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PRINCIPALS' PERCEPTIONS OF SINGLE-SEX CLASSES IN
COEDUCATIONAL PUBLIC ELEMENTARY SCHOOLS

BY

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Submitted in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education
Seton Hall University

2008

SETON HALL UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN SERVICES
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Abstract

Principals' Perceptions of Single-sex Classes in Coeducational Public Elementary Schools

The purpose of this study was to examine principals' perceptions of single-sex classes in coeducational public elementary schools. Public schools can provide single-sex classes as an educational alternative or intervention, following the mandates of *No Child Left Behind* (NCLB) and the regulations in the revisions to Title IX. The focus of the study pertained to single-sex classes and the variables of school culture, classroom pedagogy, and professional development.

The data in this study were collected from telephone interviews of principals who implemented single-sex classes during the 2006-2007 school year. Interview questions focused on single-sex classes and the variables of school culture, pedagogy, and professional development. The researcher developed a semistructured, open-ended questionnaire, after careful reading of the literature.

The results of the study included the following principals' responses: (a) the goals of single-sex classes clustered around academic achievement, behavior, gender-differentiated instruction, and students' needs. (b) Teachers differentiated instruction and addressed the interests and personalities of the genders. (c) Early and frequent communication among all stakeholders was vital to the success of the programs. (d) Professional development, whether through the reading of literature, workshops, or in-services, was significant.

Recommendations for future study include the following: (a) A study comparing perceptions of single-sex classes among all stakeholders; (b) a study to determine the impact of professional development on the pedagogy of single-sex classes; (c) a study to determine effective pedagogical strategies and practices of single-sex classes; and, (d) a study on how boys and girls learn differently during the elementary school years.

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ACKNOWLEDGEMENTS

A special thank you to my mentor, Dr. Mary Ruzicka, for her guidance and unequivocal support and encouragement throughout the dissertation process. I also thank the members of my dissertation committee: Dr. Caulfield, Dr. Brightman and Dr. Figgs for their time and suggestions.

Thank you to my family for their loving support and daily sacrifices, which allowed me to complete the doctoral journey.

Thank you to Cohort X for your strength and solidarity, especially Mary Jo, Sue, Rick, Jeff, Ben, and Jean.

Thank you Father Patsy Amabile for your prayerful support.

Thank you to the faculty and staff of BSR for your patience, support, and encouragement. Special thanks to Janet Sampson, Cindy Buzby, Rich Uznanski, Pat Thomas and Terry Smith.

DEDICATION

To my husband, Brien, for your love, confidence, encouragement and support over the last two years. You are my rock. I love you--always.

To my children: Chelsea, John-Kyle, Russ, and Sean, I hope to inspire you as much as you inspire me.

To my mother, Pat Plesh, who gave me the strength and convictions to follow my dreams; and, to my sister, Pam Weigand, and brother, Paul Plesh, for their love and support.

To my father, John Plesh, my grandparents, Dana, De, and Bruce, who followed my journey from heaven—I carry you in my heart.

TABLE OF CONTENTS

List of Tables.....	viii
Chapter 1: The Problem and Procedures	
Introduction.....	2
Problem Statement.....	6
Purpose of the Study.....	10
Significance of the Study.....	10
Research Question.....	12
Subsidiary Questions.....	12
Limitations of the Study.....	12
Definitions.....	13
Chapter 2: Review of the Literature	
Introduction.....	15
Single-sex Education.....	15
History of Single-sex Education.....	16
Legislation and Case Law.....	20
Single-sex Education and Urban Settings.....	24
Single-sex Education and California.....	27
Single-sex Education Research.....	28
Single-sex Classes.....	31
School Culture.....	34
Pedagogy.....	39
Gender Differentiation.....	44
Teacher Professional Development.....	47
Summary.....	49
Chapter 3: Methodology	
Introduction.....	52
Subjects.....	52
Procedure.....	52
Instrument.....	54
Interview Questions.....	55
Design.....	58
Data Analysis.....	58
Chapter 4: Presentation of the Data	
Introduction.....	60
Nature of the Study.....	60

