



# Research Report

## **SINGLE-SEX SCHOOLS: A REVIEW OF THE LITERATURE**

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## INTRODUCTION

The following literature review was conducted in response to a staff request to examine recent literature and research regarding the notion of single-sex schools, with a particular focus on the needs of and the educational options for boys, and specifically all-boy schools. The structure for this review emerged as we started to read and came to better understand the complexity of the perspectives and debate surrounding this issue, the influences that are shaping recent directions, and the interpretation of the data and evidence that informs these conversations. It became apparent that a broader discussion of the issues and implications was needed, beyond a description of existing schools.

The area of interest for this review was primarily “all-boy schools”, as opposed to either selected single-gender classes in coeducational settings or a more general discussion of proven gender-friendly classroom strategies. The National Association for Single Sex Public Education (NASSPE) defines single-gender options as being either coeducational schools which offer single-sex *classrooms* for some subjects but which retain at least some co-ed activities, or single-sex *schools*, meaning that students attending any of those schools have all their school activities, including lunch and electives, in a setting which is all-boys or all-girls. In practice and in the literature, however, the distinction between the two was not always clear and discussions about the two models often overlapped.

The review is structured according to the following topics and/or themes: the historical and political context, educational challenges for boys, different perspectives on single-sex education as a solution for gender gaps, an account of the existing research-based evidence, limitations of the data, and concluding remarks.

The search of the literature was conducted using the ERIC database, ProQuest Education, and EBSCOhost, searching relevant educational organizations and websites on the Internet, and with some assistance from the Professional Library in accessing full-text versions of documents. The selection of resources was mostly limited to professional journals and organizations, and the original request specified a timeframe from the year 2000 and onwards. The use of the search terms “single-sex education” and/or “single-sex schools” generated ample resources that matched the parameters of our literature review. It should be noted however that the collection largely reflects the perspectives of the US context given recent shifts in the direction of single-sex education in that country, and the United Kingdom and Australia, although the context of their experiences is somewhat different. There are limited references to Canadian resources.

## HISTORICAL AND POLITICAL CONTEXT

Traditionally, single-sex educational institutions were limited to private schools, often serving a more affluent clientele, and primarily boys. By the 1960s and 1970s, however, closer attention was paid to the options for girls in response to perceived shortcomings in their educational opportunities, particularly in certain subject areas such as mathematics and science, as well as in response to the rising civil rights and feminist movements of the time. In 1972 in the United States, Congress passed Title IX which mandated equal education for the sexes and led to the reduction of single-gender schools within the public education domain. Around the same time, private schools began to feel similar political pressures and although they were not bound by the legislation, many began to open their doors to both genders. In the words of Salomone (2006), “Single-sex schooling seemed to be dying a slow but certain death.”

During this time, concerted efforts were made to make schools more girl-friendly in terms of the curricula and teaching methods. More recently, however, there has been a reversal in that boys’ academic achievement appears to be a focus of concern as indicators of academic achievement and gender gaps suggest boys are lagging behind girls in many areas. Such trends have been observed internationally and seem to be persistent (Demers & Bennett, 2007).

In support of the No Child Left Behind Act of 2001, the United States Department of Education subsequently rewrote the original 1972 Title IX statute that placed restrictions on the establishment of single-sex programming. These 2006 amendments to the regulations now permit single-sex *classrooms* when districts “provide a rationale,” “provide a coeducational class” as well, and “conduct a review every two years.” Single-sex *schools* are allowed as long as they provide equal services either in a co-ed school or a school for the opposite gender, while charter schools are exempt from all restrictions. With this new legislation, single-sex options for both girls and boys are experiencing a resurgence.

Translating this in terms of actual numbers, NASSPE reports that when it was founded in 2002 only eleven public schools offered single-gender classrooms, while as of September 2009 there were at least 545 public schools in the United States offering single-sex educational opportunities, the majority of which are co-ed schools with some single-sex classes. According to their estimates, at least 15% of the total would qualify as single-sex schools with all of their activities separated by gender. They indicate that most of those would be located in exclusively single-sex settings as opposed to dual program campuses (NASSPE, 2009).

It should be noted that the Canadian context is different from the United States in that there is no legislation comparable to Title IX that governs or limits the establishment of these programs, and single-sex programs in public education have not been challenged (Sanford & Blair, 2002).

## **INDICATORS OF THE EDUCATIONAL CHALLENGES FOR BOYS**

Taylor and Lorimer (2003) reviewed 30 sources, which identified some of the troubling trends or challenges which some boys are facing. They report that overall, in comparison to girls, boys:

- Score lower in language arts and standardized tests
- Populate special education classes and are more likely to be labelled learning disabled
- Dominate school discipline statistics (e.g. such as behaviour related referrals, suspensions and expulsions)
- Enrol in fewer advanced courses
- Record higher drop out rates
- Show a declining rate of enrolment in college

Although some of these trends are also evident in our own local and provincial results, a closer examination of some of this data over time and/or by subject area reveals that the gender patterns that emerge are not always consistent or significant.

At a local level, a presentation prepared for the Toronto District School Board (2009) highlights where gender gaps exist on various achievement and outcome measures over time. These include the Early Development Instrument (EDI), Primary and Junior Education Quality and Accountability Office (EQAO) assessments in Reading and Writing only, Ontario Secondary School Literacy Test (OSSLT), Credit Accumulation and Student Outcomes, Post-Secondary School Confirmations, and Suspension Data. With the exception of the suspension data that shows males are suspended at a significantly higher rate than females, gender gaps favouring girls over boys range between 4% and 13% depending on the measure. It is important to note, however, that over the past five years, generally these gaps have either remained consistent or have narrowed, and the performance outcomes for *both* boys and girls have improved during this period.

At the provincial and national levels, Ontario and Canadian results from the 2006 Programme for International Student Assessment (PISA) study of 15 year olds analysed by gender demonstrated that:

- Girls performed significantly higher than boys in Reading and in one Science sub-scale (identifying scientific issues)
- Boys performed significantly higher than girls in Mathematics and one Science sub-scale (explaining phenomena scientifically)
- There were no significant differences between boys and girls in the Science combined scale or the sub-scale, using scientific evidence (Source: PISA, Statistics Canada, pg.38)

From an international perspective, the 2007 Trends in International Mathematics and Science Study (TIMSS) also assessed mathematics and science at the grade 4 and grade 8 levels and concluded that “gender differences in achievement were not uncommon among TIMSS 2007 countries, though they were by no means universal”. Approximately half the participating countries exhibited no gender differences in either grade level or subject area and about half did, and when gender differences did exist, “they more often favored boys at grade 4 and girls at grade 8”.

