

**An Analysis of Gender Differences
And Performance in the
Elementary School Classroom**

**Willie Davis, III – Student Researcher
Jenifer L. Moore, Ph.D. – Faculty Mentor
Discipline – Elementary Education
July 10, 2009**

To

Kelli Davis

and

her 2008-2009 fourth grade class

Thanks for your inspiration, support, and encouragement.

Abstract

The information provided in this study supports the idea that male and female students exhibit different learning behaviors. This literature review analyzes the three commonly recognized learning styles and preferences of male and female elementary school students (visual, auditory, and tactile/kinesthetic). Reported gender-specific behaviors of each sex are included in this study. Learning environments that cater to male and females are discussed as well. Male and female performance on standardized tests are compared and contrasted. Specific information related to the learning preferences of male and female students and the impact on learning outcomes is also provided. Finally, a discussion related to the implications for classroom teachers is offered.

“As a future educator, it is important that I understand learning styles and preferences of students. If educators can’t identify their students’ learning styles, it is impossible to help them be successful in the classroom. Because everyone’s brain does not develop at the same rate, some skills we excel in and others we do poorly in. I became interested in gender differences and performance while I was doing a field observation at Montevallo Elementary School. I noticed that the academic performance of my male and female students was somewhat different. This led me to study the finding of other researchers in my discipline. By using other researchers findings, I was able to reach a conclusion about gender differences and performance in the elementary school classroom.”

Willie Davis, III
University of Montevallo (Montevallo, AL)
College of Education
Teacher Candidate

There are obvious differences in males and females with perhaps the most apparent being the outward appearance and genetic make-up of each sex. Because of hormones and the genes that are inherited, males and females function differently, adapt to their surroundings differently, and follow particular behavior patterns. In addition to genes affecting a person's overall appearance, they contribute to how individuals learn (Grossman & Grossman, 1994). Males and females navigate toward different learning styles and have diverse learning preferences. Both sexes tend to use gender-specific learning styles (Grossman & Grossman, 1994). What is a learning style and how is one acquired by an individual? These are important questions that educators must consider while developing lesson plans and introducing concepts to students.

Learning styles are different ways that individuals learn or take in information (Snipes, 2009). There are three commonly recognized learning styles: visual, auditory, and tactile/kinesthetic (Snipes, 2009). Visual learners learn best by taking information through their eyesight. These learners are known to read a lot and keep many written records (Reading Master, 2009). Auditory learners learn best by hearing information. These learners are much more attuned to sound, may be more aware of environmental sounds than visual or tactile/kinesthetic learners, and generally love to talk (Reading Master, 2009). Tactile/kinesthetic learners learn best by experience. These learners like to do hands-on activities and grasp concepts by engaging in them (Reading Master, 2009). Previous research has shown that about one-fifth of people will find one learning style dominant compared to the other two (Grinder, 1989). Perhaps this is the period in which individuals are exploring different methods of learning.

From the time individuals are born, they are eager to discover the world around them. Individuals go through a series of predicted stages in which our bodies develop and we acquire knowledge. The brain continues to develop at a constant rate and our curiosity grows stronger

each day. Individuals begin to start using our senses (see, touch, smell, taste, and hear) to figure things out.

As people grow older and begin to receive instruction from certified teachers, we continue to use our individual learning styles to understand material being presented to them. It has been suggested that males and females have different achievement levels (Grossman & Grossman, 1994). Males have been known to outperform females in fields such as mathematics (Grossman & Grossman, 1994; Mann, 1994). Females tend to outperform males in areas such as reading and language arts (Grossman & Grossman, 1994; Tinklin, Croxford, Ducklin, & Frame, 2001).

One reason for these outcomes is behavior. One major distinction between boys and girls is that boys are seen to be assertive and aggressive (Grossman & Grossman, 1994), while girls are typically more mild-natured (Grossman and Grossman, 1994). Males have been noted to cause trouble in the classroom (Grossman & Grossman, 1994). “Females hold more positions in student government and are more often class valedictorians” (Eggen & Kauchak, 2007, p.117).

