

# PART 1

## Energize the Environment

### THE RIGHT STUFF

Our area of clear vision comes from a small area in the back of each of our eyes called the macula. The rest of our vision is all peripheral vision. In the periphery of our vision, we are unconsciously aware of many aspects of the environment that could help us pay attention and get the input put in, or could detract from our ability to pay attention to the content being taught. If I have students who have trouble paying attention, lack focus, or may not be interested in my content, I must work hard every class period to make sure that everything I can control in my environment is as congruent as possible to meet my end goal, which is to have the students learn.

#### © Clutter

*(K-Adult)*

If you are a teacher who leaves stacks of paper leaning on every counter and your desk, I could say, "Hey, that's your style" and not argue the point. Besides, you would just tell me

you know where everything is anyway. I used to be a bit like that; but after learning about the power of the environment, and after being convinced that everything in my classroom says something about the kind of learning I expect and the kind of teacher I am, I have cleaned up my act, literally. If there is even a little attention being paid by some students to the pile of papers on my counter, and if they wonder even for a moment if and when the stack will fall, then I have lost that bit of their attention to my content.

To combat this, I suggest looking around the room and noticing what is out of place. At first, it may seem a little obsessive, but after a while, it becomes a habit that is worth the time you invest. Are the chairs out of line? Are the window shades in your room at different heights? Are the hangers on your coat rack jumbled together, or neatly spaced? Are the posters in the room and on the bulletin board hung evenly? Are the papers stacked uniformly? All of this and more can be accomplished by you and your students in a few minutes in the morning, or in a few moments at the end of every class.

## © Just Hanging Around

*(K–Adult)*

Many teachers hang student work and projects from the ceiling. My issue with this is that every time the air conditioner comes on in the classroom, the papers will move. Not only will the student with ADHD look, but so will every kid with that paper in their peripheral vision. It's what I call a *biological imperative*. Our visual system sends most of the incoming visual signal to the back of the brain, to the occipital lobe. Some incoming information, however, gets sent right down to the brain stem. Our brains are constantly monitoring incoming information to see if it is harmful or helpful to us. If we see movement in our peripheral vision, our instinct is to look to check it to determine if this stimulus represents a threat. After a while, we will become attuned to it and not look, but why put up with a potential competitor for your students' sometimes-fragile

attention, even for a minute? My advice would be to reduce or eliminate distracting movement in your classroom.

## LIGHTING

Our brains are hardwired to pay attention to novel stimuli. This may be a survival instinct, to alert us to anything new in the environment that could be a potential hazard. Educators can take advantage of this and increase their students' awareness and attention by varying the type, amount, and location of lighting in a classroom.

Lighting is one of the more studied aspects of educational environments. The type of lighting used in classrooms may have a positive impact on student depression or on short-term and long-term memory and problem solving (Tithof, 1998). An extensive study involving 21,000 students revealed that exposure to natural sunlight positively affected academic performance. Those students exposed to the most natural light during the day progress 15 percent faster in math and 23 percent faster in reading than students in classrooms with the least amount of sunlight (Heschong Mahone Group, 1999). Consider taking into account some of the following ideas about lighting, to keep your classroom environment invigorating.

### © **Manipulate Away!**

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Manipulate the amount, quality, and kind of light in your classroom.

- ✦ If you are reading a dramatic or emotional piece, shut off several banks of lights to enhance the mood.
- ✦ Use dramatic lighting to tell a story. Use the overhead projector as a spotlight; shine a flashlight under your chin to light your face. (Remember telling scary stories around a campfire?)

#### 4 © Classroom Activators

- ✦ Have a question/answer session with the lights off, pointing at participants with a flashlight when it is their turn to respond.
- ✦ Use table lamps instead of overhead fluorescent lighting.
- ✦ Experiment with different colors of light bulbs for the holidays. Try a green bulb for Saint Patrick's Day or a red bulb for Valentine's Day.
- ✦ Try using some full-spectrum light bulbs. Research on the effects of full-spectrum light on students include findings that seem to indicate that students who learn under full-spectrum light may learn faster, test higher, grow faster, have fewer absences, and even have fewer cavities (Hathaway, Hargreaves, Thompson, & Novitsky, 1992)!

### THE SENSE OF SMELL

Our sense of smell is unique among our senses in that it is the only sense that directly connects to our limbic system, where our brain houses structures such as the amygdala and the hippocampus, which are responsible for processing emotions and memory.

Interestingly, the molecules that make up the essential oils used in aromatherapy are among the few molecules that can pass through the blood-brain barrier, which is a densely packed lining of cells that protects the brain from harmful chemicals.