Presentation and Analysis of Findings.....	62
Demographics.....	62
Interview Question 1.....	64
Subsidiary Research Question 1.....	68
Interview question 2.....	68
Interview question 3.....	72
Interview question 4.....	76
Interview question 5.....	80
Subsidiary Research Question 2.....	85
Interview question 6.....	85
Subsidiary Research Question 3.....	89
Interview question 7.....	89
Summary.....	93

Chapter 5: Summary and Recommendations

Introduction.....	95
Findings Related to Demographic Data.....	96
Grade Levels.....	97
Gender of the Classes.....	98
Findings Related to School Culture.....	100
Findings Related to Pedagogy.....	106
Findings Related to Professional Development.....	110
Conclusion.....	111
Summary of Recommendations for Future Research.....	114
References.....	118

Appendices

Appendix A: Letter of Solicitation.....	131
Appendix B: IRB Consent Form.....	135
Appendix C: Participation Form.....	141
Appendix D: Interview Questions.....	143
Appendix E: Telephone Script.....	145
Appendix F: Principal Interviews.....	147

List of Tables

Table 1 Demographic Information.....	63
Table 2 Grade Level and Subject Area of Single-sex Classes.....	65
Table 3 Goals of the Single-sex Classes.....	69
Table 4 School Culture and Single-sex Classes.....	73
Table 5 Involvement of Stakeholders and Single-sex Classes.....	77
Table 6 Obstacles in Single-sex Classes.....	81
Table 7 Pedagogy of Single-sex Classes.....	86
Table 8 Professional Development and Single-sex Classes.....	90

Chapter 1: The Problem and Procedures

Introduction

Public schools in the United States can provide single-sex education opportunities. Provisions in the No Child Left Behind Act of 2001 (NCLB, Section 5131(a)(23)) and amendments to Title IX allow states and school districts the opportunity to adapt innovative programs, to improve teaching and learning (U.S. Department of Education, 2007). The use of innovative program funds that support same-gender schools and classrooms must be consistent with applicable law (Federal Register, 2002).

Public schools have begun to explore single-sex options based on an educational needs rationale:

A number of single-sex programs have been implemented to address the needs of at-risk students . . . some of these are new upstarts including charter schools; some are reconstituted schools that were formally coeducational and failing; some educate girls and boys in separate classrooms within the same facility; and others are totally single-sex. In addition, a number of coed schools have initiated separate classes in certain subjects. (Salomone, 2006, pp. 778-779)

In the current era of high-stakes testing, standardized tests continue to indicate achievement gaps by gender, race, and socioeconomic status. Single-sex classes are beginning to emerge in coeducational public elementary schools. Wills, Kilpatrick, and Hutton (2006, p. 277) maintain "that if the single-sex class concept is to achieve its full potential it must begin early in primary school and may not have achieved its full potential until children reach adolescence," and that "there may be an extended lag between establishing changed social relationships and measurable academic outcomes."

Research on single-sex education can be classified into two main categories: comparing single-sex and coeducational schools and comparing single-sex classes in coeducational schools to coeducational classes. Research in the United States often compares single-sex education of private and parochial schools to private, parochial, or public coeducational schools (Lee & Byrk, 1986; Marsh, 1989; Riordan, 1985). Most studies comparing single-sex classes in coeducational public schools come from countries outside the United States (Gray & Wilson, 2006; Warrington & Younger, 2001).

Interest in single-sex education is not new. During the early 1990s, single-sex experiments in public education began in Baltimore, Detroit, Milwaukee, and New York, to meet the needs of and problems confronting African American boys (Cooper, 2006; Salomone, 2003). Urban school districts also turned to single-sex education to "explore comprehensive approaches" to meet the "needs of adolescent girls across the economic spectrum" (Salomone, 2003, pp. 4-5). The Detroit School Board, in 1991, established three male-only academies in an effort to reduce dropout and retention rates of African American boys. In 1996, the Young Women's Leadership School of East Harlem was established to address the educational needs of minority and low-income girls. Opponents of these experiments included the National Organization of Women and the American Civil Liberties Union.