Average scores of the Ontario TIMSS participants in 2007 indicated no statistical difference between boys and girls in either grade 4 science or mathematics, while boys performed slightly higher than girls in grade 8 science and mathematics. Overall, the more recent shorter-term trend data in all areas did not reveal any significant changes in achievement, although at both grade levels and in both subject areas, boys *and* girls posted significantly higher average scores in 2007 compared to 1995 (Source: TIMSS, 2007).

Similarly, in her comprehensive review of the American literature and performance statistics, Mead (2006, p.6) concurs that “overall, there has been no radical or recent decline in boys’ performance relative to girls. Nor is there a clear overall trend—boys score higher in some areas, girls in others.”

Although some persistent gaps do remain, Mead also recognizes the positive direction of much of the trend data, which indicates an increase or gradual improvement in the outcomes for both boys and girls over time. She notes that “in fact, with a few exceptions, American boys are scoring higher and achieving more than they ever have before. However, girls have just improved their performance on some measures even faster. As a result, girls have narrowed or even closed some academic gaps that previously favored boys, while other long-standing gaps that favored girls have widened, leading to the belief that boys are falling behind”.

It is recognized that gender differences also present themselves in ways other than academic performance; Sadker & Zittleman (2005) cite some of the “many faces of gender bias”.



### ***Reading and Writing***

- For decades, boys have consistently lagged behind girls in reading and writing performance, a reality highlighted by standardized tests. Some attribute this to developmental or learning style differences, to an anti-school culture felt by boys, or even to brain differences (NCES 2003; Pollack 1998).
- Boys often regard reading and writing as “feminine” subjects, and report that reading threatens their masculinity (Dutro 2001/2002).

### ***Science and Math***

- Although boys and girls like and do well in math and science in elementary school, girls become less positive and do less well in higher grades (NCES 2000).
- By the third grade, 51 percent of boys and 37 percent of girls have used a microscope in class (NCES 2002).
- Boys receive more math and science-related toys than do girls (NCES 2002).

### ***Technology***

- Girls rate themselves considerably lower than boys on technological ability and are less likely to use computers outside of school (NCWGE 2002).
- Current software products are more likely to reinforce gender stereotypes and bias rather than reduce them (AAUW 2000).
- Girls are five times less likely than boys to consider a technology-related career (AAUW 2000).

### ***Achievement***

- Girls receive higher report card grades throughout their schooling career (NCWGE 2002).
- Boys outscore girls on most high-stakes tests, including both the verbal and math sections of the SATs (ETS 2001; NCES 2000).

### ***Psychological Barriers***

- Girls in grades 6 and 7 rate popularity more important than academic competence or independence (NCMST 2000).
- Boys are expected to follow a “boy code,” a kind of swaggering posture that hides their vulnerabilities and suppresses dependency while leaving them feeling emotionally isolated (Pollack 1998).

### ***Sexual Harassment and Bullying***

- Verbal and physical sexual harassment begins in elementary school. Four out of five girls, and almost as many boys, experience some form of sexual harassment (AAUW 2004).
- Thirty percent of students are victims of bullying. Boys are both more likely to bully others and be victims of physical bullying, while girls frequently experience verbal and psychological bullying (Nansel et al. 2001).

### ***School Staffing***

- Approximately 9 percent of the nation’s elementary school teachers are men, down from about 18 percent in 1981 (NEA 2004).
- Almost half of elementary school principals are male (NCES 2004).

## **ARE SINGLE-SEX SCHOOLS A SOLUTION FOR GENDER GAPS?**

### **A Media Perspective**

Thompson and Ungerleider's summary on single-sex schooling (2004) for the Canadian Centre for Knowledge Mobilization (CCKM) acknowledged the strong influence that the news media plays in shaping the public, policy-makers', and practitioners' views and understandings of current issues. Based on an inventory of newspaper articles published between 2003 and 2004 and created using the LexisNexis and Canadian Newsstand databases, single-sex schooling had been defined and presented in the media according to five dominant perspectives, with higher student achievement presented as the main benefit:

- as an educational benefit issue
- as a learning styles issue
- as a choice issue
- as a gender gap issue
- as a distraction issue

The notion of single-sex schooling to address and mitigate the disadvantage of boys was a dominant sub-text in these articles and was presented as a potential way to help boys improve their concentration, engagement and performance in school.

A focus on the middle-school age group was also a prevalent theme in the popular press, which reflects other literature that suggests gender becomes a more "visible" variable or characteristic in the early adolescent years and which may be influenced by biological/hormonal forces and/or by broader socio-cultural gender roles and expectations.

### **A Research Perspective**

The ongoing debate about the impact of single-sex schools widens when performance statistics and evidence-based information are more thoroughly investigated and assessed. Some research findings related to same-gender education have documented higher academic achievement and more positive student attitudes, especially for female students and male students who are from lower socio-economic or racially/ethnically diverse backgrounds.

Other studies have found that same-gender grouping makes no difference academically, though gains in self-esteem may be evident for some students.

“Proponents” of single-sex segregation cite information from the fields of brain development, neurobiology, educational psychology and sociology to illustrate children’s brain growth and development, gender differences in how the brain works and the influences of hormones and acculturation, along with some selected positive assessment and anecdotal findings about student performance in a single-sex environment (Gurian, NASSPE). Advocates for same-gender schooling are of the opinion that gender differences are innate, that the unique setting enhances educational opportunity and frees students from gender stereotypes.

On the other hand, “challengers” or opponents of the movement consist of those who believe that “separate but equal” is by nature discriminatory and unconstitutional and/or those who believe that the absence of quality research evidence and the neutral or inconsistent results do not warrant widespread organizational reform (Demers & Bennett, 2007). Some researchers (e.g. Bracey, 2006; Mead, 2006) question the emphasis on or generalizations made regarding brain development theory and the extent to which such differences actually have an impact in the classroom. While acknowledging that many boy-friendly practices are certainly reasonable, “other recommendations are based on an inappropriate application of brain research on sex differences. Many of these authors draw causal connections between brain research and stereotypical male or female personality traits without any evidence that such causality exists. These analyses also tend to ignore the wide variation among individuals of the same sex” (Mead, 2006; p. 16).

Similarly, Hubbard and Datnow (2005) reflected on some of the prevailing concerns or criticisms in the literature, such as:

- Experiences with single-sex education so far have primarily been within the context of parochial schools (or private schools and/or international settings), so class differences or selection bias may account for differences in outcomes
- Separation deprives students access to mainstream programs and constitutes a return to structured inequality
- Factors other than school types are more significant contributors to positive student outcomes, such as teacher-student interactions, teachers’ expectations, and teachers’ values.