It is important to consider the environment individuals are in while learning, because it can affect them in many ways, including how well or poorly they perform. In order to fully understand the learning styles and preferences of male and female students, it is important to know which learning styles each sex prefers or is drawn to.

Genes play an important role in the way individuals learn (Grossman & Grossman, 1994). The difference in the male hormonal system and the “lateralization and specialization” of the male brain contributes to a number of the males’ reported gender and learning differences (Grossman & Grossman, 1994). The male species carries the sex hormone testosterone. Grossman & Grossman (1994) suggest that high testosterone levels affect males directly and

indirectly. The direct effect of hormones cause males to act differently in the following areas: activity levels, assertive/aggressive behavior, and emotional reactions (Grossman & Grossman, 1994). “The indirect effect predisposes males to prefer and engage in activities well-matched with their different biological make-ups (Grossman & Grossman, 1994).”

According to theory, hormonal differences in activity needs predispose males to select toys such as block, vehicles, and so on, as well as outside sports and games that coincidentally provide more opportunity for them to practice visual-spatial skills (Grossman & Grossman, 1994, p. 60)

According to Grossman and Grossman (1994) males do well in some areas and poorly in others because of the different activities they engage in. Cook (2006) suggests that males are under-performing in school, compared to their female counterparts. “Boys are now a new subgroup, and their failure to achieve is causing ripples through the education community (Cook, 2006, p. 4).” This is not a new concept. Cook (2006) states that this has been a problem for approximately twenty years. Compared to girls, boys have been outperformed in school since the 1980s (Cook, 2006). Boys’ lack of performance on homework is blamed on schools, which increasingly rely on homework as a measuring stick for good grades. (Grossman & Grossman, 1994) argue that males learn better in impersonal situations. Although research shows that males are being academically outperformed by females, there are areas where male students outperform their female counterparts (Grossman & Grossman, 1994). In the past, male students outperformed female students in mathematics-related fields (Tinklin, Croxford, Ducklin, & Frame, 2001). Male students also outperform female students in skills and computer literacy (Grossman & Grossman, 1994). Additionally, male students begin to outperform female students on science tests during middle school. (Grossman & Grossman 1994) “Many research studies on gender differences in

science help to illustrate the differences between boys' and girls' science experiences in school and they indicate that boys have more opportunity for participating in science activities than girls do" (Alexxopoulou & Driver, 1997; Kahle & Lakes, 1983; Stark & Gray, 1999 as cited in Carrier, 2009, p. 4). There is also evidence that male students do better on multiple-choice tests than female students (Tinklin, Croxford, Ducklin, & Frame, 2001). Research has indicated that boys learn better in outdoor environments and demonstrate greater knowledge of the environment (Carrier, 2009). Tinklin, Croxford, Ducklin, & Frame (2001) has shown that peer pressure on some boys causes them not to do so well in school "Boys who were academically successful were seen as "uncool" and could suffer for it among their peers (Tinklin, Croxford, Ducklin, and Frame, 2001 p. 8) As a result of peer pressure, boys were reported to limit their academic performance (Tinklin, Croxford, Ducklin, & Frame, 2001). This may be a reason why boys are assigned to learning and behavioral support more often than girls. "Boys are two times more likely than girls to be diagnosed with a learning disability than girls (Tinklin, Croxford, Ducklin, & Frame, 2001)" Research on classroom interactions shows that male students tend to dominate the classroom in whole class settings. "They contribute more to discussions, attract more attention through misbehavior and tend to dominate the physical settings (e.g. using computers, doing experiments) (Tinklin, Croxford, Ducklin, & Frame, 2001)." Teachers have been reported to view male students as ill-mannered, competitive, disruptive, over-confident and inattentive in class. Some students believe that teachers punish boys more harshly than girls (Tinklin, Croxford, Ducklin, & Frame, 2001). William Pollack, professor of psychology at Harvard University states (as cited in Cook, 2006), "Up until fifth grade, a boy needs four to five recesses a day,"(p. 5). Boys often feel abandoned and brainless because if they cause trouble, people want to associate their behavior with an emotional disturbance and suggest medications.

