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# Instructional strategies within single-gender learning environments

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# Instructional strategies within single-gender learning environments

## **Abstract**

Various instructional strategies can be beneficial in both gender-specific classrooms, as well as co-educational environments. When developing age-appropriate, individualized instruction, it is crucial to consider gender-specific needs that may assist according to certain learning styles. In order to better relate to students of each gender, these practices must be given thoughtful consideration. There are many methods, found in both types of classroom settings have been explored based on practical, research-based experiences from the real-world setting.

**Instructional Strategies  
Within Single-Gender Learning Environments**

**A Research Paper Presented to  
Department of Educational Psychology and Foundations**

**Submitted  
In Partial Fulfillment  
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Masters of Arts in Education**

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## Chapter One - Introduction:

Education of today's youth may occur in a variety of settings, with great variance in numerous factors such as socioeconomic status, inner-city/urban environments, level of opportunities within the surrounding community, experiences of teachers, teaching styles presented, amount of parental support received within a school, and whole-hearted level of caring/kindness demonstrated by staff. One factor that is becoming of more interest to the public, educators, and policymakers is the number of children receiving instruction in a single-gender setting.

At the Dr. Walter Cunningham School for Excellence, there are five such gender-specific classrooms: one all-males 5<sup>th</sup> grade classroom, one all-males 3<sup>rd</sup> grade classroom, one all-females 3<sup>rd</sup> grade classroom, one all-males 2<sup>nd</sup> grade classroom, and one all-females 2<sup>nd</sup> grade classroom. At both 2<sup>nd</sup> and 3<sup>rd</sup> grade levels, an alternative co-ed classroom environment is offered. Fifth grade contains two co-educational classrooms as alternative settings to the all-male classroom. The Dr. Walter Cunningham School for Excellence elementary school is unique and stands alone from others in the district for a variety of reasons which include: staff and student uniforms; year-round calendar; gender-specific division of classrooms; earlier start time for the

school day compared to other elementary schools within the district. These teachers of single-gender classrooms have received explicit training regarding instructional strategies targeted for their specified gender grouping, and attend conferences on this matter on a yearly basis.

*Problem Statement:*

Traditionally, students are taught in an environment where sex, gender, race, and ethnic background are equally distributed. Throughout the 90,000 public schools across the United States, three public schools were offering single-gender classrooms in 1995. Today, a total of 262 schools have embarked this initiative (DeFao, 2007). Recently, focus has been drawn to the single-gender classroom where some researchers say a multitude of barriers are removed simply through the elimination of the opposite gender's presence during instructional time.

*Research Question:*

Research approaches gender-specific classroom environments from both perspectives. Some professionals believe the gender-specific setting harms children, and prevents them from learning to adapt to society as it will be presented later in life. Still, others believe the elimination of certain behaviors and characteristics enhances student learning in a more inclusive

environment. Does the use of the same instructional strategies reap similar academic growth in traditional classrooms as is found in single-gender elementary classrooms?

*Significance:*

Determination of which setting best benefits children involved may serve as an indicator which may shape the direction today's educational system will focus in the near future. As previously mentioned, several researchers believe this gender-specific stance allows students to become immersed in an instructional environment that expands and builds upon their strengths at a very young age.

Developmentally, males and females are able to process and understand math and reading/language concepts at different stages of their early years. By dividing classrooms accordingly, these skills can be enhanced during a developmentally appropriate time in their lives, rather than being introduced at a time where children's brains are not yet capable of comprehension. This may eliminate feelings of failure and lead to greater self-concept in general.

### *Benefits of Single-gender Education:*

Benefits of receiving instruction in a single-gender classroom are widespread. Based on research of brain structure and development, girls mature at an earlier rate than boys. This developmental delay in boys does not allow language and reading skills to progress as early as girls. As a result, teaching reading to young elementary-aged boys appears to be more of a struggle compared with efforts involved with teaching girls. One benefit of separating gender would be taking the opportunity for girls to grasp early literacy skills and apply themselves in ways that boys are not yet capable. By eliminating the opposite gender, these girls would be given the opportunity to enhance these fundamental skills in the areas of language and reading rather than spend time reviewing concepts which are already solidified in girls' schemas.

An additional benefit found in single-gender instruction is lessening the pressure of performing well in front of one another as hormonal changes occur, and confidence levels vary. Teaching girls apart from boys reduces feelings of inferiority and self-consciousness while trying to perform academically in front of their male peers. Girls' self-esteem levels soar

when the distraction of boys within the everyday learning environment is eliminated.

Benefits for boys are just as powerful. When taught separately from same-aged females, these all-male classrooms are able to take on a new structure. Boys' attention spans and ability to remain on task differ greatly from girls; consequently, learning rates are found to differ among the sexes, which may result in better accommodations while receiving their education in separate settings. Also, boys require more physical activity; henceforth, instructional strategies include more movement and kinesthetic approaches than found in all-girl classrooms.

If this matter were to go without notice, education of America's young children would remain as is: traditional classrooms would contain a mixture of sex, gender, race, and ethnic backgrounds. A majority of schools would not offer gender-specific settings as alternative formats of receiving instruction. Benefits of learning in this type of environment may never be properly examined and explored. Children may never be given the opportunity to learn in a comfortable setting where they feel free to take great risks without high stakes being present.

*Definitions:*

**Amygdala** - Almond-shaped group of basal nuclei anterior to the inferior horn of the lateral ventricle of the brain, within the temporal lobe. The amygdala is part of the limbic system involved in emotional processing.