Somewhere in the middle, with perhaps a more moderate perspective, are those who believe the essential question is to determine “which boys?” are struggling within the traditional coeducational environment. This view is rooted in the belief that as “differences among males

and females are just as vast as the differences between, there is clearly a danger in promoting *all girls learn one way and all boys learn another*” (Thompson & Ungerleider, 2004). This leads to the argument that the gender data needs to be disaggregated by other factors such as race and social class to see exactly who is succeeding or not succeeding to reveal where the true inequities lie (Herr & Arms, 2004).

A discussion of the research-based evidence regarding the impact of single-sex schooling can be found later in this report.

### **A Pedagogical Perspective**

An in-depth investigation or discussion about the range of gender-friendly practices and the research behind them is beyond the scope of this literature review, however, this section addresses the belief that gender-friendly pedagogical factors or practices can or should be found in any effective school, either single-sex or co-ed, and need not be restricted to a unique or limited environment/organizational structure. As Taylor and Lorimer (2003) point out, drawing attention to the needs of boys does not require massive expenditures or programs, but a willingness to look at the philosophical underpinnings.

One resource suggested that school administrators and teachers first need to be aware of and acknowledge the basis of gender inequities in order to address them (Sadker & Zittleman, 2005). They discuss underlying factors or behaviours such as: a pattern of gender differentiation or unintentional bias by teachers in their interactions with students; students’ own beliefs or interpretations about their abilities (e.g. boys and girls attributing their successes and failures to different conditions, like ability and/or luck); learned helplessness and/or self-imposed stereotyping by the students themselves; how male and female roles and accomplishments are represented in school exhibits, displays and materials; etc.

Taylor and Lorimer’s (2003) review of about 30 resources focuses more directly on the influences on boys’ motivation and achievement in particular and they offer the following research-based strategies as a starting point to programming for them:

- Offer more technology and increased use of computer education to engage boys
- Use multiple literacy strategies; including use of non-fiction, texts that appeal to boys’ interests, give them more choice and options in terms of literacy assignments, try collaborative group work, assignments with authentic real-life application

- Establish and encourage male mentoring relationships, e.g. class guests, influence of older high school or college-age mentors
- Incorporate more action-oriented tasks and opportunities for physical activity, such as active learning through role playing, debates, field trips, and hands-on investigations

Similarly, an article about “Teaching to the Minds of Boys” (King & Gurian, 2006) documents how a school incorporated boy-friendly strategies within their co-ed classes rather than as a separate single-sex structure in order to narrow gaps. This involved incorporating new theories from gender science into classroom practice and altering strategies to accommodate typical male assets, as opposed to viewing them as problems. Overlapping somewhat with the list above, recommended strategies include:

- Increasing experiential and kinaesthetic learning opportunities
- Supporting literacy through spatial-visual representations
- Letting boys choose topics that appeal to them
- Helping boys with homework
- Offering some single-gender learning environments, e.g. single-gender grouping, dividing class to give the students a choice in reading material
- Making reading and writing purposeful, e.g. establish authentic purpose and meaningful, real-life connections
- Seeking out male role models

### **An Implementation Perspective**

There is general consensus that merely reorganizing the physical structure of a school into a single-sex or dual program site according to gender is not a complete or effective solution for addressing performance gaps between the sexes. Nancy Protheroe (2009) stresses the need for very thorough consideration and planning prior to establishing any single-sex program and points out some possible implementation pitfalls.

In terms of constructive advice to consider in advance of implementation, she offers:

- Engaging in an intensive study of the “why” and “how” issues before implementation. The crucial question to answer clearly at the outset would be, “Why a single-sex program?”
- Looking at disaggregated assessment data that might indicate a significant gender gap for a particular sub-population or a certain subject area or a particular grade or grade range (e.g. the middle years “diamond” pattern)

- Collecting data from teachers in advance on other contextual factors within the school or classroom such as student participation rates, disciplinary actions, etc.
- Depending on where particular problems are revealed via the data analysis, viewing a single-sex program as only one possible option
- Offering more staff development on gender equity issues (e.g. differentiated instruction etc.)
- Considering the implications of teacher variables and characteristics (e.g. experience, values, training, interactions)

Drawing on lessons learned from a largely unsuccessful experiment with single-sex public education in California during the 1990s, Protheroe also shares some useful cautionary notes about potential barriers to successful implementation.

For example, as cited in Protheroe:

- The single-sex program must have a clearly articulated rationale and specific program goals before implementation efforts begin (Salomone, 2006a)
- Schools had insufficient time to plan, gain the support of their constituencies, and recruit and train teachers (Datnow, Hubbard, and Woody, 2001)
- Although test scores improved, the needs of boys and girls were not fully addressed because of inadequate staff development, inexperienced teachers, and a school mission that was more focused on raising standardized test scores than consciously addressing specific needs (Salomone, 2003)
- Careful efforts to work with teachers, parents, and others involved are critical
- Educators should also take care that implementation of single-sex classes or schools does not send a message that boys and girls “have innate limitations that have to be overcome” (Salomone, 2006b)

Herr and Arms (2004) also discuss the California experiment and reiterate that improvement requires more than a simplistic separation by gender. Their opinion is that success is due more to the interrelation and contributions of three conditions: the organizational structure; positive teacher-student relationships and interactions; and ample funding for extras in terms of resources, staffing, etc.

In another paper by Martino, Mills, and Lingard (2005), one of their main arguments is “that structural reform in the absence of good pedagogies and requisite teacher threshold knowledge

about gender runs the risk of maintaining and even reinforcing particular assumptions or orientations to learning considered to be the domain of either boys or girls”. They cite a particular example where a single-sex option was created essentially as a “structural” reform to address a behavioural management issue with some boys rather than being a pedagogical reform. The resulting girls-only class was simply a by-product of that decision.

### **EXISTING BOYS’ SCHOOLS MODELS (U.S.)**

According to NASSPE records, as of September 2009, at least 91 of 545 schools across the United States qualified as single-sex *schools*, meaning that students attending any of those schools have all their school activities – including lunch and all electives – in a setting, which are all-boys or all-girls. All single-sex schools (either single-sex sites or dual campuses at one location) were indicated within the original full list with an asterisk. Based on their brief descriptions, thirty-seven “boys-only” schools were identified and that list and their descriptions can be found in Appendix A. In some cases, hyperlinks to their own district or school web sites were provided as well.

An informal tally of these American boys’ schools was done in terms of grade levels; campus type; and intended target population(s), with the categories and the counts based on the brief descriptions provided, as well as a cursory look at individual school web sites where links were provided. In some cases, however, the relevant information was not readily found in either source.

The tables found later in Appendix A illustrate the prevalence of different “boy school” models. The largest proportion of these 37 “boys’ only” schools were offered either at the middle level or intermediate grades (n=14) or the secondary or high school level (n=10) or at a combined middle/secondary school (n=2). A majority of single-sex boys’ schools (70%) were housed at single-sex sites, as opposed to dual campuses.