Until the enactment of NCLB in 2002, and the amendments to Title IX in 2006, the legality of such experiments was questionable (Cooper, 2006). The Bush administration has supported the single-sex movement through legislation authorizing the use of local innovative education funds for public single-sex schools and classes

at the elementary and secondary levels and by proposing amendments to Title IX regulations to remove possible legal impediments (Simson, 2005, p. 448). The proposed and amended regulations of Title IX were published on October 25, 2006, with implementation effective November 24, 2006. The No Child Left Behind Act of 2001 has provided public schools considerable flexibility in offering single-sex classes.

Elementary schools are beginning to implement single-sex classes to improve student achievement, address at-risk students, meet diverse educational needs, and acknowledge gender-based learning differences (Salomone, 2006, p. 778). There are approximately 360 coeducational public schools listed with the National Association of Single-Sex Public Education (NASSPE) that offer single-sex educational opportunities, with most offering single-sex classes within a coeducational setting. The number may be higher. The exact number may not be known because schools wish to avoid media attention (Salomone, 2006, p. 779).

Problem Statement

Public schools in the United States can legally provide single-sex classes as an educational alternative or intervention, following the mandates of No Child Left Behind (NCLB) and the regulations in the revisions to Title IX. NCLB regulations are not concerned with gender equity "but rather offer considerable flexibility based on either a 'diversity' or 'educational needs' rationale, as long as the educational opportunities offered to girls and boys are 'substantially equal'" (Salomone, 2006, p. 784). Some elementary schools are beginning to implement single-sex classes as an intervention strategy to improve student achievement on high-stakes tests, improve student behavior, address at-risk students, and meet diverse gender learning styles.

To meet the educational needs of students through single-gender programs, the South Carolina Department of Education, Office of Public School Choice: Single-Gender Education aids schools and districts in creating, implementing, and evaluating single-gender programs. Support includes administrative and team leader planning, staff training, gender-awareness staff presentations,

classroom observations and teacher meetings, and parent presentations. Additionally, workshops, meetings, and newsletters are presented periodically for teachers statewide (Chadwell, 2008).

One impediment to the implementation of single-sex classes concerns the NCLB requirement that newly created programs and curricula must be based on and supported by scientific research. The current research on single-sex classes available to educators and policymakers appears weak and contradictory (Bracey, 2007, p. 26; Salomone, 2006, p. 779). The single-sex research coming from foreign countries is controversial, and applicability to the United States questionable (Bracey, 2006; Salomone, 2006). "The countries are seen as being very different in terms of educational traditions, socialization, patterns, acceptance of change, family and employment structures and even cultural and religious influences" (Mael, 1998, p. 118).

Salomone (2006) concluded that many studies on single-sex education lack the scientific rigor that the Department of Education requires to support findings. Thompson and Ungerleider (2004) found that most studies use samples of convenience (Streitmatter, 1997), compare single-sex

private or denominational schools to public coeducational schools (Byrk, Lee, & Holland, 1993; Marsh, 1991), or make comparisons between Catholic single-sex and coeducational schools (Lepore & Warren, 1997; Martino & Meyenn, 2002; Steinback & Gwizdala, 1995). Therefore, current initiatives to develop single-sex classes in public schools must focus on the emerging body of research in the United States drawn from public school settings (Herr & Arms, 2004).

Bracey (2006, p. 39) recommended certain questions for single-sex education studies, including the following: (a) What are the goals of the program? (b) What obstacles conflict with the stated goals? (c) Have the school's administration, faculty, and parents accepted the program? (d) Will professional development be provided for the administration and faculty? (e) Does the rationale for the program include differential brain function? To facilitate the successful implementation of single-sex classes, research cannot be limited to student achievement scores on standardized tests. Comparing what happens in single-sex and coeducational classrooms, including classroom and school climate, school organization, and other institutional factors, can be significant (Salomone, 2006).

