

REDESIGNING THE MIDDLE-SCHOOL CLASSROOM: FIVE EASY STEPS TO IMPROVE STUDENTS' GRADES AND DECORUM

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- You know Kimball Jackson. He's the six-foot tall, gangly adolescent who rarely sits *properly* at his desk. His legs either sprawl into the aisle or directly between the feet of whichever classmate it in front of him. You can't help but notice Kimball; all that squirming rivets your attention through much of each period.
- You also know Michael Perez. He is never without snacks in his hands or pockets. Mike chews incessantly—during lectures, discussions, readings, and particularly tests.
- We bet you know Laura and Diane too. Although these gal-pals don't contribute much to class discussions, they talk intermittently throughout your lecture. They also talk in the halls before and after class. When chastised for talking while you teach, they passed notes back and forth and thought they were being *cooperative*.
- And of course you know Bart. You're consistently reminding him to take his baseball cap off in class. He shields his eyes while writing and seems hyperactive much of the time.

Certain middle-school students find it hard to concentrate in conventional school classrooms. In turn, they distract teachers from teaching. However, if you are willing to experiment with the class that has your most tough-to-teach students, try two or three of the following five *interior decorating* approaches. You will see immediate improvement in students' attitudes toward learning and their own achievement! Don't doubt the effects; choose the steps you are inclined to try--and begin! Within one week, you will see the positive outcome of your efforts!

How Do Students Master New Or Difficult Knowledge?

Adolescents react differently to many environmental, sociological, and physiological factors while concentrating. Some need extreme quiet to concentrate; others think best with soft background music or conversation. Some prefer bright lighting; others prefer dim. Some are able to sit quietly for long periods of time

whereas others cannot be passive for more than 10 or 12 minutes, and so on! It is important to identify and address students' prerequisites for concentrating because researchers have documented statistically higher achievement, attitudes, and retention rates when the instructional environment was responsive to how individuals learn (Dunn & DeBello, 1999; Dunn, Griggs, Olson, Gorman, & Beasley, 1995; Lovelace, 2005; www.learningstyles.net, 2005).

Impact of Environmental Factors on Middle-School Students' Concentration

Few teachers are aware that, when middle-school students are seated in wooden, steel, or plastic chairs, 75% of their total body weight rests on four square inches of bone (Branton, 1966). The resulting stress on their buttocks causes fatigue, discomfort, and the need for frequent postural change--for which students like Kimball Jackson (above) are scolded daily. Informal, comfortable seating quickly improves both their attitudes and attention spans!

Some teachers do not realize that *analytic* students, who process new information detail by detail, fact after fact, tend to focus best in a quiet, well-lit classroom with conventional seating and few interruptions. Conversely, global students who need to understand how each lesson relates to their lives or their interests, focus best in a softly-lit environment with music or conversation in the background, in casual, informal seating, with snacks, and intermittent breaks (Dunn, Bruno, Sklar, & Beaudry, 1990; Dunn, Cavanaugh, Eberle, & Zenhausern, 1982; Sagan, 2002).

Undoubtedly, we all recognize, but do not understand, that many healthy, normal youngsters cannot remain seated in the same position for more than 10 or 12 minutes without moving. Professor Armin Thies of Yale University (1979, 2000-2001) believes that the human need for mobility is related to biological brain processing and Richard Restak (1979) of Georgetown University emphasizes that schools impose *feminine* behaviors on males who do not learn while sitting still.

Redesigning Your Conventional Classroom

If you have either the courage or curiosity to experiment with redesigning physical classroom space, consider several physiological and sociological aspects of learning. These factors include individual and group attention spans, seating, lighting, sound, and temperature preferences. For example, if your class roster includes students who require informal seating, begin the transition with seating arrangements. If you have a large cluster of students who need soft illumination, consider lighting first. Whatever the needs of your most difficult students, start there!

Step One: Seating

Most schools provide a combination of chairs, desks, or tables made of wood, steel, or plastic for each student. As noted above, when students sit on those inflexible surfaces, about four square inches of bone supports 75% of their total body weight. The result is physical discomfort that distracts them from concentrating.