The school descriptions usually did not indicate definitively whether or not a specific target population for admission or enrolment had been identified (n=21). Approximately one-third of the schools, however, mentioned one or more potential risk factors or characteristics (e.g. underachievement, at-risk, African American, low income) to describe their typical student population, while high performing students were identified as the intended clientele in a few other cases.

## THE RESEARCH EVIDENCE

Given time and resource constraints the review focused on recent research “reviews” that assessed and summarized the academic literature. Five such reviews were identified, with each primarily focusing on studies of school populations in England, Australia, New Zealand, and the United States.

Studies generally addressed one or more of four areas: academic achievement, subject choice, personal and social development and sexism and gender stereotyping. The research base is small so there is overlap between the reviews in terms of the studies assessed, and thus in the conclusions of the reviews.

A read of these reviews illustrates the inconsistent and contradictory nature of the research literature. As such, it is easy to find support for various explanations and positions, but difficult to make easy summary statements (Mead, 2006; Bracey, 2006). So instead, the conclusions of the reviewers are offered.

Australian researcher Judith Gill (2004; p. 117) stated her conclusions as follows:

*“There is no conclusive answer for all young people, much less all girls or all boys...but perhaps such an answer is no longer to be expected. Given the lack of closure in the reported research on this issue, it is perhaps ridiculously optimistic to attempt to reach any conclusions at all.”*

Writing in Canada, Thompson and Ungerleider (2004; p. 16) concluded that:

*“Given that few studies were identified as meeting the criteria of rigorous research, we cannot make conclusive statements about the effects of single-sex schools... the research we reviewed is too tenuous to support the organization of single-sex classrooms or schools.”*

Considered the most systematic review, Mael et al (2005; p. x) examined some 112 findings contained in 40 studies and concluded that:

*“As in previous reviews, the results are equivocal. There is some support for the premise that single-sex schooling can be helpful, especially for certain outcomes related to academic achievement and more positive academic aspirations. For many outcomes, there is no evidence of either benefit or harm.”*



American researcher Gerald Bracey's (2006; p. 37-38) work reviewed the findings of some of the other reviews, most thoroughly the 2005 Mael et al review completed for the United States Department of Education. He concluded:

*"The research, although copious, is mostly flawed by failure to control for important variables such as class, financial privilege, selective admissions, religious values, prior learning or ethnicity... (p. ii)... It is hard to be particularly confident about what can be learned from the available data. Most of the outcomes are not consistently found even when fairly strict controls are applied... most areas have some contradictory findings, and even those that don't are not wholly consistent... as the data do not lead to easy summary statements, so they do not lead either to firm recommendations."*

Finally, English researchers Alan Smithers and Pamela Robinson (2006; p. 30-31) concluded:

*"Given the seemingly small effects of separating or bringing the sexes together for education and the limitations on what educational research can and cannot do, it seems unlikely that evidence will ever be obtained that is sufficiently robust to cause the proponents of one approach or the other to change their views... the paradox of single-sex and co-education is that the beliefs are so strong and the evidence is so weak."*

We turn now to a discussion where there is substantial agreement in the literature and that is on the limitations of the research.

## **LIMITATIONS OF THE RESEARCH BASE**

It is important to note that researchers concur that it is extraordinarily difficult to conduct what would be considered "scientifically-based" research (i.e., randomized experiments) on single-sex schools. As Bracey (2006) notes, "The mere fact that all such schools are schools of choice means that from the outset, no random assignment is possible" (p. 16). Mael et al (2005) further adds that "As soon as parental preference is allowed to determine assignment to group, the possibility that the two parent bodies (and hence the students) will differ significantly is real" (p. 88). Thompson and Ungerleider (2004) concur that "The difficulty in comparing single-sex and mixed-sex schools is that existing enrolment in either school type implies pre-existing assumptions on the part of parents about what is best for their children" (p. 16).

## **Self-selection Bias**

Controlling for differences related to such “self-selection” is difficult. Thompson and Ungerleider (2004) note that much of the literature acknowledges these concerns and attempts were made in some cases to control for variables such as socio-economic status and prior achievement. But many studies failed to address these issues, inadequately controlling for differences in prior achievement, socio-economic status, parental factors or other differences between schools, like selective admissions or religious values, likely to impact on student outcomes (Bracey, 2006; Thompson & Ungerleider, 2004; Mael et al 2005).

## **The “Types” of Schools Studied**

Thompson and Ungerleider’s comments segue nicely into another major limitation of the research, and that is the “types” of schools that have been studied. Most studies compared single-sex private or denominational schools to public coeducational schools, or made comparisons between Catholic single-sex and coeducational schools only. As Thompson and Ungerleider (2004) note, this is problematic due to inherent differences between the public and private school systems, and resultant differences in student backgrounds and characteristics. There has been little time to evaluate the single-sex schools that currently exist in the public sector in the United States because they are so new (Bracey, 2006) and so the effectiveness of single-sex public schools has yet to be examined.

## **Moderating Variables**

Few studies examined other possible important moderating variables that may have differential effects for single-sex schooling. For example, a number of authors contend that single-sex schools are especially effective for students from lower income backgrounds, specifically members of minority and/or disadvantaged groups and communities. Unfortunately, few studies addressed this (Mael et al, 2005). Although many studies made reference to the influential role of teachers, missing were studies which controlled for teacher effects, another important moderating variable (Thompson & Ungerleider, 2004).

## **Impact of Broader Social Forces**

Moreover, the campaigns for and against single-sex schools have taken place in the context of social change with regards to gender-bias and civil rights. As a result, one could argue that the effects seen in single-sex schools have more to do with these broader societal changes than with the organization of schools by gender (Bracey, 2006). For example, Bracey notes that in

England, while the number of girls' schools decreased after the move to comprehensive education, the percentage of girls taking A-level physics rose. Researchers attributed these changes to the increased opportunities provided by the reform of secondary education, in which the shift from single-sex schools was but one of many reforms (Bracey, 2006).

### **Lack of Canadian Studies**

As noted earlier, each of the reviews focus on studies of school populations outside of the Canadian context. As Gill (2004) notes, "...structures of schooling and the cultural expectations associated with it are significantly different in different places" and there are differences between the school systems even within English-speaking countries such as England and the United States (p. 103). As Bracey (2006) cautions, any conclusions about single-sex public schools or classes depends upon the extent to which one feels comfortable generalizing from the public sector in other countries, or from research comparing public and private schools, or religious single-sex and co-educational schools.

### **Limited Focus on Elementary or Middle School Populations**

Much of the single-sex research has been conducted in Catholic single-sex schools, where students are typically separated by sex upon entering their adolescent years, and as a result, the vast majority of studies examine high school students. Opportunities to study single-sex elementary or middle schools in either the public or private sector have been limited (Mael et al, 2005). As noted above, the more recently created single-sex schools in the public sector in the United States have yet to be studied, but unfortunately it also seems that there has been limited planning for such study (Bracey, 2006).

