

STAY TUNED

A column for The Mirror in Federal Way, Washington (December, 2008, published in 2-parts)
By Susan Kovalik, © 2008 Susan Kovalik

Student Engagement

Today's students are more thoroughly engaged in those activities that appeal to their creativity, their competitiveness, and their need to socialize than any time in our history. With their iPods, Pocket PC's, Palm Handhelds, laptops, and mobile phones, they are engaging almost continuously in the world around them. Within this vast storehouse of information they have learned how to work with Word, Power Point, Excel and 101 ways to use their iPods expanding their understanding and the ability to communicate that understanding in innovative ways.

Technology has changed their lives and in so doing has presented educators with a dilemma as to how to use the very elements that engage them with technology to invite and encourage them to be mentally present in the classroom.

Why do some students come to school inherently eager to learn and then become disengaged inside the classroom? What makes many young students who are naturally curious, with active imaginations and eager minds 'tune out' after they pass through the schoolhouse door? Why do other children consistently view school as a fun, exciting cool place to be and excited at the possibilities ahead of them?

The answer lies in that foundational but often overlooked reality that different students learn differently and finding effective ways to tap their inherent instinct to want to know and want to be able to do. Even more significantly, the scenario is set against the harsh reality, students are expected to learn in ways that are inconsistent (and frequently opposite) to how learning happens. Often they are expected to learn in ways that are convenient for the institution and teacher rather than ways that are brain-compatible, natural, and consistent with their "other" learning – learning that has taken place since birth. All of which goes on outside of school without teacher, textbook or worksheet.

What is it that makes a classroom and lesson brain compatible? Over the past thirty years research in neuroscience, specifically with the brain, has contributed greatly to our understanding of the phenomena of learning.

The following elements are a lens that provides a brain-compatible guide for classroom instruction:

1. absence of threat
2. meaningful content,
3. enriched environment
4. movement to enhance learning
5. choices,
6. adequate time
7. collaboration

8. immediate feedback
9. mastery (application)

Interestingly, these are the very same elements that attract students to technology.

1. There is an **absence of threat** at some level-where peers or a teacher are not present.
2. They make **content meaningful** using a variety of tools in a combination of ways to suit individual needs and interests.
3. They **enrich** their research with a variety of modes of presentation skills developing new forms of evaluation formats and critical thinking opportunities.
4. Movement-the impact of the Wii is amazing, as the users observe movement, their bodies mirror the action – their bodies are reacting even as they watch others on the screens move
5. There are unlimited **choices** in the gathering and presenting of information and their learning becomes interactive and multifaceted
6. They are in charge of their own adequate amount of **time** and will work at their own pace as long as their curiosity and interest is sustained
7. They **collaborate/socialize** with those they have something in common with expanding their connection worldwide and paving the way for their future.
8. As they discover and uncover information there is **immediate feedback** which allows them to expand their thinking, check other sources, and engage experts where possible.
9. They will stay with a ‘game’ or project until they have achieved **mastery**

The good news is that the emerging technology provides a wide range of opportunities for the teacher to engage their students and in ways students can participate using their acquired expertise. Using the vast array of available technology it is possible for every subject to have new and dynamic connections making learning more meaningful and engaging. It is not that students will not engage, it is that they have chosen what engages them.

Beyond technology there is another critically important aspect of classroom instruction that impacts engagement. It is the understanding of the hard wiring of gender.

Girls and boys play differently. They learn differently, they fight differently, they see the world differently and they hear differently. They express their emotions differently. Girls and boys behave differently because their brains are wired differently

This information is vital as schools are seeing more and more boys disengaged from the classroom/school. In Dr. Leonard Sax’s latest book, *Boys Adrift: The five Factors Driving the Growing Epidemic of Unmotivated Boys and Underachieving Young Men*, he contends that a combination of social and biological factors is creating an environment that is literally toxic to boys.

The following examples are broad generalizations as all behaviors are on a continuum and each of us is a unique individual flexible enough to modify our behavior based on the situation when needed or if motivated to do so.

Information on gender is not new and over the years we have heard about it but rarely have we

applied it with intention in our classrooms, actually what we have done over the past 20 years, is tried to create gender neutral classroom/school environments, which in many cases have been a detriment of boys.

In his practice as a family physician and psychologist, Dr. Sax, has seen a growing epidemic of underachieving boys. Starting in kindergarten they are very often labeled in-attentive, distracted, and with limited focus; often they are put on medication to control their behavior. Dr. Sax's dedication to uncovering what is behind this trend taps into the question of student disengagement and uncovering the factors that are influencing this trend.