**Arcuate fasciculus** - This fiber bundle has great importance for language. It connects Wernicke's area (phonological recognition) to Broca's area (phonological production).

**Basal ganglia** - Large subcortical nuclear masses derived from the telencephalon and located in the basal regions of the cerebral hemispheres; control movement sequences such as walking, when necessary.

**Cerebral cortex** - External layer covering the brain; contains neurons that promote higher intellectual functions and memory, and interprets sensory impulses.

**Cerebrum** - Upper or main part of the brain, largest part of human brain, controls conscious and voluntary processes; the thinking center.

**Coeducational** - Learning environment that contains both male and female students.

**Corpus callosum** - Connects two hemispheres of the brain.

**Dimorphism** - The existence of two or more different forms within a biological species.

**Frontal Lobe** - Facilitates speech, thought and emotion; produces neurons for skilled movement; more highly active in females.

**Hemisphere** - (Left/Right) way brain is split into halves.

**Hypothalamus** - Controls automatic body processes (heart beat, breathing, temperature); also controls sexuality differences.

**Kinesthetic** - Learning style that is hands-on, involving students while allowing them to touch and feel the object they are learning about.

**Left hemisphere** - Processes language in most people; reading, writing, math, verbal thoughts and memory, temporal, sequential language, linguistic consciousness, conscious self-image, defense mechanisms, projection, self-deception, denial.

**National Association of Educational Progress (NAEP)** - Association also known as "the Nation's Report Card," is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted periodically in mathematics, reading, science, writing, U.S. history, geography, civics, the arts, and other subjects.

**Occipital Lobe** - Lobe found along the back part of the skull or brain; detects and interprets visual images.

**Parietal Lobe** - Part of each hemisphere of the brain between the frontal and the occipital lobes; perceives and interprets bodily sensations such as touch, pressure, pain, and temperature.

**Right Hemisphere** - Interprets emotional contents; tone of voice; facial expressions; gestures; melodic speech; social, musical, visual, spatial, and environmental awareness; unconscious self-image, body image, emotional and visual memory.

**Single-gender** - Learning environment that contains one single gender throughout the classroom.

**Trajectories** - The path that a projectile makes through space under the action of given forces such as thrust, wind, and gravity.

**Temporal Lobe** - Lobe found along both sides of the brain; part of memory storage; recognizes some tones and volume. Associated with aural content, music, and social activities.

**Werencke's Area** - An area in the posterior temporal lobe of the left hemisphere of the brain involved in the recognition of spoken words; links language and thoughts (Gurian, 2001).

### *Organization:*

Throughout the remainder of this paper, several instructional strategies found in various single-gender classrooms will be discussed. These strategies will have numerous researchers' backing, both in case studies across America, as well as those found in classrooms within the local school district. Chapter two will discuss the history of traditional educational settings and the introduction of single-gender learning environments. The research question will be further developed as both sides of educational environments are explored. In chapter three, results from experts and researchers will be revealed through discussions found in various research articles pertaining to this topic. Conclusions, based on research, will be drawn in chapter three regarding whether single-gender instruction contains more benefits than those found in the traditional setting. Chapter four will focus on instrumental strategies that have been proven most effective in both variations of single-gender education.

Chapter five will discuss ways the information from the previous chapters can be applied, in order for all students to reach their full potential.

## Chapter Two – Gender Differences:

### *Introduction:*

The opportunity to learn in a single-sex setting provides an alternative to the traditional classroom setting. This idea is receiving more attention as research on its effects is being performed. Researchers and educators are beginning to approach education from the individualized perspective rather than "one-size-fits-all." This chapter will explore the differences in the human brain, human growth and development, and motivation between the genders.

The biology and chemical makeup of the male and female brains are amazingly diverse. Many differences in formation, rate of maturation, and human development have been found to impact a child's readiness to learn along a specific timeline according to their biological age. Due to discrepancies in human growth and development, boys and girls have been found to learn according to individual styles of learning. Accordingly, Howard Gardener's multiple styles of learning will be discussed throughout this chapter, as well as numerous variations regarding the timeframe which brain development occurs among both sexes.

### *Biological variations in brain formation:*

Several differences have been discovered when researching the male and female brain. Males' brains contain a larger amygdala, which leads to greater aggressive behaviors. Due to the faster engagement of the basal ganglia, levels of physical movement are more increased in males.

There is a thicker cerebral cortex on the right side of the male brain, which is why they are referred to as "right-brained" learners (math, science, spatial relationships and reasoning are significant). In contrast, the female brain contains a thicker cerebral cortex on her left side, which deems the term "left-brained" learners (more successful in language based-learning, listening and communication). Females also contain strong connecting pathways in the brain's cerebellum, which improves language and fine motor skills. The highly active Wernicke's area also contributes to improved verbal communication in females.

Questions have been raised pertaining to why girls and boys are affected differently when faced with the introduction to the school setting of beginning academics. Dr. Leonard Sax, who is an advocate of single-sex learning environments and has performed countless presentations for both parents and educators, states that "Different regions of the brain develop

in a different sequence and tempo in girls compared with boys" (Sax, 2007, 22). Due to this factor, many girls are able to comply to the demands of an early elementary classroom, whereas boys have difficulty sitting still and quietly.