### **Limited Research on Boys or Boys' Schools**

Particularly relevant to the aim in this review, it is important to understand that much of the research has been conducted from the point of view of girls (Smithers & Robinson, 2006) and has focused on girls' schools more than boys' schools (Mael et al, 2005). This is partly so because interest in single-sex classrooms and schools in the United States and abroad initially evolved within the larger context of feminism and girls' disadvantage and the ways in which schools were seen to be discriminating against girls (Thompson & Ungerleider, 2004; Gill, 2004). Missing from the research literature was the strong concern about the perceived disadvantage of boys (Thompson & Ungerleider, 2004). Gill (2004) contends that many of the current claims about boys' disadvantage are similar to those advanced in the 1970s and 1980s with respect to

girls but tend not to be supported by an established research base as was the case for girls. Writing from an Australian perspective, Gill (2004) argues that the case for boys' disadvantage has yet to be made. Similarly, writing in the United States, Mead (2006) argues that the "so-called boy crisis" is not based on solid information, and that although countless statistics demonstrate how boys and girls perform, very little is known about why these differences exist or how important they are. Others suggest that the focus on boys also serves to divert efforts away from the unresolved issue of gender inequality (Datnow, Hubbard & Woody, 2001).

### **Small Research Base**

Although the literature appears vast, there are actually a small number of studies considered to be of high quality. Thompson and Ungerleider (2004) identified only 48 studies that met their inclusion criteria of "sound research". Similarly, Mael et al (2005) began with over 2,000 studies and ended with only 40 quantitative studies in their review. These 40 studies cover 33 outcomes and therefore each outcome draws on only a small number of studies. What this means is that none of the outcomes studied have a large research base from which to make conclusions (Bracey, 2006).

### **Lack of Causal Evidence**

Finally, as noted at the outset of this section, it is extraordinarily difficult to conduct what would be considered "scientifically-based" research on single-sex schools. Mael et al (2005) noted that had they applied the What Works Clearinghouse criteria for scientifically-based studies as they originally planned, almost all studies would have been eliminated from their review. Therefore they had to relax their standards to include correlational studies which do not provide causal evidence. The authors are careful to note that the arguments that can be built and extended from their review are limited as a result.

## CONCLUDING REMARKS

While frustrating for those wanting easy answers, researchers agree that the conflicting and contradictory nature of the literature makes intuitive sense as schools are complex with many interacting variables influencing outcomes, and single-gender schools/classes represent but one factor in these complex interactions, and perhaps not the most important one (Smithers & Robinson, 2006; Gill, 2004).

Thompson and Ungerleider (2004) suggest that: “A question that policy makers must consider is: What is our purpose for initiating public single-sex classes and schools? If in fact it is about improving achievement for students, then one must consider the sound research which suggests the single-sex environment itself does not have an effect on achievement. Rather, what changes in a single-sex classroom is the “gendered climate” and established order based upon degrees of femininity and masculinity. Simply stated, girls generally feel more comfortable and less intimidated in single-sex classes; and conversely, boys generally prefer the “normativity” of mixed sex environments. The question which needs to be asked and answered is: Why is this so? And, if single sex schooling produces the opposite effects for boys and girls, can improvement for one group be justified at the expense of a decline for the other?” (p. 17).

Similarly, Bracey (2006, p. 39-40) notes that as the research base does not lend itself to “easy summary statements” the only recommendation that he can make is that certain questions be asked of any proposed program for single-sex classes or schools. These include:

1. What are the goals of the program? (e.g., cognitive, affective and behavioural outcomes).
2. Are single-sex schools or classes the best way to accomplish the goals?
3. What might be lost if coeducation were generally abandoned? What are the costs and tradeoffs of establishing a single-sex school or class?
4. When single-sex schools have been found to be effective, what factors produce that effectiveness? Does the proposal take these factors into account?
5. What policy obstacles lie in the way of or conflict with the stated goals? Is sex segregation a means of reaching gender equity or a tool for increasing test scores?
6. What are the rationales for the program? Gender equity? Differential brain function? Recruitment of girls into curriculum areas historically avoided?

7. Has the program been well thought through?
8. Where did the program come from? Are its sources external to the school? Is the reform expedient or, in the words of Datnow and Hubbard, inauthentic?
9. Has the school administration bought in? Has the faculty? Have the parents?
10. Will a program of professional development built around the goals of the program be provided for administration and faculty?
11. Is there a sound plan to evaluate the outcomes of the program as described in #1 above?

And for those forging ahead, Bracey (2006) suggests that some of the qualitative studies are worth examination as they illustrate, in a way that the quantitative studies cannot, the complexity of the issues and the difficulties in implementing single-sex schools in the public sector.

One such study was conducted by Datnow, Hubbard and Woody (2001) examining the viability of single-gender schooling in the public sector. Using a case study approach, the researchers examined single-sex academies in six districts in California (the first state to experiment with single-gender education on a large scale) over a three-year period. As noted earlier, the experiment was largely considered to be unsuccessful. After just three years, five of the six districts had closed their academies and at the time of their report in 2001, only one district had single-gender academies still in operation.

The authors concluded that the academies were not sustainable under the state's policy framework. They found that single-gender schooling was primarily used as a means to meet the needs of at-risk students with most educators seeing the grant monies as a way to address the educational and social problems of low achieving students and not as an opportunity to address gender inequity.

In fact, the researchers discovered that traditional stereotypes were often reinforced in the academies. They found that even though educators ensured equal resourcing to the boys' and girls' academies, they failed to address gender bias in their practices. Part of the legislation in California required the academies to operate on the same site and this led an unexpected negative outcome with staff coming to regard girls as "good" and boys as "bad."

Although the separation did create some positive outcomes such as reduced classroom distractions, girls still experienced unwanted attention in coeducational spaces, and both sexes endured teasing from other students for being enrolled in the academies. On the positive side,

both teachers and students said that the single-gender setting allowed for more open dialogue about issues particular to girls or boys, but this did not occur in all cases and was dependent on the teacher's commitment, comfort level etc.

Finally, success was undermined by implementation issues such as lack of time to plan, engage the support of stakeholders, and promote/advertise the academies in the school community. Their results led the authors to offer several implications for policy and practice as follows (p. 73-74):

- Policies for single-gender public schooling need to be more carefully crafted and need to provide an infrastructure of support;
- The gender “problem” has not been solved...students and teachers must consciously attempt to dismantle gender inequality;
- Single-gender academies need to guard against becoming a new form of tracking or resegregation;
- Implementing single-gender schools as “schools within a school” can unintentionally threaten efforts to ensure gender equity;
- Experiments with single-gender public schooling need to be driven by a strong theory of gender equitable education; and
- Teachers need access to relevant training and a supportive administration in order to address critical issues facing students' lives, including gender and racial bias, harassment, sexuality, and homophobia.

