instruction and learning context match their learning style.

Established teaching and scheduling practices have made the American educational system strong and successful over the first half of this century. However, that system never had to service such a diverse group of students as it is trying to educate today. Only two decades ago, divorce and drugs were uncommon in our society, pregnancies among elementary school children were unheard of, and teenage pregnancies were something that happened to uneducated, undisciplined hoodlums in inner cities.

Today we recognize that unless we educate every child, we all suffer. At-risk students place society at risk by what they do to us, our children, our property, and our educational system. Fortunately, the results of newer, more sophisticated statistical approaches to research now point the way to making instruction more responsive to youngsters who do not learn and retain information in ways that conventional education provides.

Research Challenges
15 Popular Beliefs

Fifteen old-fashioned beliefs are the subject of this article. We have found that when teachers expand their instruction to respond to students' individual learning styles, it takes as little as six weeks to see increased achievement and a decrease in discipline problems. Even at-risk youngsters begin to learn and feel better about themselves, and teachers no longer regret having them in class.

Fallacy Number 1. Students learn best when seated upright at a desk or table.

The Research. Almost all classrooms have wooden, steel, or plastic chairs and desks for students. When a person sits on a chair constructed from those materials, approximately 75 percent of the total body weight is supported on only four square inches of bone.
Making students sit upright in their seats does not necessarily make them more responsive to learning.

Shea (1983) identified high school students with strong preferences for sitting informally on cushions, pillows, couches, and carpeting. When permitted to work that way, they performed significantly better (.001) on an English comprehension test than when they were required to sit in conventional seats. Another population of under-achieving seventh- and eighth-graders achieved significantly higher mathematics test scores when taught and tested while seated on pillows, lounges, and small carpets (Hodges 1985).

Classroom design affects at least 20 percent of secondary students, for whom achievement is either increased or decreased based on where they are permitted to work. Therefore, every classroom should provide both formal and informal types of seating.

Fallacy Number 2. Students perform better on tests and learn more from their homework in an absolutely quiet environment.

The Research. Many adolescents think and remember best when studying with music (Price 1980). Furthermore, 20 percent of one elementary population earned significantly higher reading scores when tested in a noisy environment (Pizzo 1981). Incidentally, a few students require so much silence that they perform more efficiently on tests when wearing earmuffs or earplugs.

Each classroom should have quiet sections for those youngsters who cannot concentrate with noise, and areas where the 20 percent who need sound while learning can listen to music on a listening set.

Fallacy Number 3. Students learn best in well-illuminated areas and damage their eyes when they read in low light.

The Research. Many students perform significantly better (.01) in low than in bright light, which makes them restless, fidgety, and hyperactive (Krimsky 1982); low light calms these youngsters so that they can relax and think clearly (Dunn et al. 1985).

Right-brain-dominant students appear to prefer dim light when concentrating (Dunn et al. 1982). The younger children are, the less light they seem to need. Children need only that amount of light for reading in which they feel comfortable, but their need for light seems to increase every five years (Price 1980).

Loosen one bulb in a corner of a classroom and permit students who prefer low light to sit there. Observe their behavior, attention, and grades during the next six-week period. You will be surprised at the improvement among eight out of ten students—particularly the underachievers.

Fallacy Number 4. Students learn difficult subjects best in the early morning, when they are most alert.

The Research. We all know early birds, night owls, and people with either high- or low-energy levels at different times of the day or evening. Research demon-
Tactual/kinesthetic youngsters learn better through resources that match their perceptual strengths than when listening to the teacher.

It demonstrates that no matter when a class is in session, it is the wrong time of day for almost one-third of that population (Freeley 1984, Price 1980, Worthington City Schools 1980, Virostko 1983). Another investigation reported that when junior high school students were allowed to learn subjects at their preferred time of day, their behavior, motivation, and mathematics scores began to improve (Carruthers and Young 1980).

When an elementary school student is on-task is likely to be far more important than the subject being studied or the amount of time devoted to it. For example, one elementary school required one hour each of reading and mathematics for every youngster in grades three to six. Half of each grade were taught reading in the morning and math in the afternoon; the other half had those subjects reversed. At the end of one year, 280 students achieved significantly higher scores (.001) in the subject taught during their preferred learning time and significantly less well in the subject taught at the opposite time. During the second year of that study, the disciplines were reversed. Thus, those students who had reading in the morning previously were taught reading in the afternoon, and so forth. At the end of the second year, more than 90 percent of these youngsters achieved significantly better in the other subject (Virostko 1983). That study won the Kappa Delta Pi International Award for the best research in 1983.