The format of single-sex classes and appropriate grade levels for effective implementation are unclear. Wills, Kilpatrick, and Hutton (2006, p. 277) recommended that in order to gain the most benefit from single-sex education, it must begin in the early years of schooling. "Depending on the questions asked, the methodology employed, and the educational quality of the particular programs, these efforts could generate useful information in determining the merits of single-sex as compared with coeducation" (Salomone, 2006, p. 779).

Single-sex classes within a coeducational school can provide "fertile ground for research, policy and practice" (Watterson, 2001, p. 4). Single-sex classes have the potential to present as an educational alternative, strategy, or intervention to the either/or choice of a public single-sex school or a public coeducational school. It is important to consider the relationship among planning, implementation, evaluation, and research when considering and developing single-sex programs, examining "the underlying rationales and specific goals of each program" (Salomone, 2006, p. 782).

Purpose of the Study

The purpose of this study was to investigate principals' perceptions of single-sex classes in coeducational public elementary schools on the variables of school culture, pedagogy, and professional development, where single-sex classes were implemented during the 2006-2007 school year. The purpose of this study was not to determine whether single-sex classes have a greater impact on student achievement than coeducational classes. Rather, this study explored principals' perceptions where single-sex classes, as an alternate strategy, had been instituted.

Significance of the Study

A study on single-sex classes in coeducational public elementary schools is significant due to the scarcity of research, implementation issues, and the increase in gender learning data. A study of single-sex classes in coeducational, public elementary schools is timely due to the November 2006 implementation of the new Title IX regulations:

The debate about the subject of single-sex education is something, which has been going on for some years

now. Despite the fact of this longstanding discussion, there is not enough sound, definitive research to be used to guide educators and policymakers. (Bracey, 2007, p. 22)

Within the United States, research pertaining to single-sex classes in coeducational public elementary schools is limited and, to the researcher's knowledge, does not include principals' perceptions where such programs exist. Consequently, a study to ascertain the perceptions of principals of single-sex classes in coeducational, public elementary schools, within the variables of school culture, pedagogy, and professional development was conducted.

Schools are required to base the implementation of academic programs, such as single-sex classes, on research-based supportive data. This study will provide information on single-sex classes in coeducational public elementary schools, and address the practical issues facing administrators. The information can be important to the development and implementation of successful single-sex intervention strategies in public schools.

Research Question

What are principals' perceptions of single-sex classes in coeducational public elementary schools?

Subsidiary Questions

How does the school's culture support single-sex classes?

Interview Questions 2, 3, 4, and 5

To what extent, if any, does the pedagogy differ in single-sex classes?

Interview Question 6

To what extent, if any, does professional development address single-sex classes?

Interview Question 7

Limitations of the Study

The following are the limitations of the study: (a) The subjects for this study were limited to principals of coeducational, public elementary schools, within the United States, that held single-sex classes during the 2006-2007 school year. (b) The study consisted of only 6 principals (N = 6). (c) The demographic differences/

similarities of the school settings may have impacted answers. (d) The responses of the principals may have been based on personal bias. (e) Interviews were conducted over the telephone. (f) Because single-sex classes are relatively new in coeducational public elementary schools, the principals' perceptions may have been subject to the Hawthorne effect. "The Hawthorne effect is the effect of novelty—people often behave differently at the beginning of an innovation or experiment than they do later on" (Bracey, 2006, p. 17).

Definitions

For the purpose of this study, the following definitions are presented for the variables.

School Culture

School culture is the existence of interplay among three factors: the attitudes and beliefs of persons inside the school and in the external environment, the cultural norms of the school, and the relationships between persons in the school (Boyd, 1992).