Without clear direction then, researchers suggest that deciding whether to mix or separate the sexes has to be a matter of judgement (Smithers & Robinson, 2006). It is hoped that this review has brought to light the range of issues that should be considered.





## REFERENCES

- Bracey, G. (2006). *Separate but superior? A review of issues and data bearing on single-sex education*. Arizona State University, College of Education, Education Policy Research Unit. Retrieved September 2009, from <http://epicpolicy.org/files/EPSSL-0611-221-EPRU.pdf>.
- Datnow, A., Hubbard, L., & Woody, E. (2001, May). *Is single gender schooling viable in the public sector? Lessons from California's pilot program*. Toronto: Ontario Institute for Studies in Education, University of Toronto.
- Demers, S. & Bennett, C. (2007, June). Single-sex classrooms. *Monographs of The Literacy and Numeracy Secretariat, Ontario Ministry of Education (No. 4)*.
- Education Quality and Accountability Office (2008, December). *Trends in international mathematics and science study (TIMSS), 2007. Ontario Results Report*. Retrieved September 2009, from [http://www.eqao.com/pdf\\_e/08/TIMSS\\_Ontario\\_Report\\_2007.pdf](http://www.eqao.com/pdf_e/08/TIMSS_Ontario_Report_2007.pdf).
- Friend, J. (2007, Spring). Single-gender public education and federal policy. *American Educational History Journal, 34(1)*, 55-67.
- Gill, J. (2004). *Beyond the great divide: Single-sex or co-education?* Sydney: University of New South Wales Press.
- Herr, K. & Arms, E. (2004, Fall). Accountability and single-sex schooling: A collision of reform agendas. *American Educational Research Journal, 41(3)*, 527-555.
- Hubbard, L. & Datnow, A. (2005, June). Do single-sex schools improve the education of low-income and minority students? An investigation of California's public single-gender academies. *Anthropology and Education Quarterly, 36(2)*, 115-132.
- King, K. & Gurian, M. (2006, Sept). Teaching to the minds of boys. *Educational Leadership, 64(1)*, 56-61.
- Mael, F. A., Alonso, A., Gibson, D., Rogers, K., & Smith, M. (2005). Single-sex versus co-educational schooling: A systematic review. *U.S. Department of Education, Office of Planning Evaluation and Policy Development, Washington, D.C. Document No. 2005-01*.
- Martino, W. (2008, April). Boys' underachievement: Which boys are we talking about? *Monographs of The Literacy and Numeracy Secretariat, Ontario Ministry of Education (No. 12)*.

Martino, W., Mills, M., & Lingard, B. (2005, June). Interrogating single sex classes as a strategy for addressing boys' educational and social needs. *Oxford Review of Education*, 31(2), 237-254.

Mead, S. (2006, June). *The evidence suggests otherwise: The truth about boys and girls*. Education Sector. Retrieved September 2009, from <[www.educationsector.org](http://www.educationsector.org)>

Meyer, P. (2008, Winter). Learning separately: The case for single-sex schools. *Education Next*, 8(1), 10-21.

Protheroe, N. (2009, May/June). Single-sex classrooms. *Principal*, 88(5), 32-35.

Sadker, D., & Zittleman, K. (2005, March/April). Closing the gender gap--again! Just when educators thought it was no longer an issue, gender bias is back in a new context. *Principal*, 84(4), 18-22.

Salomone, R. (2006, April). Single-sex programs: Resolving the research conundrum. *Teachers College Record*, 108(4), 778-803.

Sanford, K., & Blair, H. (2002). Engendering Public Education: Single-Sex Schooling in Western Canadian Contexts. In A. Datnow & L. Hubbard (Eds.), *Gender in policy and practice: Perspectives on single sex and coeducational schooling* (pp. 90-108). Routledge Falmer Press.

Smithers, A., & Robinson, P. (2006). *The paradox of single-sex and coeducational schooling*. University of Buckingham, Centre for Education and Employment Research. England: Carmichael Press.

Statistics Canada. (2007). Differences in performance by selected student characteristics. In *Measuring up: Canadian results of the OECD PISA study. The Performance of Canada's Youth in Science, Reading and Mathematics 2006 - First Results for Canadians aged 15* (pp. 37-42). Ottawa, ON: Author. (Catalogue no. 81-590 no. 3).

Taylor, D. & Lorimer, M. (2003, Dec/Jan). Helping boys succeed. *Educational Leadership*, 60(4), 68-70.

Thompson, T., & Ungerleider, C. (2004). *Single-sex schooling: Final report*. The University of British Columbia, The Canadian Centre for Knowledge Mobilisation. Retrieved September 2009, from <http://www.cckm.ca/pdf/SSS%20Final%20Report.pdf>.

Toronto District School Board. (2009, August). "Equally Prepared for Life? How Male and Female Students Perform in TDSB Schools."

## MODELS FOR SINGLE-SEX SCHOOLS FOR BOYS

According to the National Association for Single Sex Public Education (NASSPE) records, as of September 2009, at least 91 of 545 schools across the United States qualified as single-sex *schools*, meaning that students attending any of those schools have all their school activities – including lunch and all electives – in a setting, which are all-boys or all-girls. All single-sex schools (either single-sex sites or dual campuses at one location) were indicated within the original full list with an asterisk, while the listing below includes just the 37 “boys-only” schools as determined by the brief description provided. In some cases, hyperlinks to individual district or school web sites were provided as well.

The first table below represents an informal summary of these boys’ schools in terms of (1) grade levels; (2) intended target population(s); and (3) campus type. The categories and the counts are based on the brief descriptions provided in NASSPE, as well as a cursory look at individual school web sites where links were provided. In some cases, the relevant information was not specified in either source.

<b>Grade Levels</b>	<b>#</b>	<b>Target Population</b>	<b>#</b>	<b>Campus Type</b>	<b>#</b>
Elementary	7	At Risk/ Underachieving	7	Single Campus	26
Elementary/ Middle	1	African American/ person of color	6	Dual Campus	10
Middle	14	Low Income	3	Not specified	1
Middle/ Secondary	2	Higher Achieving	4		
Secondary	10	Not specified	21		
Not specified	3				

The second table also provides a very unmethodical tally or “snapshot” of common design features or themes found within some of the boys’ schools models. This list was derived from scanning the home pages of selected websites of boys’ schools e.g. those that posted direct links on the NASSPE site.