#### *Differences in Connections Within Brain:*

Not only is the brain development occurring in a different sequence with boys and girls, but there is a significant difference in the "wiring" as well. For instance, Sax notes that the language areas of the brain develop before the spatial relations in girls; in boys, it's vice versa. In girls, emotion is processed in an area of the brain that is well connected to the location where language (both verbal processing and speech) occurs - making it easier for girls to talk about their feelings. On the contrary, one of the hardest questions for boys to answer is "Tell me how you feel" due to the separate regions involved within their brains connecting talking and feeling. This type of request makes most boys uncomfortable because "you're asking him to make connections between two parts of his brain that don't normally communicate" (Sax, 2005, 30).

Another differentiation can be found in the patterns within the development of the hypothalamus, which leads to a greater and more

constant sex drive in males. Differences have also been detected in the occipital lobe, which allows males to possess the ability to see better in bright light and females to see better in lower amounts of light. Less data has been found to move through the parietal lobe of males, which allows the brain to "zone out" better and more frequently than females; whereas, the female brain is receiving more data through these lobes which leads to tactile sensitivity. The stronger pituitary gland allows for more rapid "fight or flight" response in the male brain as well. Higher levels of testosterone in the male brain increase levels of aggression, competition, self-assertion and self-reliance. In contrast, higher levels of estrogen in the female brain lowers aggression, competition, self-assertion and self-reliance.

The female brain is unique in many ways as well. For instance, early development of the arcuate fasciculus allows females to speak in sentences at an earlier age than males. The highly active Broca's area and frontal lobe of the brain allows for improved verbal communication in females. More volume of cerebrum found in the female brain allows for multi-tasking abilities. According to a study done by researchers from the National Institute of Mental Health, total cerebral volume peaks at age 10.5 in girls

and 14.5 for boys. This study was considered to be the largest pediatric neuro-imaging study ever performed. (Sax, 2009).

Sax states that "merely placing girls and boys in separate classrooms accomplishes little...Teachers need to understand the importance of differences in how girls and boys hear, see, and respond to different learning styles" (Sax, 2007, 195). He explains that this difference embarks at a very young age: baby boys prefer staring at mobiles, while baby girls enjoy staring at faces (Weil, 2008, 7). "Boys' eyes respond better to movement and direction, while girls' eyes are more affected by colour and texture" (Fread, 2008, 1). It is this difference in boys' and girls' abilities to see and hear that accounts for their variance in performance; not necessarily the difference in how the two groups think.

#### *Developmental Readiness to Learn:*

"Trying to teach five-year-old boys to learn to read and write may be just as inappropriate as it would be to try to teach three-year-old girls to read and write" (Sax, 2007, 18). Sax explains this phenomenon as determining age-appropriate readiness in the area of academics. He has found research that proves young boys would prefer being actively engaged

by running around and playing games rather than sitting still and expected to learn.

Researchers have discovered differing brain maturation rates among boys and girls involving the areas associated with language and fine-motor skills such as handwriting as well as those areas of the brain associated with geometry and spatial relations. Hence, the average 12-year-old girl's brain resembles an average 8-year-old boy's brain when it comes to learning geometry. While researching the art of writing poetry, on the other hand, the brain of the average 12-year-old boy resembles the brain of the average 8-year-old girl (Sax, 2005).

#### *Gender Differences vs. Stereotypes:*

- Boys are "naturally" better at science and math than girls are.
- Girls are "naturally" more emotional than boys are.
- Girls are "naturally" collaborative, while boys are competitive.

#### *Learning Styles:*

According to Howard Gardner's study on learning-style differences, ten areas have been discovered within the gender-specific brain, which contribute to various approaches to learning. These are described in the following table (Gurian, 2001, 44-49):

<b>Areas of Learning-Style Differences:</b>	<b>Male Brain:</b>	<b>Female Brain:</b>
<b>Deductive vs. Inductive Reasoning</b>	Deductive thinkers: move from general to specific	Inductive thinkers: build on concepts
<b>Abstract vs. Concrete Reasoning</b>	Calculate well without seeing or touching	Work well with the use of manipulatives
<b>Use of Language</b>	Work silently, find jargon and coded language more interesting	Use words as they are learning, prefer using everyday language
<b>Logic and Evidence</b>	Hear less and ask for more evidence to support claim	Better listeners, more receptive to new ideas
<b>Likelihood of Boredom</b>	More likely to become bored	Able to self-manage boredom
<b>Use of Space</b>	Take up more physical space when learning	Take up less physical space when learning
<b>Movement</b>	Stimulates boys' brains and reduces impulsive behavior	Do not need to move around as much while learning
<b>Sensitivity and Group Dynamics</b>	Focus on task performance, not on emotions of others	Work well in cooperative settings, sensitive to social interactions
<b>Use of Symbolism</b>	Require more pictures, diagrams and graphs	Require less pictures, diagrams and graphs
<b>Use of Learning Teams</b>	Form structured teams, pick team leaders quickly. Focus on task orientation	Form looser organizations

David Chadwell, follower of Dr. Sax, is the coordinator of Single-Gender Initiatives at the South Carolina Department of Education. He believes teachers need to teach according to these gender differences found in the brain. These variations in the ways boys see and hear should directly influence instructional methods. "You need to engage boys' energy, use it, rather than trying to say, 'No, no, no'. So instead of having boys raise their hands, you're going to have boys literally stand up. You're going to do physical representation of number lines. Relay races. Ball tosses during discussion" (Weil, 2008, 6). Chadwell also emphasizes the importance of connections and relationships among girls. In order to be successful, girls need to establish a connection with the content, their peers, and the teacher. Girls also need to be given the opportunity to talk to one another and share personal experiences that relate to new content.