There is no right or wrong in this discussion, just the science behind the hardwiring of gender. The past 10 years have proven beyond doubt that classrooms that organize around gender neutral strategies leave out what we have known about our differences. It is once again in the forefront of our thinking as more and more students (primarily boys) seem adrift from our classrooms and in some locations it is now seen as an epidemic.

The good news is that Dr. Sax recommends alternatives to the traditional classroom approach to help dispel the notion that students are not functioning up to par.

Sax's books are mainly about boys because their struggle is so obvious; however, he also describes girl behavior and generally sees it as more conforming at the elementary level because the majority of teachers are female and their strategies in the classroom are a reflection of their gender. By secondary school more of their teachers will be male and more options are available and have a broader appeal to boys.

The basics: Hearing and Seeing

Studies have been used to determine if hearing differences are present at birth or developed over time. Working with premature babies, and with parent permission, soft music was played in their cribs immediately following birth and their responses recorded. The babies were matched in age and weight. Babies who had music played in their crib grew faster, had fewer complications and were able to leave the hospital earlier than those who had no music. Girl babies who received music therapy left the hospital nine and a half days sooner than girl babies who did not hear music. But boy babies who received music therapy did not leave the hospital any earlier than boys who did not hear the music. Another study involved humming to the premature babies — allowing the girl babies to leave the hospital, on average, 12 days earlier than babies who weren't. It made no difference to premature boy babies. Hearing is a brain function, and scientists can measure acoustic brain response in newborns and over time.

Girl babies hear a 1,500 Hz tone about 80 percent greater than the average baby boy does. This is especially important because this range of sound is critical for understanding what others say. Other studies have demonstrated that the female/male differences increase as children get older. Implications for the classroom, keeping in mind that not all boys and girls can be easily categorized by this information; situations vary, teacher styles vary. The important point is to consider the implications that would benefit both boys and girls.

It has been demonstrated that noise levels that distract 11-year-old girls are 10 times softer than noise levels that boys find distracting. Girls won't learn as well in a loud, noisy classroom. If a

male teacher speaks in a normal tone of voice, normal to him, the girl in the front row may feel he is yelling. This is the same when a father is speaking to his daughter. How often have we found ourselves asking our boys or husbands, "Do you hear me, I'm talking to you!" Maybe they don't. Boys will do better if they are in the front of the classroom where their ability to pay attention increases as they can clearly hear what the teacher is saying. For some boys diagnosed with ADHD, they may be distracted when sitting in the back of the room because they can't hear clearly enough to do what was asked of them. In many classrooms today, especially with youngsters who haven't mastered English yet, teachers are using headsets to enhance the clarity of speech, and this may assist boys as well. Seating arrangements where boys sit in the front and in rows may assist them in listening with intention — and without distraction from peers.

Girls and boys see the world differently — not only figuratively, but literally. Regarding vision, a girl's retina is built very differently from the retina of a boy. When a girl and boy look at the same landscape, they are seeing very different images.

How did we arrive at this critical piece of information? A study was done immediately after the children were born and still in the hospital. Babies were given a choice between looking at a simple dangling mobile or at the face of a woman in the nursery who smiled but didn't say anything. All 102 babies were videotaped and researchers, who didn't know the sex of the babies, analyzed their eye motions. The differences were significant: The "boys were more than twice as likely to prefer the moving mobile, while the girls were drawn to the living face. The rods and cones within the retina are structurally different within the male/female eye. Rods are color blind. Cones are sensitive to color. They send their signals to the ganglion cells, some of which are large while others are small. They have different jobs. The large cells are wired to rods and are sensitive to motion. Think of them answering the questions, "Where is it now and where is it going?" They are essentially a motion detector. The male retina has mostly these larger, thicker M (magnocellular) cells, and can track objects anywhere in the field of vision. The smaller cells answer the questions "What is it and what are the colors and textures?" The female retina has predominantly the smaller, thinner P (parvocellular) cells that are concentrated in and around the fovea, the center of the field of vision.

If boys' eye structure is geared to motion, then looking out the window, out the classroom door, watching the classroom action and anything moving will catch their attention — they are wired for that. Looking at a worksheet, in the center field of vision, is better suited for girls' retinas. When giving kindergarten students crayons and a blank sheet of paper where they can draw anything they want, you will see that girls use multiple colors like red, orange, green and brown, drawing detailed pictures, usually of people, plants and animals. In the same kindergarten class, Matthew is frantically scribbling with a black crayon. "What's that?" asked his teacher. "It's a rocket about to smash into the Earth," he said. Girls draw nouns, and boys draw verbs.

Kindergarten used to be a time of play, building structures with blocks, riding tricycles and otherwise moving for the better part of their day. Today, seatwork is front and center, where girls see better, and boys are labeled as attention deficit for not wanting to finish their worksheets.