Only after the incoming sensory information has passed through the limbic system does the information arrive in the higher cortical brain regions for perception and interpretation. Our sense of smell has a direct link, indeed, the most direct link, between incoming sensory information and emotions and memory.

Researchers are well aware of this link, and the research on aromas is far-reaching and has shown some amazing effects.

For example, aromas have been shown to reduce dental pain, reduce anxiety, and improve moods (Lehrner, Marwinski, Lehr, Johren, & Deecke, 2005).

Aromas also can lower anxiety (Burnett, Solterbeck, & Strapp, 2004), reduce postpartum depression (Imura, Misao, & Ushijima, 2006), lessen dysmenorrhea (menstrual cramps, pain, and discomfort) (Han, Hur, Buckle, Choi, & Lee, 2006), and help to alleviate insomnia (Lewith, Godfrey, & Prescott, 2005).

## © Fresh Aromas

### *(K-Adult)*

In the classroom, I am not that interested in reducing dental pain; however, I would love to find ways to increase the state of arousal in my students, to lower their anxiety, and to improve their memory. After making certain that no students have any sensitivities or allergies to any aromas, I suggest you get a book on aromatherapy, a nice air diffuser, and some essential oils to try to enhance the environment in your classroom.

- ✦ Try rosemary or mandarin oil to increase your students' alertness.
- ✦ Rosemary and sage have positive effects on memory.
- ✦ Lavender has positive effects on student mood, making them less depressed, more relaxed (Diego et al., 1998).
- ✦ The use of brandy mint and lavender has been shown to decrease fatigue (Leshchinskaia, Makarchuk, Lebeda, Krivenko, & Sgibnev, 1983).

## © Easy Enhancements

### *(K-Adult)*

If you don't want to get all fancy with the essential oils, our sense of smell is still an amazing, and perhaps underutilized, sense in our classrooms. Maybe try some of the low-tech ideas listed below to enhance your classroom:

- ✦ Pop fresh popcorn when beginning a new unit or reviewing for a test. Pop some more during the test.
- ✦ Once in a while, put potpourri on your desk or on the students' desks.
- ✦ Sprinkling a little powdered deodorizer on the carpet will freshen the scent of the room.
- ✦ Try a plug-in room deodorizer for the addition of a pleasant odor in your classroom.

## THE EFFECTS OF IONS

Ionized air occurs naturally around waterfalls, ocean waves, and rainstorms. This is one reason the air can smell fresh and invigorating after a rainstorm. Numerous studies have shown the positive effects negative ions in the air can have on mood and performance. Cognitive experiments conducted with rats can be a valid predictor of what happens to humans under similar conditions, because the brain of a rat (actually the brain of any mammal) has the same basic building blocks that human brains have, that is, neurons and glial cells. Thus, predictions can be made about human behavior from rat studies. One experiment conducted with rats (Duffee & Koontz, 1965) showed a 350 percent improvement in cognitive functioning on a water-maze performance task when exposed to negative ions.

There are also many negative ion experiments that have been conducted on humans. One study, done in England (Hawkins & Barker, 1978), showed that there were significant increases in people's ability to perform cognitive tasks when exposed to negatively ionized air. A study was even conducted to see if ionized air could improve memory and attention in students with learning disabilities (Morton & Kershner, 1984). The study showed that all of the children breathing negatively ionized air were superior in incidental memory. The results showed enhanced performance on the order of 8.4 percent for students without learning disabilities, and an almost 24 percent improvement in performance on memory tasks for students with learning disabilities. Another study

showed faster reaction times and subjects reported feeling more energetic after exposure to negative air ions (Tom, Poole, Galla, & Berrier, 1981). Other studies have shown that negative ions introduced into the atmosphere can have a strong impact not only on mood and energy, but on cognitive functioning as well.

### © **Ionize *This!***

*(K-Adult)*

Try using an air ionizer to add charged particles to the air. Inexpensive air ionizers can positively affect the mental state of your students. With all this compelling evidence, it seems to be an easy thing to go on the Internet, do a search for air ionizers, and see what comes up. They can be purchased online or in some retail stores as well.

## MUSICAL MOMENTS

The power of music in the classroom can be profound and transformational. Research has indicated that music can affect us in ways that can create the conditions for optimal learning. For example, music that affects you emotionally is accompanied by increases in cerebral blood flow to areas of the brain thought to be involved with reward, arousal, motivation, and emotion (Blood & Zatorre, 2001).