Males have difficulty transitioning from one task to another, as well as multitasking, according to Gurian. When given a short period forewarning the upcoming transition, they are better able to move between tasks, and the level of frustration is lowered by a great extent (Gurian, 2001, 164).

### *Differences Found in Teacher-student Relationships:*

Different educational styles can be found among girls and boys, as well as differing levels of expectations regarding the teacher-student relationship. Due to such different relational needs, male teachers especially have difficulty understanding behaviors of their female students. Females are more likely to admit the need for help from their teacher and are more consumed with pleasing adults than boys are. Males will only ask the teacher for help if frustrated with what is being asked and they have tried all other options (Sax, 2005, 80).

### *Educational Awareness:*

Dr. Sax's study of gender differences relates to the educational world as well. Girls aim to please adults more often than boys; consequently, they tend to do homework simply because it was asked of them. Boys only have interest in completing this homework if it does not bore them. "Girls at every age get better grades in school than boys do, in every subject - not because girls are smarter, but because girls try harder" (Sax, 2007, 27). Sax believes that if boys would simply be placed into "boy-friendly classrooms," this would be far more effective than attempting to treat this "inattentiveness" with medication (Freaan, 2008, 1).

*Motivation and its effects:*

Motivational differences can be found involving males and females from an extremely young age. However, the college years are where this "gender gap" in motivation can truly be recognized. The following table demonstrates enrollment of males versus females in four-year colleges and universities in the United States:

<b>Year:</b>	<b>Male:</b>	<b>Female:</b>
1949	70%	30%
1959	64%	36%
1969	59%	41%
1979	49%	51%
1989	46%	54%
1999	44%	56%
2006	42%	58%

Dr. Sax has spoken to numerous audiences containing parents, educators, health professionals, and others who work with young boys. One factor he finds extremely troubling is the lack of passion towards any activity they are pursuing. "The boys I'm most concerned about don't disdain school because they have other real-world activities they care about more.

They disdain school because they disdain everything. Nothing really excites them" (Sax, 2007, 7).

Another reason boys and girls react differently when maturing to school-age is linked to motivation. Girls aim to please adults and are able to share perspectives of mature thinkers. Boys are less motivated to please adults and are not capable of this higher level of reasoning and thinking (Sax, 2007, 24). Sax states his concern towards closing this achievement gap among males "In the co-educational classroom so many of the choices we make are to the advantage of girls, but disadvantage boys. The fact that girls are doing well is not the problem. The problem is, why can't their brothers do as well?" (Freaan, 2008, 1)

#### *Noise Levels and its Effects:*

"Girls are bothered by extraneous noise levels 10 to 40 times lower than the levels that bother men. Girls are aware of what is going on around them. Boys are oblivious" (Freaan, 2).

Within a co-educational learning environment, Freaan discovered that noises that may bother and distract girls from learning would not even phase young boys. For example, if a boy were tapping his pencil and stretching loudly at a nearby desk, most girls would hear this and become distracted

immediately. On the contrary, these noises would go "unheard" by surrounding young boys. One result due to this variance in hearing ability is the extremely high number of boys that are over-diagnosed with Attention Deficit Disorder (ADD).

In a study led by Hiroaki Sato, it has been confirmed that girls demonstrate a superior hearing at higher frequencies than do boys. This can be directly related to anatomy in the inner ear due to girls' cochlea being described as shorter and stiffer than a boys' cochlea. This type of cochlea accounts for "a more sensitive frequency response" (Sato, 1991, 1).

*Summary:*

Dr. Leonard Sax has discovered many factors that have contributed to human growth and development. Throughout his research, he has determined numerous differences biologically, cognitively, and emotionally, in relation to how boys and girls learn. These differences attribute to the need for specific instructional strategies to be held in place within single-gender learning environments.

Motivation occurs in various forms among boys and girls. The source of motivation varies among the two sexes, and educators must be made aware of these differences in order to best serve today's youth. Stress

also has varying impacts on boys and girls, which also needs to be taken into consideration when teaching a specific gender. Noise levels found within all-males versus all-females classroom settings have been found to vary based on underlying motivational and survival techniques. Each of these components must be carefully considered while approaching the setup of a single-gender classroom learning environment to bring success to all involved.

## Chapter Three - Gender-Specific Strategies:

### *Introduction:*

Chapter three will discuss various strategies behind the single-gender classroom setting, including benefits found in both types of environments. When linking instructional style to particular abilities within the brain, all individuals would benefit from approaches tailored to specific learning needs. Stress and outside influences and its effects on both genders will be discussed in chapter three as well. A guide designed with the purpose to assist in developing single-gender-friendly classrooms will be shared.

This chapter will also share opposition versus those advocating in researching this phenomenon of single-sex education to be reviewed. This controversial subject area has many followers who believe single-sex education is the answer, while others oppose and are offended by this ideology. The importance of parental support in order to better enhance learning under these conditions will also be shared in chapter three.