Is Risk Taking Behavior Hard Wired?

Many boys enjoy taking risks and are impressed by other boys who do as well. They enjoy the immediate thrill of the risk itself and usually the consequences are not a consideration. Boys are more likely to be seriously injured in a variety of accidents, whether on a bike, skateboard, misusing a gun or being lost in the wilderness. A ranger at Yosemite National Park reported that 9 out of 10 boys who get lost end up seriously hurt and 9 out of 10 girls will be found, usually very near where they were lost. Girls are willing to take risks but are less likely to seek out risk taking behavior. Boys overestimate their abilities and girls underestimate their abilities and will be less likely to engage in an activity where they have no experience. It may be that for boys in choosing risk taking behavior the danger itself is exhilarating.

If a boy takes his skateboard over a dangerous jump other boys think it is awesome but girls are more likely to ask, "Why would he want to do that?" If a girl did the same behavior the girls who heard about it would react, 'That is crazy, why would she do that?'

A boy is more likely to take a risk that is dangerous if there are other boys present. Dangerous behavior gives boys a charge that is irresistible. Climb the mountain because it is there, ride the bull at the rodeo, become a motocross racer, snowboard down the steepest hill, use alcohol while underage, experiment with drugs, all elements that have a risky edge to them and are an emotional high. (Girls participate in these activities as well but it is not the norm, and some boys do not participate at all, remember we are all unique.)

Emotions, both positive and negative, are processed differently in boys and girls' brains. Prior to adolescence there are limited connections between feelings and language in both boys and girls. Knowing that you feel mad, or sad or disconnected is your feeling but you may not be able to describe or explain it to themselves or others.

During adolescence the connections between the amygdala (the emotional center) and the cerebral cortex begin their connection, and this connection empowers reasoning, reflection and language. This change occurs only in girls. Boys negative emotions stay routed in the amygdala. And how do these negative emotions get expressed? Playing violent video games is one way.

A comprehensive review of the research on the effect of violent video games states that violent games lead to "aggressive behavior, aggressive cognition, aggressive affect, and cardiovascular arousal." A video game has a more toxic effect than watching violent television because on television you are watching someone else do the violence; in video games you are inflicting the violence. The concept of aggression or violence for girls is not considered 'fun'. "Girls who act aggressively may lower their standing in the eyes of their peers."

Precautions that parents and teachers can utilize when dealing with risk taking behaviors include three points: one: boys in groups increase their risk taking without considering the consequences, so take the whole family, snow boarding, white water rafting, or other organized risk taking opportunities. 2. Supervised is better than unsupervised. Joining a team be it football, soccer, or motocross racing is a supervised risk. 3. Assert your authority. Don't argue. Don't negotiate. Just do what you have to do; remove the video game, take away the skateboard, and take back the cell phone.

In the classroom girls are more likely to do their homework even if the assignment doesn't interest them but because they want the teacher to like them. Boys need to find the homework assignment meaningful to them and having the teacher like them is not a necessity. A boy who works well with his teacher may have his status lowered with other boys or may be considered a geek.

When girls ask for help, she is responsive to a smile and will make eye contact, with a boy sit down next to him and spread out the materials in front of you, so you are both looking at the materials, shoulder-to-shoulder.

Small group learning works for girls because they are more comfortable asking the teacher for help if they need it, if boys get stuck chances are they won't ask for help and may even get rowdy to get attention. Their status in the eyes of the other boys in the classroom is raised if they disrupt the teacher.

Competition and time constrained tasks draw boy's attention and when they have to work as a team to answer a question they collaborate and work hard not to let the rest of the team down.

Girls regard shouting out answers as silly and complain that the 'right answer' focuses on small details instead of the big picture. Moderate stress improves boy's performance on tests and degrades girl's performance.

What does all this mean? According to Dr Sax, "ignoring gender differences does not break down gender stereotypes; ironically, neglecting hardwired gender differences more often results in a reinforcement of gender stereotypes."

The solution is not necessarily to have gender specific classes, although in some situations that has shown to work very well and in some states this is a growing trend; however, the knowing of these hardwired differences can inform and direct what we do in the classroom insuring that students are engaged and eager to participate in the learning. (For more information, visit www.whygendermatters.com)

What does all this mean? According to Dr Sax, "ignoring gender differences does not break down gender stereotypes; ironically, neglecting hardwired gender differences more often results in a reinforcement of gender stereotypes."

The solution is not necessarily to have gender specific classes, although in some situations that has shown to work very well, the knowing of these hardwired difference can inform and direct what we do in the classroom to be sure that students are engaged and eager to participate in the learning.

Think about it.