If he is a discipline problem, then we look for ways to have him diagnosed and put on medication. And people wonder why boys feel misunderstood and stupid” (Cook, 2006)

Females have a developmental edge over males from birth (Mann, 1994). Girls develop faster and obtain fine-motor skills at an earlier age than males (Eggen & Kauchak, 2007). Some research indicates that girls have been outperforming boys on school examinations since the mid-1970s (Tinklin, Croxford, Ducklin, & Frame, 2001). Some educators agree that female students learn best in interpersonal situations. (Grossman & Grossman, 1994) Although females achieve great academic success at early ages, research shows that they rely more on adults when they enter school (Mann, 1994). It has been reported that females achieve more in the presence of adults than when adults are not present (Grossman & Grossman, 1994). This may be due to interdependence being encouraged more in males than in females (Mann, 1994).

Female students are more confident than male students in courses such as reading. ”This is due to brain hemispherical specialization in areas such as verbal, visual-spatial, and mathematical reasoning which occurs earlier in females (Grossman & Grossman, 1994). Grossman & Grossman (1994) indicate that the early development of the female brain and greater hemispherical specialization allows females to strengthen their verbal skills. Evidence from the Early Intervention Programme (EIP) shows that, on average girls had higher reading scores than boys at the start of 1st grade, and at the end of 3rd grade (Fraser *et al* 2000) as Quoted in Tinklin, Croxford, Ducklin, and Frame, 2001). A study by the Assessment of Achievement Programme (AAP) shows that girls are performing consistently better than boys in reading and writing in elementary school (Scottish Executive, 2000 as Quoted in Tinklin, Croxford, Ducklin, & Frame, 2001).

In mathematics-related courses, which are thought to be male dominated, females tend to

attribute their poor performance to internal factors such as lack of ability and their success to external factors such as luck (Grossman & Grossman, 1994). Educators suggest that females who score lower than males on mathematics achievement tests are not less-skilled mathematicians (Grossman & Grossman, 1994). Instead, female students may become anxious while taking the test (Grossman & Grossman, 1994). Researchers question the validity of female math test scores because some believe the tests may be biased against females (Grossman & Grossman, 1994). Females' math scores may be due to the fact visual-spatial and mathematical reasoning develops later than their skills. "Early hemispherical specialization occurs too soon in females for them to develop visual-spatial skills and mathematical reasoning to their full potential (Grossman & Grossman, 1994 p. 61)." Some educators believe that females' learning is enhanced when they and their teachers collaborate to evaluate their experiences together (Grossman & Grossman, 1994). "Research conducted in the 1970s indicated that females were better able to delay making a decision and arriving at a conclusion about something until they had all the information they required (Grossman & Grossman, 1994, p. 18). When faced with difficult and challenging situations, girls react less positively than boys (Grossman & Grossman, 1994). Girls are less persistent than boys when faced with difficult tasks in schools (Grossman & Grossman, 1994). Girls are also less likely to take risks than boys and do not expect to do as well as boys following failure or the threat of failure (Grossman and Grossman, 1994).