## *Supports for Specific Genders:*

### The Ultimate Elementary Classroom for Both Boys and Girls:

#### **Boys:**

- Support teacher training in male-brain development and the male learning pace, which is often different than the female's.
- Use boys-only groups when needed.
- Encourage close bonding between teacher and student.
- Enjoy and navigate normal Huck Finn male energy toward academic focus and good character.
- Pay special attention to the more sensitive, less competitive or aggressive males in the classroom.
- Advocate for boys' issues in the school and community.
- Allow physical movement, as well as engaging in physical activity; from hugs and touch when appropriate to getting down and dirty at recess once in a while.
- Be sure there are men in the boys' educational life, especially from fifth grade onward.
- Before third grade, never allow chairs to be kept in a row or nailed down, and always make available as much space as possible.
- Offer lots of storytelling and myth making in the classroom to help the male brain develop its imaginative and verbal skills through story making.
- Give boys lots of things to touch and otherwise sense, especially when reading and writing are being taught.

#### **Girls:**

- Train teachers on how the female brain learns.
- Teach early elementary math by manipulatives and objects; teach higher levels of math not just on the blackboard, which requires abstraction and favors male brains, but also through graphs, charts, and written material on paper.
- Provide concrete manipulatives to touch and otherwise sense, especially when science is being taught.
- Tell stories and use images of girls and women who are competent, and who model varieties of mature female behavior.
- Offer girl-only groups when useful.
- Give special access to technology, computers, and the Internet and a little extra encouragement to use technology; master it, and lead with it (beginning around third grade, keeping in mind that intense computer use before about age nine may be hazardous to brain development).
- Match math and science lessons with journal writing expression so that girls can use their writing strengths to help them process math calculations and science data.
- Encourage healthy competitive learning as well so that girls do not end up disadvantaged compared to boys (who may naturally seek competitive activities in other parts of life).
- Provide healthy and constant feedback, so that girls get encouragement and have high expectations from teachers (Gurian, 2001, 196).

### *Instructional Strategies:*

Many girls benefit from the opportunity to learn in a variety of learning styles, according to Gurian (2001, 177). This can be directly related to the ability to multi-task, which is prominent in female brain development. Often times, boys will discover one method in learning to be successful, and stick to this. Providing students with this variety in instructional approaches allows each individual to determine what works best for them, and is beneficial for *all*.

Boredom is often times the result of learning material that is too advanced for the particular student. This boredom becomes a "mask" due to the brain "defending itself against a subject in which it feels it is inadequate" (Gurian, 2001, 181).

### *Stress and Human Bonds:*

In the co-educational setting, boys tend to receive more frequent teacher interaction than do girls. Gurian states "they appear to have clearer bonds with the teacher. However, the bond is often a more negative one" (Gurian, 2001, 136). Girls usually receive more positive interaction, but in a less frequent manner than their counterparts.

When faced with a stressful situation, girls are more likely to discuss their feelings and talk about what is causing them the stress. Boys, on the other hand, bring this stress to school, which results in seeking negative attention.

**Girls' Friendships Have Distinct Values and Exhibit Different Dynamics Compared with Boys' Friendships:**  
(Sax, 2005, 84)

	<b>Girls</b>	<b>Boys</b>
Friendships form among...	Two or three girls	Two to twelve boys
Friendships focus on...	Each other	A shared interest in a game or activity
Games and sports are...	An excuse to get together	Central to the relationship
Conversation is...	Central to the relationship	Often unnecessary
Hierarchies...	Destroy the friendship	Build and organize camaraderie

Stress has a large impact on human beings as well; both sexes respond differently to this in every mammal studied by scientists. According to Sax, learning is enhanced in males when placed in a stressful situation. Their counterparts, females, react in an opposing manner: this same stress impairs their learning (Sax, 2009, 3).

*Advice for Parents:*

Common same-sex friendships are different among girls and boys. Many times, girls base their levels of friendship on the scale of "being together, spending time together, talking together, going places together" while boys' friendships are based on a "shared interest in a game or an activity". Sax terms this difference being "girls' friendships are face-to-face while boys' friendships are shoulder-to-shoulder" (Sax, 2005, 83). Females base these relationships on conversation and confidentiality, while males focus on a specific activity. This creates more understanding for parents and educators regarding stress and common reactions: girls look to each other for support and comfort and prefer to be surrounded by their friends, while boys would prefer to be left alone.

"Parents love the idea of single-gender classes and that they are looking forward to their children coming to school to pay attention to their

lessons and not each other" was a comment made by the assistant principal of Lewis Frasier Middle School in Georgia (Gurian, 2005, 205). Other parents have commented that their boys are benefiting more from school work-time; there is less of a distraction from the girls since they are removed from the classroom, and their boys are better able to focus on academics. These components are pertinent in creating a successful single-gender classroom environment.

#### Tips for Parents: (Gurian, 2001, 199)

- Support and advocate for structural innovations, such as year-round schooling, smaller schools, multigenerational classrooms, and a lower teacher-student ratio.
- Advocate and even help fund (privately and by public lobbying) teacher training in gender and brain differences.
- Get two to three professional opinions before putting a child on Ritalin, Prozac, or another psychotropic medication.
- Continue reading rituals in the home, but now augment them with writing rituals - making sure a child writes thank-you notes, birthday invitations, letters, e-mails, and perhaps a journal.
- Instill character education in the home, by example, didactic instruction, and spiritual storytelling.
- Be consistent with discipline systems in the home, learning what system the school is using and melding with that when possible.
- Use brain-based tricks of the trade, such as giving certain boys sixty seconds to fulfill a demand, and giving some of the girls extra verbal encouragement.
- Stay in constant contact with teachers, volunteer for school activities, and become a friend of the school.
- Plan computer, television, and other technology use to best augment brain development.
- Become more familiar with aggression nurturance and how it works, guiding it as well as we guide empathy nurturance.
- "Be there". Become trained in brain and gender material alongside teachers.