Research has indicated numerous positive effects that music has on students. For example, music has been found to facilitate studying, test taking, and learning tasks that require intense concentration (Botwinick, 1997). Studies have shown that using classical or meditative music can produce increased levels of melatonin, a neurotransmitter that plays a key role in relaxation, sleep onset, heart rate, and blood pressure (Tims et al., 1999). Listening to music has been shown to increase spatial reasoning (Rauscher, Shaw, & Ky, 1993) and may even facilitate focused thinking to enhance general intelligence (Cockerton, Moore, & Norman, 1997).

The uses and benefits of using music in the classroom are still being explored, but the message is clear—if you aren't utilizing music in your classroom, you should start.

## ⑥ Music to My Ears

*(K–Adult)*

There are many ways to use music in your classroom and countless selections and styles to choose from. Don't limit yourself to just playing classical music—use whatever is already in your collection as a start. Notice how listening to a certain piece of music makes you feel, and play it when you want your students to feel the same way. Use music for a purpose and then shut it off! If you have music playing in the background during the entire day, the students will eventually tune it out, and the power of the music to affect the state of the class is lost. Use music for an exact purpose, such as those listed below:

- ✦ To excite students and generate a lot of positive energy, play up-tempo, upbeat music. Anthologies and collections of golden oldies have a broad appeal.
- ✦ If you want to set a quiet and contemplative tone as students enter your room or during a transition, play slow-tempo classical music or music by modern composers such as Gary Lamb.
- ✦ Using music as a trigger to automate daily classroom rituals and routines can be extremely powerful, motivating, and effective. For example, instead of telling students it's time to put away their books for lunch or clean up their workstations after a lesson, use music to prompt the transition. With practice, students will automatically put their work away, get their lunch boxes, and line up at the door when they hear the cue song. Musical cues are fun for students and help reduce stress on the teacher—at the very least you won't have to raise your voice to be heard above the noise of a class working on projects.
- ✦ Match musical routines to songs with appropriate lyrics. Alert your class that it's lunchtime with songs such as



“Be Our Guest” from the Disney movie *Beauty and the Beast*, or “Hot Lunch Jam” from the *Fame* soundtrack.

- ✦ Use songs such as “Come on Over” by Shania Twain to accompany students as they move around the room.
- ✦ At the end of the day, send your group home to “So Long, Farewell” from *The Sound of Music*, or “Who Let the Dogs Out” by the Baha Men.
- ✦ Greet students as they enter your room each morning with an upbeat song to get them in the mood to learn and have fun.
- ✦ Music can also be used to “entrain” information into the brain. For example, putting academic content to music can be a very effective technique for getting students to memorize information. Try having students write lyrics to familiar songs, such as “Mary Had a Little Lamb” or “Twinkle, Twinkle Little Star,” based on the lesson being studied.

## VARYING YOUR INSTRUCTION

Psychologist William James (1980) suggested that we have two basic types of attention: voluntary attention and involuntary attention. Voluntary attention requires the brain to actively block out competing stimuli in the environment. Prolonged periods of voluntary attention tend to fatigue the brain’s neural inhibitory mechanisms (located in the frontal lobe region), thus enabling competing stimuli to sneak into the brain’s awareness. According to James, to keep students’ attention, teachers must continually find ways to vary the presentation of the topic to keep it fresh for the students.

If you find yourself lecturing more than you would like, try these activities to spice up your teaching style.

### © Change the Visual Field

*(K–Adult)*

One element you can instantly change (thereby keeping attention) is the students’ visual field. Changing your body

posture or behavior can be quite unexpected yet very easily accomplished.

- ✦ If you usually stand up to teach, sit down, stand on a chair, or lie on the floor.
- ✦ Before you tell a story or introduce a new topic, turn your back to the audience for a few seconds to capture their interest.
- ✦ Host a guest speaker.
- ✦ Try showing video clips or a computer slide show during your presentation.
- ✦ Go on a field trip.

## © **Actively Involve the Students**

*(K–Adult)*

Research on enriched environments reveals that active involvement is required to grow connections in the brain. It is not enough to just sit and simply watch events happen (Diamond, 1988). In a study of the impact of enriched environments on dendritic growth, a group of rats lived in an environment with lots of toys, novelty, stimulation, and rat companions. These rats exhibited a great deal of dendritic growth. Rats kept by themselves in cages devoid of any stimulation save the ability to observe the rats in the enriched environments showed no dendritic growth. The importance of this discovery is clear: to grow new connections in their brains, students must interact with their environment and one another. Try incorporating some of the ideas listed below:

- ✦ Recruit a student to teach part of the lesson, or assign an entire lesson to a small group.
- ✦ Have students write and perform skits, role play, tutor each other, or work together on projects. The more you can actively involve students, the better.
- ✦ Add variety when asking for responses from the class. For example, instead of asking students to raise their