Male and female students share commonalities in their learning styles, learning preferences, and behavior. Hormone levels do contribute to some of the gender differences in the sexes (Grossman & Grossman, 1994). "Males and females have different hormones and this does affect their levels of activity, aggression, and emotional reactions (Grossman & Grossman, 1994). Hormones have an indirect effect on male and female "behavioral compatibility and

practice” It has been suggested that hormonal factors put forth an indirect influence on genders through behavioral compatibility and practice (Grossman and Grossman, 1994 p. 60). “Some [boys and girls] learn more efficiently in cooperative learning environments, while other learn in more competitive settings” (Grossman & Grossman, 1994, p. 21). If a student is to be successful in the classroom, his or her learning style should match the teacher’s teaching style (Grossman & Grossman, 1994). Students whose learning styles match their teachers’ instructional styles tend to learn more and have more positive experiences in school (Grossman and Grossman, 1994). According to Tinklin, Croxford, Ducklin, and Frame (2001), male and female students can be successful academically if national targets for high achievement are met. Students in today’s classroom who learn better in competitive situations may have an advantage, since competitive environments dominate (Grossman & Grossman, 1994). Male and female students are both capable of successful in the classroom. Students who are more self-confident are more successful than those who doubt themselves (Grossman & Grossman, 1994). Students who attempt things with the possibility of failure are more likely to do better than students who avoid the situation all together (Grossman & Grossman, 1994). According to research conducted in the 1970s to mid-1980s, teachers set different standards for their male and female students (Grossman & Grossman, 1994). Evidence shows that some teachers accept different kinds of inappropriate behavior from boys and girls without disciplining them for it (Grossman & Grossman, 1994).

Male and female students differ in their preferences for learning that involve active manipulation versus more inactive learning, working with others or alone, working with independently or with teachers’ guidance and instruction, and using numbers, logic, and computers (Grossman & Grossman, 1994). Compared to females, males prefer learning environments that involve: working independently, actively manipulating materials, and using

numbers, logic, and computers (Grossman & Grossman, 1994). Researchers believe that male-female differences in verbal, visual-spatial, and mathematics achievement are primarily due to differences in the age at which males and females develop the skills (Grossman & Grossman, 1994). In comparison to males, female students are more likely to attribute their general academic success to internal factors (Grossman & Grossman, 1994). Male attributions are different. Males are more to attribute their academic success to internal factors and their failures to external factors. (Grossman & Grossman, 1994)

Researchers have suggested implications for teachers and schools to improve student achievement in the classroom. Teachers should be mindful of gender patterns of interaction in the classroom (Tinklin, Croxford, Ducklin, & Frame, 2001). A variety of assessments should be used to provide students with the opportunity to create their best work (Tinklin, Croxford, Ducklin, & Frame, 2001). Schools and educators should consider how teaching and learning styles work together in the classroom (Tinklin, Croxford, Ducklin, & Frame, 2001). Also, schools and teachers should reflect on ways to improve teaching and learning styles for all students (Tinklin, Croxford, Ducklin, & Frame, 2001). Schools should find ways to identify underachieving students, and consider the needs of the individual as well as the group (Tinklin, Croxford, Ducklin, & Frame, 2001). Schools should also continue to provide equal opportunities to students. Teachers should positive teacher-student relationships (Tinklin, Croxford, Ducklin, & Frame, 2001). In hopes to defeminize schools and accommodate instructional strategies to the needs of male students, some educators suggest instructing males in single-sex settings, same sex teaching, and matching students' learning and teachers' teaching styles (Grossman & Grossman, 1994). Research has indicated that females gain more from single-sex classrooms than males, but studies reveal that males gain from attending all-male elementary schools (Grossman &

Grossman, 1994) In all-male schools, boys do more homework, learn more, and have better attitudes toward school (Grossman & Grossman, 1994) It has also been suggested that male and female students are in need of positive male role models, especially in elementary school (Grossman & Grossman, 1994). The more boys are exposed to male teachers, the less they are to associate language arts and other subjects as being feminine. (Grossman and Grossman, 1994) Educators who are in favor increasing more male role models, suggest hiring more male teachers in elementary school and inviting positive males as guests (Grossman & Grossman, 1994). To better accommodate male students' learning styles to teaching styles, (Grossman & Grossman, 1994) suggest the following: encourage and plan for free-exploration, teach boys language arts as trades and skills rather than subjects, reward males for participation in reading, de-emphasize penmanship and handwriting until fine motor skills develop efficiently (Grossman & Grossman, 1994). "Many educators believe that students learn more, behave better, and develop better attitudes toward their teachers and school when teachers accommodate their approaches to the different needs of the two genders (Grossman & Grossman, 1994, p. 154). Because of title IX (an education amendment that prohibits discrimination based on gender), some recommended implementations may be deemed unlawful.