Pedagogy

Pedagogy refers to the art, science, or profession of teaching (Merriam-Webster, 2007).

Professional Development (Teacher)

Professional development refers to access to programs for the continued improvement of teachers' professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the 21st century (U.S. Department of Education, 1996).

Chapter 2: Review of the Literature

Introduction

This chapter reviewed the literature relating to single-sex education, single-sex classes, and the variables of culture, pedagogy, and professional development. Due to the limited research and implementation of public school single-sex programs in the United States, the literature review included material from peer-reviewed journals, nonrefereed journals, university papers, government research projects, and books specifically relating to single-sex education and school culture, pedagogy, and professional development, including international material.

Single-sex Education

Public school single-sex education focuses on student achievement, students at-risk, and gender diverse learning, questioning whether or not single-sex education benefits girls, boys, or both (Salomone, 2003, pp. 5-6). Single-sex education has attracted renewed attention in the United States. Singh, Vaught, and Mitchell (1998, p. 158), in their research comparing urban single-sex and coeducational classes maintained, "Despite the long history of

coeducation in U.S. public schools, persistent questions remain about viewing coeducation as the only viable option for all students."

In an overview of single-sex education, Bracey (2007) proffered four distinct groups of thought. The first group maintains the belief that coeducation is the best. The second group believes that though coeducation is best, there may be times when single-sex classes and schools may present as viable alternatives. The next group espouses that separate schools are best for some, and the final group believes that boys and girls learn so differently that the only way to maximize learning is through separate, single-sex schools.

History of Single-sex Education

When comparing the rationales for single-sex education in today's society, it is necessary to understand the background and progression from single-sex education to coeducation in the United States. The focus and framework of single-sex education, today, are different than from the historical past. In the book *Learning Together*, Tyack and Hansot (1992) presented a comprehensive history of societal

and other factors that determined the evolution from single-sex education to coeducation in the United States. Riordan (1990) maintained in his book *Girls and Boys in School: Together or Separate* that coeducation was chosen as a matter of economics and convenience rather than its enhanced quality over single-sex education. "Initially, all formal education in the United States occurred in single-sex schools" with public education in the United States evolving from single-sex settings to coeducational settings late in the 19th century (Bracey, 2006, pp. i & 1).

Colonial girls and boys were expected to become literate; however, gender distinctions were apparent in formal education. "By law, literacy was compulsory for both sexes, but attendance in public grammar schools was optional and open only to males" (Tyack & Hansot, 1992, p. 16). Private, primary, coeducational settings could be found in family homes, dame schools, and summer schools taught solely by women.

As communities developed and grew, private, primary, coeducational schools also grew, often leading to political, religious, and public funding deliberations over the academic aptitudes of women. Still, female education

continued to remain in the private sector. Tyack and Hansot (1992, p. 31) stated that it was "the desire of parents to educate their daughters and a willingness of school boards to open the doors of the schoolhouse to girls" that led to an increase in coeducational schools.

Economic factors, political issues, and behavioral concerns were determinants in the development of public coeducational schools, in the 19th century, with many communities seeking an economy of scale and merging the genders into coeducational 'common' schools (Tyack & Hansot, 1992). Public schools began admitting girls, not only as a means of saving money but also with the hope "that the presence of girls would have the effect of tempering boys' 'rough behavior'" Bracey (2007, p. 22). As the movement to coeducational, common, public schools continued, "the primary goals of the common schools . . . were to train the rising generation in morality, citizenship, and the basic skills, represented by the 3 R's" (Deschenes, Cuban, & Tyack, 2001, p. 529).

In the book *Same, Different, Equal: Rethinking Single-Sex Schooling*, Salomone (2003) stated that as coeducation began to develop and grow, single-sex schools remained

primarily in the private and parochial sectors. Exceptions could be seen in urban settings, such as Philadelphia's Central High School for Boys and the High School for Girls, and Baltimore's Western High School for Girls. All three schools are still open today and considered high-quality academic institutions (Salomone, 2003).