Thus, they squirm, fidget, rock and, eventually, need to get out of that chair. Inevitably, boys are more hyperactive in class than girls, because the latter tend to be better padded exactly where they need to be. Therefore, girls better tolerate sitting for whole-class periods than their male counterparts. Seating is also crucial to global students who concentrate best when relaxed.

- Experiment having students bring cushions to place either on their chairs or the floor while learning.
- Allow students to relax in a carpeted, informal section of the room.
- To acquire more comfortable and casual seating possibilities, ask parents to donate cushions, beanbags, easy chairs, carpet squares, rugs, outdoor furniture, couches, or rocking chairs. Explain why, and reference the research documenting the increased test scores of many globals and males when seated casually (Burke & Samide, 2004; Dunn & Dunn, 1993; Dunn & Griggs, 2004).

Step Two: Illumination

Although fluorescent lights are used in most schools, they negatively affect many students. The fade time of florescent lighting is longer than 50 percent of the cycle time, is worse with old bulbs than with new bulbs, and cycles 60 times a second. That reverse phasing stimulates analytics (who find it difficult to concentrate on demanding academics in low light) and *over-stimulates* global processors (who tend to react with restlessness and hyperactivity). Reduced illumination results in higher test scores for children who prefer soft lighting (Dunn & Dunn, 1992; Dunn & Griggs, 2004).

The positive and negative effects of natural versus artificial light on plants have been well documented. The identical amount of exposure is beneficial for some plants and detrimental to others. People also respond differently to lighting. To find the optimum lighting for students, teachers may try one or more of the following experiments for two weeks.

- Use only half the lights in the classroom and permit students to sit wherever they feel most comfortable.
- Turn the lights off in one corner and encourage poor readers to sit there. Note the differences in behavior and attention spans that result and watch for changes in achievement.
- Encourage poor readers to choose a piece of colored acetate (often used on overhead projectors) and move it from page to page in their book as they read. Look for improved attention spans, focus, and behavior.
- Insert colored, fireproof paper between light bulbs and their covers in one or more classroom ceiling sections.
- Teach in natural light. You may not appreciate the atmosphere, but a healthy percentage of your students will!
- Permit students to wear sun visors, sunglasses, or caps with visors if they ask to or if their learning-styles profile indicates that they strongly prefer low light. Adults require more light than children; bright light causes physical tension among many global students.

- Cover large, bright, white surfaces with colored paper or fabric.
- Use dark curtains to shade a couple of window panes for students who need soft illumination or allow students to partially shade their work areas with transparent, dark-toned fabrics (Dunn & Dunn, 1992; Dunn & Griggs, 2004).

Step Three: Sound

The ability to concentrate on difficult cognitive tasks in either quiet or noise-filled environments varies among individuals. Strongly analytic processors require quiet, whereas strongly global processors think better *with* sound, including music, modified background conversations, ocean waves crashing, or birds singing. For students who strongly prefer background noise, use only music *without* lyrics, because their mind automatically repeats lyrics with which it is familiar instead of concentrating on their academic tasks.

Experiment with different acoustic environments and get feedback from students. In addition:

- Encourage students who need quiet to sit away from traffic and activity patterns.
- Allow soft cotton or rubber ear plugs, earmuffs, or nonfunctioning headphones during tests or in study environments.
- Carpet the heavy class traffic areas for the 10 to 12 percent of students distracted by sound.
- Insert an old tennis ball over the bottom of the leg of each chair in the classroom. This will reduce distracting noises when moving chairs and desks.
- Provide private classroom spaces for students easily distracted by noise.
- Offer seats near the hub of activities or near the door for students who require sound.
- Permit music without lyrics on headphones for students who prefer background sound (Dunn & Dunn, 1992; Dunn & Griggs, 2004).