In conclusion, the information provided in this research supports the idea that male and female students exhibit different learning preferences. This study analyzes the learning styles and preferences of male and female elementary school students. Research associated with the gender differences regarding learning style is provided. Learning preferences and performance of male and female students is discussed in addition to the learning styles common to both genders. A discussion related to implications for classroom teachers is also included.

References

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Annotated Bibliography

Carrier, S., (2009). Environmental Education in the Schoolyard: Learning Styles and Gender. *The Journal of Environmental Education*. 40(4), 2-4.

This journal article reports results from an experiment involving upper elementary school students. The students were tested on their general knowledge of the environment. According to the results, male students demonstrated a greater knowledge of the environment than their female counterparts. This journal was relevant to my research because it listed environments where male student can achieve success.

Cook, G. (2006). Boys at risk: The gender achievement gap. *American School Board Journal*, 193(4), 4-6.

The author of this journal article gives reasons for the reported underachievement of male students. He offers suggestions to improve the success of male students. This journal was relevant to my research project because it helped me to identify the academic struggles of male students.

Eggen, P., & Kauchak, D. (2007). *Educational Psychology: Windows on Classrooms* (7th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

The authors of this book list several academic differences between male and female students. The authors' reference reported behaviors of male and female students. This book was relevant because the overall goal of my research was to show that males and females learn differently and behavior can contribute to their academic performance.

Grossman, H., & Grossman, S. (1994). *Gender Issues in Education*. Boston, MA: Allyn and Bacon.

Grossman and Grossman report many differences among male and female students. They give factors which may contribute to students' overall academic performance. These factors include: genes, brain development, socioeconomic status, background, etc. This book was especially helpful in my research because much of the information was relevant to my topic.

Mann, J., (1994). Bridging the Gender Gap: How Girls Learn. *National Association of Elementary School Principals*. 13(2), 2-5.

Judy Mann discusses the academic successes and failures of female students. She gives teachers advice on how to help female students appreciate math. This article was helpful to me because it made me aware of the need to involve more female students in mathematics.

P.E. S. Direct Web site (2009). Retrieved July, 7, 2009, from <http://www.pesdirect.com/lsitest1.html>.

This website includes many different learning styles inventories. A learning styles inventory is an assessment used to determine an individual's learning styles. This site was useful in my PowerPoint presentation.

Reading Master Web site. (2009). Retrieved June 25, 2009, from http://www.readingmaster.com/WebPages/Learning_Styles.htm.

This website describes the three commonly recognized learning styles: visual, auditory, and tactile/kinesthetic. Examples of how to recognize these styles are listed. This site was very helpful, because it helped me to correctly define each learning style.

Snipes, D. (2007). *Understanding Learning Styles*. Retrieved June 25, 2009 from <http://www.articlesbase.com/print/192956>

Understanding Learning Styles gives a brief overview of what a learning style is and gives examples of them. It lists several tips for visual, auditory, and tactile/kinesthetic. I was able to incorporate this information into my paper.

Tinklin, T., Croxford, L., Ducklin, A., Frame, B. (2001). Gender and Pupil Performance: Interchange 70. Scottish Executive Education Department (SEED).

The authors of this journal report results from a study done in 2001. The study assesses the academic performance of male and female students in Scotland. The attainment of the students is also assessed. Although I focus of American school children, much of the information was relevant.