Based on this research performed by Gurian, every single classroom across America should be focused on teaching boys and girls, not just children. This can be done in a gentle, yet intense, manner. Teachers in the coeducational environment should provide a classroom where "bonds run deep, conflicts are resolved, no child is left behind, any gender biases are noted, and teachers are trained to move beyond hidden prejudice against either boys or girls" (Gurian, 2001, 198).

*Advocates for Single-sex Education:*

Advocates of single-sex public education have faced an extremely challenging audience, and have found that both boys and girls benefit from this separation among the sexes. Several major studies have been performed around the world, including the United States, Canada, England and Australia. Students in single-gender classrooms in Australia have been found to perform between 15 and 22 percent higher than their coed counterparts. This information was obtained by the Australian Council for Educational Research, where 250,000 students were studied in 53 subject areas for a period of six years (Gurian, 2005, 197).

In British schools where single-gender classrooms are offered, not only have students performed better academically, but researchers have

seen a drastic improvement in students' attitudes toward learning! This has occurred across the country, and has been reviewed by observing over 800 public schools' test scores.

Advocates of single-gender education also discuss the importance of allowing children to learn as individuals. When taking the opposite sex out of the educational equation, students are better able to focus on the task at hand. Dr. Bruce Cook from Australia reports that:

We can concentrate on their learning style. In co-ed, boys tend to adopt a quasi-masculine attitude because girls are there. They feel they have to demonstrate their emerging masculinity by gross macho over-reaction. In boys' schools, they can participate in anything irrespective of any perceived gender bias, whereas in co-ed schools you get boys who don't even try moving into those areas, the choir or debating, because they're fearful of being labeled gay or a sissy (Gurian, 2005, 202).

### *Opposition of Single-sex Education:*

Opposition towards single-sex public education can be found across America as well. Districts are required to provide a certain rationale in support of their educational decisions, as well as reviewing single-educational programs every two years and maintaining voluntary placement within these classrooms (Weil, 2008, 4).

One of the disadvantages that can be found with single-sex education is that it can be "perceived as going back to the bad old days of 40, 50, or 100 years ago" (Eidemiller, 2009, 3). In order for single-sex education to be

successful, teachers need to be properly trained and parents need to be aware of options that will serve their child in the best way possible.

It is crucial that parents be given the choice for their child's placement. At the Dr. Walter Cunningham School for Excellence, there are single-education settings as well as co-ed settings at these grade levels involved, which gives parents this power of choice. "Girls-only schools are best for some girls and boys-only schools are great for some boys, but not all, and every parent should have a choice" declares Leonard Sax, when defending the parents' right to choose (Eidemiller, 2009, 1). He assures people that the NASSPE "does not assert that single-sex education is best".

*Summary:*

Howard Gardner's studies on learning styles confirm differences in basic needs of both males and females. Some of these discussed were noise level, physical movement, amount of space necessary, and ability to work cooperatively in a group setting. Many times, females must establish a safe and positive relationship prior to learning, which occurs at a much faster rate than with males.

When introduced to single-sex education, parents must be given a choice regarding their child's placement in a single-sex versus co-educational

setting. Chapter three discussed a number of ways that parents may become active participants in their child's education, particularly within a single-gender environment. Ways that parents and teachers may both approach each sex in a unique manner were further reviewed.

## Chapter Four - Instructional Strategies:

### *Introduction:*

Chapter four will discuss instructional strategies that have been deemed successful with both males and females in single-gender settings. These strategies are catered to specific needs found within each gender's realm of learning. Boys have more need for physical movement, louder noise levels, competition, etc. while girls work well in cooperative groups and focus on relationships within their learning environment. Males need higher levels of energy present in order for their brains to reach their highest potential.

Furthermore, key principles needed to adjust instructional approaches in both male and female classrooms will be determined in chapter four. Research has demonstrated the need for particular elements within all-males and all-females groupings. These key elements will be further discussed in great detail in chapter four.

### *Research-based Strategies:*

Research has shown that certain key elements must be present within a single-gender classroom in order for students to reach their optimum learning potential. For boys, it is crucial to encourage close bonding between the teacher and student, since girls are more ready to develop these bonds

naturally. Boys must be encouraged to initiate this closer relationship since it is not embedded within them. Boys *need* physical movement and are better able to learn after engaging in physical activity: this stimulates their brains and allows them the opportunity to remain active while being presented with academic learning opportunities. Boys require more physical space than do girls; they are able to organize and compartmentalize when given this extra room to expand their thinking. Boys also respond well to opportunities to tell stories within the classroom; this allows further development of their imagination and verbal skills through storytelling. Lastly, boys benefit when given manipulatives to touch and sense - especially during the time when reading and written language is being taught.

Girls have different elements which aid to their success within the classroom. In order for girls to be successful, they need these same manipulatives to be included within the instruction of science. This gives them a chance to explore new material in a variety of ways. Girls need more feedback than boys do, due to the impact of encouragement reflecting on their academic performance. Girls also benefit when math and science lessons are matched with journal writing. This allows them to use their writing skills as a strength in processing math calculations and science data.