Most single-sex public school education ended with the Title IX Education Amendments of 1972, which banned gender discrimination in schools that receive federal funding. Single-sex public schools and classes could no longer be created "except in rare circumstances or to remedy prior discrimination" (Bracey, 2006, p. 1). Salomone (2006) stated:

For almost three decades, the Office for Civil Rights in the Department of Education adhered to a policy prohibiting public schools from separating girls and boys for all or part of the school day with few exceptions . . . In recent years, an increasing number of programs have defied this interpretation primarily to address the needs of at-risk students. (2006, p. 778)

Early in the 1990s, questions began to emerge on the equality of educational opportunities for girls. The American Association of University Women (AAUW) published a report in 1992 indicating a lag in achievement scores among girls, with a loss of interest in science and math classes, particularly at the middle-school level. Sadker and Sadker (1994) found in their study that teachers called on boys more frequently than girls and that boys received more of the teachers' attention than girls. As these issues and concerns came to the forefront of education, equity in programs and outcomes began to be examined. Discussions also began on whether or not single-sex education could benefit those in public schools.

Legislation and Case Law

Research studies on single-sex education in the United States include the impact legal decisions have had on single-sex education in public schools. Single-sex debates often begin with equal opportunities and *Brown v. Board of Education*, questioning whether separate is inherently unequal and if race and gender should be viewed in the same way. Opponents view single-sex education as placing girls

in a pre-Brown era, while advocates view single-sex education as providing girls and boys with the opportunity to realize their academic potential (Heise, 2004).

In 1972, the passing of Title IX virtually eliminated single-sex education in public schools (Mael, 1998) and "made it illegal to create new single-sex public schools and classes, except for rare exceptions" (Bracey, 2006, p. 1). The interpretation of Title IX prohibits federal funding for single-sex schools, classes, or activities. The passing of Title IX is viewed as a response to an equity call for female students, with equal access to education "one of the primary goals of the modern day women's movement" (Salomone, 2006, p. 780).

Specific court cases have had noteworthy impact on public school single-sex education (Caplice, 1994; Heise, 2004; Salomone, 2006). In *Vorchheimer v. School District of Philadelphia*, the Third Circuit allowed an all-male high school to exclude girls provided an equal, all-female high school existed. The decision stated that the "female plaintiff was not denied Equal Protection of the laws" because the educational opportunities offered to the boys and girls were equal and enrollment was voluntary (Caplice,

1994, p. 4). The appeals court viewed this as an equal benefits issue (Stoeker & Pascarella, 1991). The Supreme Court's affirmation of the appeals court's decision appears to constitutionally permit separate-but-equal when considering gender (Salomone, 2003).

In *United States v. Virginia*, the Fourth Circuit affirmed "the physiological and psychological differences between the sexes," concluding "that single-sex education can be pedagogically justifiable" (Caplice, 1994, p. 46). In 1996, the Supreme Court "invalidated Virginia Military Institute's (VMI) all male admissions policy" as "contrary to constitutional requirements" (Heise, 2004, pp. 1221, 1224). The VMI decision affirmed that public schools must clearly support and justify the implementation of single-sex experiences (Heise, 2004). "The U.S. Supreme Court's 1996 decision requiring the Virginia Military Institute to admit women set very narrow conditions under which single-sex classes would be permitted (Bracey, 2007, p. 22).

In 2001, Congress approved, as a part of *No Child Left Behind*, the use of federal funds for innovative programs including same-gender schools and classes, with the provision that educational programs are guided by

scientific research (Salomone, 2006). To legally implement single-gender programs, legal constraints had to be lifted. The amendments to Title IX give "public school districts the flexibility to establish single-sex schools and classes, as long as enrollment is voluntary and a comparable coeducational opportunity is available" (Cooper, 2006, p. 14).