Step Four: Temperature

In every group of people, some feel warm and others feel cool while everyone else is unaware of how they feel--unless specifically questioned. Temperature preferences are unrelated to either global or analytic processing, but need to be accommodated for learning efficiency. Responding to strong temperature preferences also improves achievement. Students who seem devoid of energy or are consistently withdrawn may be experiencing environmental discomfort. The following measures may help some students:

- Use curtains to block out the sun and drafts.
- Turn on a fan and let students choose their seats.
- Supply paper cups and water for drinking and for dabbing on faces and wrists.
- Allow students to keep a sweater in their desks or in a closet.
- Encourage students to layer their clothing so that they can put on or take off items.

- Remember that the warmest part of a room is in the middle, with weather-dependent exceptions near windows and heat sources (Dunn & Dunn, 1992; Dunn & Griggs, 2004).

Sociological Factors That Influence Learning

The social setting in which learners learn best is unrelated to global or analytic tendencies. Many adolescents learn well in a mixture of patterns--sometimes alone, sometimes with a partner, occasionally in a small group of peers, in a team, or with either an authoritative or collegial teacher. Each individual's social pattern may vary with age and achievement. However, a healthy percentage of people learn consistently in the same routine, whereas others have no particular preference other than that they like the classmates with whom they study or work (Dunn, Giannitti, Murray, Rossi, Geisert, & Quinn, 1990).

More global than analytic, adolescents are peer-oriented. These students often learn best with either one friend or in a small group, in contrast with the 13% of students who learn best independently and the 28% who only concentrate well with a teacher nearby.

- Allow students to choose the social setting that best suits them to complete all or most assignments--with the exception of tests.

Step Five: Social Choices

- Whenever you give an in-class or at-home assignment, allow students to work alone, in a pair, in a small group of three or four, or seated near you.
- Change their desk placements to reflect different possibilities—in pairs, in small rounds of three or four, in bright versus low light, in different sections of the room, in occasional triangles, and so forth.
- Place different desk or informal seating formations in relatively quiet sections of the room and in other areas close to activities.
- Permit students to relocate their chairs, beanbags, or pillows to sections of the room in which they feel most comfortable.

Mobility Factors that Affect Learning

Many students who are restless, apparently disinterested, and sometimes disruptive often are mislabeled as *hyperactive*. Most students who exhibit these characteristics are not clinically hyperactive--they often are normal young teenagers in need of mobility (Restak, 1979). The less interested the learners are in the content of the material being taught, the more mobility they require. Approximately 95% of these so-called hyperactive students are male. When the same characteristics are observed in girls, they correlate with a high degree of academic achievement. Implementation strategies designed to promote disciplined mobility include the following.

- Establish “stations” that permit students to move from one section of the room to another as each completes short segments of a longer assignment.


- Place needed reference materials in a table in one corner, media in another, hands-on resources in another, and perhaps informal seating in another.
- Establish one section of the room as a *Quiet Quarter*, another as *Permitted Pair Partnering*, another as a *Small-Group Section*. Permit disciplined movement from one area to another.
- Allow individuals a *60-Second Slumber Break* every 15 minutes or so if they quietly choose to take time out and then return to their assignment.

Rules for Maintaining Learning-Style Privileges

The benefits of experimenting with your current classroom far outweigh any imagined risks, but you must establish firm ground rules that even the least mature students understand and can follow. List those ground rules on a wall chart and illustrate them for global students who pay better attention to pictures and graphs than they do to words or text. Start with basic rules that include those listed on the sample chart below.

Rules for Maintaining Learning-Style Privileges

- Your learning style must not distract anyone else.
- Your grades must be better than they ever have been.
- Your assignments must be completed.
- Whenever I need your attention, you must give it to me immediately.
- The way you work in class is based on your learning-style assessment and subsequent evaluation of your work.



Add other rules as they become appropriate. Emphasize that the privilege of using their learning styles require personal responsibility and that disregarding your rules will result in a loss of privileges.