Two successful teachers of second grade single-gender classrooms at the Dr. Walter Cunningham School for Excellence share that in order for students of specific genders to achieve to their highest ability, the following must be given careful consideration (Duncan & Schmidt, 2009):

### **Different Learning Styles for Boys and Girls:**

- Boys can think better if they are able to move around.
- Boys respond positively to team competition in academics.
- Boys do well with high stakes tests, time limits, and cooperative learning.
- Girls need unconditional positive reinforcement.
- Girls need to be encouraged to be risk-takers when performing academic tasks.
- Girls respond well to group work, real-life applications of their lessons, and relaxing music.

When each of these components is carefully considered by teachers within a single-gender classroom setting, there is great opportunity for all children to succeed. Following is a listing of these significant components with greater detail of their importance within today's classroom.

### *Bonding:*

Girls need to meet one of the basic needs "sense of belonging" - in order for them to feel accepted and willing to open up and learn new things. If this need is not met, girls are unable to reach their maximum potential in the classroom, as well as outside within personal relationships. Girls seek adult and peer approval in ways that differ from boys, and classroom time is necessary to establish these relationships in a positive manner (Gurian, 2001, 177).

Since this is a more natural need for girls, teachers of all-male classrooms need to help encourage these teacher/student "bonds" within their setting. Boys do not depend on these relationships nearly as often as do girls; however, a certain level of trust and care must be established in order for the child to truly develop to their maximum potential.

### *Movement and Effects on Brain:*

Males need higher levels of energy present in order for their brains to reach their highest potential. Females are able to sit for longer periods of time and focus on task for greater lengths. Therefore, it is necessary for boys to have multiple opportunities for physical movement on a regular basis.

"Given high male metabolism and energy level, on average boys need physical release in order to self-manage behavior more than girls do" (Gurian, 2001, 136). This is imperative to allow boys time to exercise and be active for a period of time on a routine basis. This recess is also important for girls, in a whole new way. Because girls' self-esteem is based upon friendships and the sense of belonging, girls need non-structured time in order to develop these relationships.

According to Gurian, in order to grow, the human brain needs to have physical movement. The mind requires both fine motor and gross motor tasks, which encourage development in various regions within the brain. Movement has been found to stimulate the imagination and learning due to an increase in the flow of blood within the brain's neocortex (Gurian, 2001, 149). "Blood flow to the top of the brain does indeed increase when the body moves in space. Movement of blood - glucose - increases in limbic areas of the brain, where emotional processing occurs.

It has been found that allowing a child to move around the room while talking about painful or emotional instances sometimes allows more emotional processing to occur simply due to this extra movement.

Sax encourages educators to allow boys to be more active in their learning environments (tapping the table, jumping excitedly out of their seats to give an answer, etc.).

### *Space:*

Space is another major component for boys. When males are working on a particular project, they need greater amounts of physical space than do girls. This need for space can be reflected in classroom seating charts comprised of males only. Students will be found in flexible rows where there is ample work space on either side of them. It is important for boys to have plenty of personal space so they can manipulate objects and sort out their thoughts in an easy manner.

### *Storytelling / Journaling:*

The use of storytelling is a great tool to accelerate boys' abilities to verbalize their thoughts. By allowing myth making and storytelling to become more evident in everyday learning opportunities, these boys are able to explore their imaginative and creative side. Throughout this process, their verbal skills are becoming more enhanced as they verbalize their thoughts and formulate ideas into words (Gurian, 2001, 181).

Girls are typically more talented in the area of verbalizing as well as journaling. If these skills in language are used appropriately, girls are encouraged to explore science and math in more a familiar and comfortable manner. By placing the emphasis on journaling about such topics, girls are able to use these strengths to help them process science data and math calculations. Again, the importance is building upon their strengths in hopes of allowing new information to enter in their brains.

#### *Use of Manipulatives:*

The opportunity for students to manipulate objects while learning new information allows a clear explanation and helps children make connections between what they have heard to seeing it before themselves. Both sexes benefit from the use of manipulatives in their daily learning; girls especially need these during math and science lessons, while boys need these manipulatives moreso during reading and writing. When the human brain is able to connect these happenings while learning styles overlap, there is a higher rate of retention and knowledge is better retrieved in the future (Gurian, 2001, 183).

### *Feedback / Processing time:*

Females are more verbally expressive than males, and require more time to sort out their thoughts and feelings. Girls need longer periods of "wait time" after asked a question; this longer period of silence allows them time to process what is being asked and formulate their thoughts into sensible words.

### *Noise Level:*

Research has proven that girls are able to hear better than their counterparts; males need to be spoken to in a louder voice than do girls. Many times girls may feel threatened or intimidated by this approach, whereas boys' levels of adrenaline are seen increasing boys' performance levels.

### *Competition:*

Males thrive on this competitive aspect of education. Anytime a learning opportunity involves a race against one another or even the clock, boys are inspired to perform better than if simply given a task to perform. Testosterone levels soar as competitive words and actions are demonstrated within the learning environment. This adrenaline rush assists boys in seeing more purpose behind their learning, and encourages them to "win" by proving

their abilities accordingly. By taking risks within their learning environment, boys are able to gain more of a sense of belonging and when successful, will instill this knowledge into long-term memory. Girls also need a healthy amount of competition so they do not end up disadvantaged; though, this is not a natural need that must be fulfilled among girls.