Features that were mentioned by at least four or more of those eleven schools included:

- Extended day or year
- Core curriculum/ academic focus; rigorous liberal arts
- Community involvement/ service
- Character education
- Technology (e.g. computers, labs, wireless...)
- Uniforms
- Small school/ small environment
- Safe and caring, supportive environment
- Parental/ family involvement
- Standards-driven assessments; high standards & expectations; focus on results

## **THE NASSPE LIST OF SINGLE-SEX BOYS SCHOOLS**

### **California**

**The San Francisco 49'ers Academies** were one of the six single-sex academies opened in 1996 and 1997 under the short-lived California program to establish single-sex public schools, and the only one of the six still remaining in operation today (the others closed after funding for the program lapsed in 1999). There are a total of 90 girls and 90 boys enrolled, in grades 5 through 8. The Academies take their name from the fact that the San Francisco 49'ers (the NFL franchise) is a sponsor of the school, and football players from the NFL team occasionally visit the school. You can visit their Web site here.

**Tierrasanta Campus of the Charter School of San Diego (CSSD)** opened in July 1994. This school includes grades 7 through 12, spread over 19 storefront sites. The roughly 90 students at the Tierrasanta Campus are educated exclusively in single-sex classrooms.

### **Colorado**

The **\*James Irwin Charter Middle School**, in Colorado Springs, is organized as a "dual academy" for grades 6, 7, and 8: girls are in girls-only classes, boys are in boys-only classes.

### **Delaware**

The **\*Prestige Academy** in Wilmington is a public charter all-boys school enrolling boys in grades 5 through 8. More information is available at [www.prestigeacademycs.org](http://www.prestigeacademycs.org).

## **District of Columbia**

**\*Septima Clark Public Charter School**, an all-boys public elementary charter school, began enrolling boys in grades K-2 in the fall of 2006. The school now enrolls boys in grades K-3. All staff attended a professional development seminar led by NASSPE Executive Director Leonard Sax in July 2006. In August 2007, Dr. Abigail James, a member of the NASSPE Advisory Board, led another full-day professional development seminar for school faculty.

## **Florida**

**Young Women's Preparatory Academy** in Miami opened its doors to girls in grades 6 thru 10 in the fall of 2006. For 2007-2008, the school is enrolling girls in grades 6 through 11; in 2008-2009, the school will enrol girls in grades 6 through 12. The **\*Young Men's Preparatory Academy**, also in Miami, opened in the 2008-2009 school year with an inaugural enrolment of just 84 boys.

## **Georgia**

Atlanta Public Schools launched two single-sex schools in the fall of 2007. The **\*Coretta Scott King Young Women's Leadership Academy** will enrol 6th-, 7th- and 8th-graders in 2009-2010, adding one grade per year until the school is a 6-12 school. Likewise, the **\*B.E.S.T. Academy at Benjamin Carson**, will enrol 6th-, 7th- and 8th-graders in 2009-2010, adding one grade per year until the school is a 6-12 school. Curt Green, principal of the B.E.S.T. Academy, was a speaker at our 2008 NASSPE conference and will again be a speaker at the October 2009 NASSPE conference in Atlanta.

## **Illinois**

**\*Urban Prep Charter Academy** is an all-boys charter high school launched in 2006 on the site of what was formerly Englewood High School, on Chicago's South Side. The mission of the school is empowering young African-American men from low-income neighbourhoods. The key figure behind Urban Prep is Tim King, a dynamic young (b. 1966) African-American philanthropist who envisions a network of schools modeled after Urban Prep. Mr. King and Urban Prep were featured in an article in *Education Week* about the growing popularity of single-sex education specifically for at-risk African-American boys.

## **Kentucky**

The **\*Southern Leadership Academies**, in Louisville, adopted the "dual academy" format beginning with the 2002-2003 school year: girls in girls' classrooms, boys in boys' classrooms. In the 2008-2009 school year, Southern becomes an all-boys school, while **\*Iroquois Middle School** becomes all-girls.

## **Louisiana**

**\*The Miller-McCoy Academy for Mathematics and Business** is an all-boys public charter school, which opened in the fall of 2008. The challenges facing this school were chronicled in a September 2008 article in *Education Week*.

**\*Capitol Pre-College Academy for Girls**, also in Baton Rouge is an all-girls high school.

**\*Capitol Pre-College Academy for Boys** is the brother school of the Capitol Pre-College Academy for Girls.

## **Maryland**

**\*The Bluford Drew Jemison Academy** is a public charter boys' school serving middle school boys. More information is available at the school's web site.

## **Michigan**

**\*Detroit International Academy** is an all-girls school, part of Detroit Public Schools, for girls in grades 9 through 12. **\*Douglass Academy** is an all-boys public school, also part of Detroit Public Schools, for high school boys. It is the "brother school" to the Detroit International Academy. Both schools are schools of choice, meaning that students choose to attend.

## **Minnesota**

**\*The Minneapolis Academy** in Minneapolis is a charter school, which opened in September 2004. The school is a "dual academy" middle school, enrolling grades 5, 6, 7, and 8. Girls are in all-girls classrooms, boys in all-boys classrooms.

## **New York**

**\*Green Tech Charter High School**, in Albany, is an all-boys public high school, which opened in the fall of 2008.

**\*The Excellence Charter School of Bedford Stuyvesant** is an all-boys elementary school located in a low-income neighbourhood in Brooklyn. The school currently enrolls boys in grades K-5.

**\*The Academy of Business & Community Development (ABCD)** is an all-boys college preparatory school, which opened in 2005-2006 enrolling 6th grade boys. The school has added one grade each year, with the plan of enrolling grades 6 through 12 beginning in 2011. More information is available at the school's web site.

**\*The Eagle Academy for Young Men** opened in the Bronx (New York City) in August 2004. The school targets at-risk African-American boys in grades 9 through 12.

**\*The Urban Assembly Academy for History and Citizenship for Young Men**, located in the Bronx, opened its doors in the fall of 2005. The school now enrolls young men in grades 9-12.

**\*The Brighter Choice Charter School for Girls** and **\*The Brighter Choice Charter School for Boys** are both charter elementary schools located in Albany. Both schools were launched in 2002. The schools originally shared facilities. However, effective August 2007, the Brighter Choice Charter School for Boys is now in a completely separate facility located several blocks away from the girls' school.

## **North Carolina**

**Middle College at NC A&T**, in Guilford County, is an all-boys high school launched in the fall of 2003. The school is open to high school boys who have failed two or more grades or have dropped out of school. These are boys who in most cases are unlikely to graduate without some special intervention. Classes are taught by regular teachers employed by Guilford County Public Schools, although the school itself is located on the campus of North Carolina A&T. College students, serving as mentors, are paired one-on-one with high school boys.