In the newsletter *Gender Matters*, Chadwell (2008), single-gender initiatives coordinator for the Office of Public School Choice, South Carolina Department of Education, provided a summary of the federal regulations on single-sex classes and schools. They are as follows: The school's rationale must address an important educational objective such as academic performance, attendance, and behavior; the program must be implemented whereby boys and girls are treated similarly regarding expectations, policies, and procedures; enrollment must be voluntary, and parents must have a choice; a coeducational class that is substantially equal must be offered to students who are not in the single-gender class; and schools may have to provide a single-sex class for those students of the excluded sex. South Carolina is playing a special role in the single-sex

education movement, leading the nation in offering parents the choice of single-sex educational opportunities (NASSPE, 2008). As of May 1, 2008, South Carolina has "98 confirmed schools with single-gender programs" (Chadwell, 2008).

Together, court cases, NCLB, and the amendments to Title IX have opened the door to single-sex education. Public single-sex education is not viewed as an equity issue but rather as an educational needs issue addressing diversity, at-risk students, gender learning, and behavior through interventions and strategies. Using an educational needs criteria, public schools can provide for the development and implementation of single-sex programs as long as the educational programs are substantially equal for both genders (Salomone, 2006).

Single-sex Education and Urban Settings

During the 1990s, single-sex experiments in public education began in Baltimore, Detroit, Milwaukee, and New York in an effort to meet the needs of African American boys. Cooper (2006, p. 14) suggested, in his article on the effectiveness of single-sex classes, that the rules of the U.S. Department of Education, giving schools the

flexibility to establish single-sex classes and schools as long as enrollment is voluntary, are "actually a delayed response to the experiments" of African-American educators in Baltimore, Detroit, Milwaukee, and New York. "The original experiments were designed to address the needs of Black boys who come from homes and neighborhoods lacking positive male role models" (Cooper, 2006, p. 14).

Gaps in achievement scores were evidenced by gender, race, and ethnicity in poor, urban settings. Urban school districts turned to single-sex education to "explore comprehensive approaches" in an effort to meet the "needs of adolescent girls across the economic spectrum and to resolve the compelling problems confronting inner city boys" (Salomone, 2003, pp. 4-5). The National Organization for Women and the American Civil Liberties Union fought the initiatives in Detroit and Milwaukee by encouraging lawsuits, fighting the all-male requirements (Salomone, 2003). In New York City in 1996, the Young Women's Leadership School (TYWLS) of East Harlem was founded to address the developmental needs, intellectual curiosity, and creativity of girls. TYWLS faced legal challenges;

however, unlike Detroit and Milwaukee, no lawsuits were filed. In 2004, TYWLS's second campus opened in the Bronx.

Singh, Vaught, and Mitchell (1998) compared two single-sex classes and two coeducational classes of African American, fifth-grade boys and girls from two inner-city schools, to determine any significant differences in academic outcomes between the two groups. The study found that class grades were consistently higher in the single-sex classrooms, though the differences were not always statistically significant. There was no obvious trend in the standardized test data, suggesting that standardized testing may not provide an accurate measure of single-sex classes due to the cumulative learning nature of these tests, which makes them resistant to change (Singh et al., 1998).

The empirical evidence of the Singh et al. (1998) study supported the beneficial effects of girls-only classes for urban, African American girls: that single-sex class organization is not harmful to boys, and there are small improvements for boys in terms of class grades. Limitations of this study included small sample size, an urban setting, and single-sex classes that had been

implemented for 1 year. Classroom pedagogy and individual teaching styles, which can impact student achievement, were not accounted for in this study (Singh et al., 1998). Until the enactment of No Child Left Behind, in 2002, the legality of the urban experiments was questionable.

Single-sex Education and California

In 1996, California passed legislation providing public school districts grant money to establish single-sex academies, in an effort to expand educational alternatives for public school students. In 1997, 6 academies for boys and 6 for girls were opened. In their study of the California experiment, Datnow, Hubbard, and Conchas (2001), found few educational changes aside from separating the genders. For the majority of teachers, instruction and curriculum remained the same in the single-sex and coeducational schools.