The ground rules should respond to the steps you decide to introduce. For example:

- Introducing comfortable, casual seating requires that students sit like ladies and gentlemen, that they do not distract anyone by inappropriate positions, and that their relaxation posture must not endanger classmates who walk or move within the room.
- Introducing areas in which students may speak with each other or listen to music on earphones as they work requires that no one else hears the conversation or sound.

- Introducing varied illumination requires that the work ethic be respected and not abused.
- Introducing mobility opportunities requires thoughtful completion of work.

Conclusion

Teachers must be taught how to redesign their classrooms so that all students will be provided the necessary space that complements their environmental learning-style preferences. By altering the middle-school classroom some students will be given the opportunity to work in formal areas--desks, chairs, and tables; other students will choose informal areas--couches, rugs, soft chairs, etc. Within the areas of every classroom, adaptations can be made for sound preferences, lighting needs, and temperature controls.

Kimball, Michael, Laura, Diane, and Bart should not be expected to change their environmental preferences or learn regardless of them. Our experiences in middle school classrooms suggest that all students will benefit from modifications like those we have suggested. We hope you will find these suggestions useful in your efforts to redesign your classroom.

References

- Branton, P. (1966). The comfort of easy chairs. *FIRA Technical Report 22*. Hertfordshire, England: Furniture Industry Research Association.
- Burke, K. & Dunn, R. (1998, 2005). *Learning style: The clue to you!* (LS:CY!) www.learningstyles.net.
- Burke, K., & Samide, B. (2004). Required changes in the classroom environment: It's a matter of design. *The Clearing House*, 73(3), 236-239.
- Dunn, R., Bruno, J., Sklar, R. I., & Beaudry, J. S. (1990). Effects of matching and mismatching minority developmental college students' hemispheric preferences on mathematics scores. *Journal of Educational Research*, 83, 283-288.
- Dunn, R., Cavanaugh, D., Eberle, B., & Zenhausern, R. (1982). Hemispheric preference: The newest element of learning style. *The American Biology Teacher*, 44(5), 291-294.
- Dunn, R., & DeBello, T. C. (Eds.). (1999). *Improved test scores, attitudes, and behaviors in America's schools: Supervisors' success stories*. Westport, CT: Bergin & Garvey.
- Dunn, R., & Dunn, K. (1993). *Teaching secondary students through their individual learning styles: Practical approaches for grades 7-12*. Boston, MA: Allyn & Bacon.
- Dunn, R., Giannitti, M. C., Murray, J. B., Rossi, I., Geisert, G., & Quinn, P. (1990). Grouping students for instruction: Effects of learning style on achievement and attitudes. *Journal of Social Psychology*, 130, 485-494.
- Dunn, R. & Griggs, S. A. (Eds.). (2004). *Synthesis of the Dunn and Dunn learning-Style Model research: Who, what, when, where, and so what?* New York: St. John's University's Center for the Study of Learning and Teaching Styles.
- Dunn, R., Griggs, S. A., Olson, J., Gorman, B., & Beasley, M. (1995). A meta-analytic validation of the Dunn and Dunn model of learning-style preferences. *Journal of Educational Research*, 88, 353-361.

- Learning-Style Network Website Bibliography*. New York: St. John's University' Center for the Study of Learning and Teaching Styles, www.learningstyles.net
- Lovelace, M. K. (2005). A meta-analysis of experimental research based on the Dunn and Dunn learning-style model, 1980-2000. *Journal of Educational Research*, 98(3), 176-183.
- Restak, R. (1979). *The brain: The last frontier*. New York: Doubleday.
- Sagan, L. (2002). Middle-school students' recommendations of environmental and instructional change based on their analyses of individual learning-style inventories. (Doctoral dissertation, University of Denver, 1985). *Dissertation Abstracts International*, 45(12), 3537A.
- Thies, A. P. (1979). A brain-behavior analysis of learning styles. In *Student learning styles: Diagnosing and prescribing programs* (pp. 55-61). Reston, VA: National Association of Secondary School Principals.
- Thies, A. P. (1999-2000). The neuropsychology of learning styles. *National Forum of Applied Educational Research Journal*, 13(1), 50-62.

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