## **Ohio**

CEO of Cleveland Public Schools in 2007, one of his first actions was to establish FOUR single-sex public schools in Cleveland – two on the East Side, two on the West Side – which opened in the fall of 2007. The four single-gender elementary schools which opened in August 2007 are:

1. **\*Douglas MacArthur Girls Leadership Academy**, 4401 Valleyside Road
2. **\*Kenneth Clement Boys Leadership Academy**, 14311 Woodworth Road
3. **\*Valley View Boys Leadership Academy**, 17200 Valleyview Avenue
4. **\*Warner Girls Leadership Academy**, 8315 Jeffries Avenue

These four schools have received considerable press coverage, in part because of the haste with which CEO Sanders has pushed the opening of these schools. One new school which has been overlooked by the media is the **\*Ginn Academy**, named after a former high school football coach. The Ginn Academy is an all-boys high school which opened in August 2007 in a renovated school building at 1740 E. 32nd St.

**\*Athena: School of Excellence for Girls** is an all-girls middle school in Youngstown.

**\*Alpha: School of Excellence for Boys** is the brother school to Athena in Youngstown.

**Harmony Community School** is a charter school in Cincinnati which enrolls students in grades 7 -12. Although the school was founded in 1998 as a co-ed charter school, the leadership "reinvented" the school as a dual academy: since the fall of 2007, all girls have been in girls-only classes, and boys are in boys-only classes, for ALL classes and ALL activities, including lunch and physical education. Dr. Sax, director of NASSPE, led a two-day workshop for the school's faculty prior to the launch of the single-sex format in August 2007.

**\*The Chase Academy for Communication Arts** launched in Columbus, Ohio, in September 2004. The Academy enrolls both girls and boys, in kindergarten through eighth grade. Students are in gender-separate classes for all subjects.

**\*Charity Adams Earley Academy for Girls** is an all-girls neighbourhood elementary school which opened in Dayton in August 2005. The success and popularity of the school prompted Dayton Public Schools to open **\*Dayton Boys' Prep**, an all-boys neighbourhood elementary school, in the fall of 2006. Dr. Leonard Sax, director of NASSPE, led professional development workshops for faculty for the girls' school in the summer of 2005 and for the boys' school in the summer of 2006.

**The Africentric School**, an elementary school in Columbus, established single-sex classrooms for 4th- and 5th-graders in 2002-2003. Teachers immediately noticed an improvement in the classroom atmosphere. "Classroom disruptions have decreased," said 4th-grade teacher Sandra Alexander. "The male students are reading," she added. "You have to peel the books out of their hands." Beginning with the 2003-2004 school year, the program was expanded to include the 3rd grade, so that all students in 3rd, 4th, and 5th grade were in single-gender classrooms beginning in 2003-2004 (and that is still the case as of 2007-2008).

Teacher Sandy Alexander said that the biggest thrill for her was seeing the boys enjoy reading and writing. The boys' interest in reading picked up after she brought in books that were more



interesting to the boys. With more reading came stronger writing skills. The most recent available test scores show a huge improvement. In science, 83.7% of 4th graders passed Ohio's proficiency test, compared with a pass rate of just 35.6% when the school was co-ed. Reading scores improved by 28 percentile ranks. Principal Stan Embry has also noted a big improvement in discipline, with fewer expulsions and suspensions since the introduction of the single-sex format.

## **Oregon**

**The Mount Scott Learning Centers** are an alternative middle school in Portland. In the 2002-2003 school year, the school experimented with single-gender classrooms, with good results – especially for the girls. Their math and reading scores were 30 to 40 percent higher than the previous year's scores. Moreover, the girls at the top of their classes had test scores that "went through the roof," according to teacher Michelle Wagner Coniff. "When the girls and boys are together, they're both psychotic," says Jackie Nagel, a counsellor at Mt Scott. Parent Jeanie Shaw saw a vast difference in her eight-grade daughter. "It's been amazing," said Shaw of her daughter, Sarah Leckron. "She does her work. She goes to school every day. She doesn't cuss the teachers out; she doesn't fight with the kids [anymore]." You can learn more about the Mt. Scott Learning Centers at the school's web site.

## **Pennsylvania**

Nine public schools in **Philadelphia** offer single-sex educational opportunities.

Two schools – **\*Pepper** and **\*Bethune** – are "dual academies", i.e. schools which enrol both girls and boys but in which girls and boys attend separate classes for all subjects.

**\*Boys' Latin Philadelphia Charter School**, (formerly known as the Southwest Philadelphia Academy for Boys), opened in the fall of 2007. This school is NOT operated by Victory schools and is completely independent.

The **\*Southwest Leadership Academy Charter School** is another "dual academy" – girls in girls' classrooms, boys in boys' classrooms – which opened in the fall of 2007, initially enrolling grades K-3. This school is operated by Victory Schools, which also operates Wright, Pratt, Pepper, Bethune, FitzSimons, and Rhodes, also in Philadelphia, The Southwest Leadership Academy Charter School is the only charter school operated by Victory in the city of Philadelphia; the other Victory schools are all regular public schools. The remaining two schools

operated by Victory Schools – **\*FitzSimons High School for Boys** and **\*Rhodes High School for Girls** – have completely single-sex campuses.

## **South Carolina**

South Carolina leads the nation when it comes to offering parents the choice of single-sex education within public schools. In the spring of 2007, State Superintendent Jim Rex asked David Chadwell, a member of the NASSPE Advisory Board, to help coordinate single-gender initiatives statewide. Mr. Chadwell became the first person appointed to any statewide office anywhere in the United States with the primary mission of promoting single-sex education in public schools.

As of February 2009, **215 public schools in South Carolina offer single-gender classrooms**. For a complete and up-to-date list of those schools, please visit the South Carolina Department of Education, Office of Single-Gender Initiatives, which Mr. Chadwell directs.

Somewhat surprisingly, only two public schools in South Carolina – the **\*Langston Charter Middle School**, in Greenville, and **\*Morningside Middle School** in Charleston County – count as single-sex **schools**, with all students enrolled in single-sex classrooms. All the other schools on Mr. Chadwell's list are co-ed schools offering selected single-gender classrooms. (None of our counts include schools reserved primarily for girls who have been convicted of a criminal offense or otherwise referred by the Department of Juvenile Justice.)

## **Texas**

**Pro-Vision** is an all-boys public school in Houston. The school was founded by Roynell Young, who continues to serve as CEO. The full name of the school, which serves boys in grades 6 through 8, is the Pro-Vision All Male Charter Middle School.

The **\*William A. Lawson Institute for Peace and Prosperity Preparatory Academy for Boys** – usually referred to as "the WALIPP Prep Academy" – is another all-boys school in Houston targeting at-risk African-American boys.

The **\*KIPP Polaris Academy** is the third all-boys public school in Houston. KIPP Polaris is a charter middle school which opened in the fall of 2007.

Source: National Association for Single Sex Public Education (NASSPE), 2009