Try administering standardized achievement tests three times—in the early morning, late morning, and afternoon. Permit students to take those tests when their energy level is highest. One elementary principal additionally allowed children to choose whether they preferred to sit in their chairs or on floor mats. She obtained significantly higher test scores merely by responding to those two elements of learning style (Lemmon 1985).

Fallacy Number 5. Students who do not sit still are not ready to learn.

The Research: Half of one junior high school's seventh-graders needed extensive mobility while learning. When permitted to move from one instructional area to another to learn new

"The younger children are, the less light they seem to need."
As students mature, they prefer to learn independently. These secondary science students use peer-oriented learning under the teacher’s supervision.

information, those youngsters achieved statistically better (p<.001) than they did when required to learn while remaining seated. Twenty-five percent of the students needed to sit still, and the other 25 percent needed to be able to move about only when not motivated or interested (Della Valle 1984, Della Valle et al. 1986).

Try using small-group instructional techniques like Team Learning, Circle of Knowledge, Brainstorming, and Case Studies (Dunn and Dunn 1978) to get children actively involved. Most teenagers will learn more, pay closer attention, and get higher grades on tests than they do by merely sitting and listening in class.

Fallacy Number 6. Whole-group instruction is the best way to teach.

The Research. Some middle school and elementary students do their best thinking alone. Many work better in pairs or in teams. Some like to learn with adults, whereas others need peers (DeBello 1985, Johnson and Johnson 1975, 1976, 1980). A small percentage of students cannot concentrate with anyone present and may not have the skills to work independently. Some of those students work better with media than with people (Dunn 1971) or with computers (Martini 1986). Gifted students tend to prefer to learn by themselves (Dunn and Price 1980, Griggs and Price 1980, Kreitner 1981, Perrin 1984, Price et al. 1981, Stewart 1981, Wausson 1980). Some students can learn well in any combination-alone, with others, or with media (Dunn and Dunn 1978).

Experiment with grouping students for instruction based on their sociological preferences. Use small-group techniques for the peer-oriented, direct teacher instruction for those who learn best with a teacher, and independent study for the capable ones who learn best by themselves. For those youngsters who do not like to work closely with a teacher—but who are not ready to work independently, use a Multisensory Instructional Package (Dunn and Dunn 1978, Gardiner 1986).

Fallacy Number 7. Most students could achieve well academically if only they were self-motivated.


Fallacy Number 8. Students concentrate best when classroom temperature is maintained at from 68° to 72° Fahrenheit.

The Research. Preferences vary dramatically among age groups, between the sexes, and among individuals whatever the age or sex. Within the same middle school environment, youngsters reacted differently to heat and cold and achieved better when they were tested in a thermal setting that matched their requirements (Murrain 1983).

Fallacy Number 9. Effective teaching requires clearly stated objectives followed by detailed, step-by-step, sequential explanations until students understand what is being taught.

The Research. Global learners grasp large concepts and then tackle the details and facts related to the concept. Learning is exactly the opposite for analytics, who pay attention to a series of facts that build up to a concept. Both groups learn equally well but achieve significantly higher scores when taught in a style that is correct for them (Douglass 1979, Trautman 1979).

Sixty-five percent of the teachers we’ve tested teach analytically. Many special education teachers tend to use a
global style. By expanding their teaching to include elements of both styles, teachers can increase the understanding of their analytic and global students.

Fallacy Number 10. Eating should not be permitted in classrooms except at snack time; food belongs in the cafeteria.

The Research. Some students eat, drink, chew, or bite on objects as they concentrate. A recent middle school study showed that students who were permitted to eat raw vegetables and popcorn while taking a test achieved significantly higher scores than those who needed food but were denied it (MacMurren 1985).

Fallacy Number 11. Students learn best in blocks of time of approximately 40 to 55 minutes with variations for lab period (80 to 110 minutes).

The Research. When students are permitted to learn in an environment that responds to their mobility (Della Valle 1984, Miller 1985) and furniture needs (Hodges 1985, Shea 1988) and can learn through their perceptual strengths (visual, tactile, and/or kinesthetic) rather than solely by lecture (Carbo 1980, Jarsonbeck 1984, Kroon 1985, Urbschat 1977, Weinberg 1983, Wheeler 1983), they are better able to concentrate and remember, whatever the scheduled amount of time.