### *Importance of Teacher Training:*

When single-gender classrooms are being offered in the coeducational environment, it is pertinent for teachers involved in teaching students of a single gender to be properly trained. Attitude is everything as well! Teachers who do not have their heart involved in the type of commitment that is necessary to be successful in these single-gender environments are not going to make as strong of an impact as those who truly believe that gender differences are valid, and that various approaches will increase student performance (Gurian, 2005, 204).

Students attending the Jefferson Leadership Academy in California were seen to improve test scores dramatically. Staff directed this improvement to "the single-gender innovation, adequate training of teachers, and to yet another element in success: involvement of parents" (Gurian, 2005, 204).

*Summary:*

Key components in the development of single-gender environments that truly correlate to gender specific needs have been determined through research findings as well as experiences provided and shared by teachers in this type of classroom. These include bonding, movement, the use of physical space, storytelling, use of manipulatives, feedback, noise level, and competition. Chapter four discussed each of these key components in detail, providing reasoning to the importance of each.

In order for single-gender classrooms to be a success, teachers and parents must be well aware of these variances in learning styles and ability levels found at certain ages. In chapter four, the human brain's need for physical movement was introduced. This is particularly true for males; motivation and participation have been seen to increase when boys are given more frequent opportunities to move around during instructional periods.

When single-gender classrooms are being offered in the coeducational environment, it is pertinent for teachers involved in teaching students of a single gender to be properly trained and interested in servicing this type of classroom. In order for single-sex education to be successful, teachers must be also be held accountable for their actions within this type of

learning environment. Learning styles must be observed and correlate to specific learning needs of involved individuals. These pre-determined qualities noted among males and females can be of great assistance to adults working with children of both sexes.

## Chapter Five - Applications within My Classroom:

### *Introduction:*

After reading and researching single-sex classrooms and their impact on children of both genders, I have found several instructional strategies that I would like to incorporate into my daily classroom. Because brain structure and processing have been proven to differ among both sexes, I feel that it is important to approach children in an individual-needs based manner. Many strategies have been proven successful for both males and females, and several strategies are gender-specific. I have already introduced new approaches to learning within the walls of my classroom, and look forward to improving the educational approach I offer to students within my reach.

A number of the instructional strategies introduced in chapter four will be discussed further throughout chapter five. I will provide more of an explanation pertaining to the decisions I have made based upon researching single-gender environments.

### *Personal Applications within My Classroom:*

In chapter four, eight instructional strategies were shared that benefit males-only, females-only, or both sexes. I have chosen five

instructional strategies that I would like to incorporate into my classroom, based on this research. In order to adjust my instructional approach, these five strategies will be shared in depth.

*Movement:*

An instructional strategy that I am newly incorporating into my classroom is the use of exercise balls to allow boys within my small groups to have more opportunities for physical movement. After researching and discovering the importance of physical activity and its correlation with brain-engaged behavior, I have committed to the use of these exercise balls to replace chairs in my classroom. By allowing students to move more freely, I feel that brain activity will be more continuous, and these students will reap many benefits from this change in our learning atmosphere. It has been proven that children who are hyperactive feel the desire to tap or fidget more-so than children that have not been diagnosed. In order to redirect these distractible sounds and actions, this new opportunity for moving and balancing will channel energy in a more positive way.

*Space:*

I have also keyed into boys' need for more personal work space. When giving an assignment, I require students to remain in their assigned seats.

Once the "lecture" period is over and individual work time is given, students are given the opportunity to move throughout the room to a reasonable location, apart from their peers, where they may work. This spreading allows students to determine a study space for themselves, free of distractions, and allows the children to maintain focus while they work independently.

#### *Use of Manipulatives:*

Something that is already prevalent within my special needs classroom is the use of manipulatives. As research states, both sexes are able to reap benefits from being given the opportunity to touch and sense objects in hopes of better shaping their learning. In my classroom, I try to include a variety of learning approaches on a daily basis. I know that many of my students are visual learners, so I have incorporated multiple visuals. I am trying to be more conscious of auditory learning preferences as well as the use of manipulatives. This takes more teacher preparation time, which is a limited resource, but is very beneficial towards student success. When students can manipulate objects associated with their learning, it is incredible to witness the connection that they are making and to see that "light bulb moment" as they reach a new discovery.

### *Feedback / Processing time:*

Longer processing time is something that has always been a part of my instructional technique since I work with students with learning disabilities. I have come to the conclusion, after much research, that many strategies that are useful with children who require longer processing time are also beneficial with boys. After information is heard, it is pertinent to allow students an opportunity to let this settle in and become applicable.

The use of visuals is also beneficial while teaching students of both sexes. According to Gardner, each individual learns according to their own personal preferential learning style, and this is true of people of all ages. When given the opportunity to see as well as hear newly learned information, much sense can be made - especially when material is above independent learning levels. The use of visuals, such as posters, graphic organizers, charts, etc. is crucial in order for my students (boys especially) to process this information. Recently, I have made a more conscious effort to include these visual supports on a daily basis within my instruction, and have seen great improvements in individual progress.

### *Summary:*

Various instructional strategies can be beneficial in both gender-specific classrooms, as well as co-educational environments. When developing age-appropriate, individualized instruction, it is crucial to consider gender-specific needs that may assist according to certain learning styles. In chapter five, instructional strategies that I am currently incorporating into my daily practice were discussed. In order to better relate to students of each gender, these practices must be given thoughtful consideration. There are many methods found in both types of classroom settings have been explored based on practical, research-based experiences from the real-world setting.

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