Fallacy Number 12. Youngsters who cannot remember verbal instruction tend to be less intelligent than those who can.

The Research. Each youngster’s specific perceptual strengths (i.e., auditory, visual, tactual, kinesthetic, or some combination thereof) should be identified. New material should be introduced to students through their strongest modality, reinforced through their second strongest, and reinforced again through their tertiary modality (Kroon 1985). Students should then be required to use the new information in a creative way (e.g., by making up a crossword puzzle with the answers, writing a rhyming poem with the information, or pantomiming the answers to a series of related questions) (Dunn 1984).

Several investigations that examined the relationship between perceptual strengths and achievement (Carbo 1980, Kroon 1985, Martini 1986, Urbschat 1977, Weinberg 1983, Wheeler 1983) found that whenever students were taught through resources or approaches that complemented their modalities, they achieved significantly higher test scores. The same was true of “learning disabled” second-graders who, when taught through their strongest modality, consistently achieved scores higher than 80 percent correct on their class reading tests (Wheeler 1983).

Fallacy Number 13. Homework should reinforce what has been taught and should be assigned from an appropriate test after a lecture.

The Research. Because students achieved higher grades when taught through their perceptual strengths, as just noted, it is only reasonable that the same concept should be applied to doing homework. Auditory students should hear the teacher’s lecture, review by reading and writing answers to specific questions, and then use the new material in a creative application (e.g., “Make a crossword puzzle where the answers describe at least five outcomes of the Revolutionary War” or “Write a six-line rhyme poem describing at least five outcomes of the Revolutionary War”). Visual students should read the material first, write answers to specific questions during the class lecture, and then develop an original application (draw a map, write a play, make up a song, etc.). Tactile students should be introduced to the outcomes of the Revolutionary War by using tactile materials (electroboards, multi-sectioned Task Cards); then they should answer questions while reading the materials, listen to the teacher’s lecture in class, and create an original game, pantomime, model, or map based on the new information.

Fallacy Number 14. Generally, the older students are, the easier it is for them to adapt to a teacher’s style.

The Research. Older students require less teacher motivation (Price 1980) and less structure (Hunt 1982). Students continue to learn differently from each other and to require different amounts of attention, direction, structure, caring, support, guidance, or freedom. Nothing is more unequal than treating individuals as though they were equals in all ways.

Because most students tend to need more independence as they go through the grades, they should be permitted options for completing their assignments and for learning required objectives (Mager and McCann 1963, White 1980, White et al. 1982). Options and choices can be reduced if students prove they are unable to handle the extra responsibility, but periodically they deserve the chance to show that they are maturing and are willing to be responsible.

Fallacy Number 15. Truancy is related to poor attitudes, home problems, lack of motivation, and other factors having nothing to do with students’ preferred learning time.

The Research. At least one study of secondary truants verified that when their learning time preferences were matched correctly to their academic schedules, they attended class more frequently (an amazing 3.5 units per ten-week marking period). There was also a significant interaction among degree of truancy, learning time preference, and whether or not they had the same teacher during the treatment condition and pretreatment. When students who had been truant were assigned to a teacher different from the one with whom they had been truant, they attended classes more often (Lynch 1981).

Beliefs Can Change
All popular beliefs have some basis in fact. There 15 do, too. Because they are so widely accepted, it is important to counteract their influence with exper-
imental evidence. Instruction has improved in schools throughout the nation where the Learning Style Inventory (Dunn et al. 1975, 1978, 1979, 1981, 1984, 1985) has been used to identify students' strengths and instruction has become more sensitive to their individual needs (Ballinger and Ballinger 1982, Cavanaugh 1981; K. Dunn 1981; Hodges 1982, 1983; Jenkins 1982; Lemmon 1982, 1985; Lynch 1982; Martin 1977; Vigna and Martin 1982; Wedlund 1984). Instruction that is responsive to individual differences may help improve learning conditions for students at risk of academic and lifelong failure.

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Kenneth Dunn is Professor, Department of Graduate Programs in Educational Services, Queens College of the City University of New York, Kissena Blvd., Flushing, NY 11367. Rita Dunn is Professor, Division of Administrative and Instructional Leadership, and Director, Center for the Study of Learning and Teaching Styles, St. John's University, Grand Central and Utopia Parkways, Jamaica, NY 11439.