While gender equity was the proposed rationale of the 12 academies, very little attention was paid to this facet of single-sex education. By 2000, 10 of the 12 academies had closed due to lack of district support and politics (Datnow, Hubbard, & Conchas, 2001). The San Francisco 49ers

Academy in East Palo Alto, one of the two schools still open, provides single-gender instruction for at-risk, minority students (San Francisco 49ers Academy, 2003).

Herr and Arms (2004) conducted an ethnographic study at the Single Sex Academy (SSA), a California middle school serving low-income, urban students, which opened in 1999. The authors of this study were interested in determining how single-sex education affects teaching and learning. The SSA, due to poor standardized test scores, had been reconstituted as an intervention strategy. The study found that "pressure to raise its standardized test scores diverted the school away from the exploration and implementation of gender reforms" (Herr & Arms, 2004, p. 527).

Single-sex Education Research

Research conducted in the United States on single-sex education beginning in the early 1990s focused on secondary, parochial, and private schools and colleges, often with inconclusive and controversial results (Bracey, 2007; Herr & Arms, 2004). The lack of significant variables, or the inability to control for significant

variables, in these studies has led to disagreements on the results (Shmurak, 1998). Many studies fail to control for "selective admissions, socioeconomic status, financial advantage, religious values, prior learning or ethnicity" variables (Bracey, 2007, p. 25).

Byrk, Lee, and Holland (1993, p. 297), after "extensive analysis of a national data base on Catholic and public high schools," found positive effects in academic achievement for those attending single-sex schools. The authors' research focused on the effects of single-sex schooling on reading, mathematics, science, and writing achievement at the sophomore- and senior-year levels.

LePore and Warren (1997) compared single-sex and coeducational Catholic schools to determine environmental effects on student achievement. No special advantages were found in academic achievement for Catholic schools, using data from the National Educational Longitudinal Survey of 1988, once socioeconomic status and prior achievement were controlled.

Studies in Australia and the United Kingdom have examined schools where single-sex education was instituted as a reform to raise the achievement scores of boys, and to

improve classroom behavior. The studies used quantitative data from standardized test results and qualitative data, exploring the perceptions of the stakeholders regarding the implementation of single-sex classes in the schools.

Salomone (2006, pp. 792-793) suggested there is "evidence from abroad that single-sex schools increase both interest and course-taking not only in math, science and technology among girls, but also in language arts and foreign languages among boys, academic subjects traditionally less-favored by them."

Utilizing a case study approach, Younger and Warrington (2006) studied secondary schools in England, which were part of the 4-year Raising Boys' Achievement Project (RBA). The Younger and Warrington (2006, p. 607) case studies presented single-sex classes in schools with different socioeconomic contexts and with "different perspectives on the perceived effectiveness of single-sex teaching." As with single-sex research in general, this study's results were conflicting and unclear. Teachers were enthusiastic about single-sex education in only one of the 6 schools, while students were enthusiastic in two of the case studies. It appears that single-sex classes positively

impact student achievement, but this finding was quantitatively proved in only one case study, which had implemented other strategies in addition to single-sex classes.

Single-sex Classes

Advocates and opponents of single-sex education agree that research findings on single-sex classes and schools are inconclusive and varied, come from outside the United States (Bracey, 2006; Herr & Arms, 2004; Salomone, 2006), and require more research (Salomone, 2006). Gill (2004) found that the research on primary schools with single-sex classes was rare, with contradictory results in conclusions and efficacy. Single-sex classes have been implemented in Australia, Sweden, New Zealand, the United Kingdom, and the United States to address underachievement in specific subjects, such as math and science (Gray & Wilson, 2006).

In a review of the literature, Thompson and Ungerleider (2004) suggested that single-sex classes in coeducational, public schools revolve around three basic themes: feminism and girls' advantage, achievement and the gender gap, and boys' disadvantage. Salomone (2006)

contended that single-sex classes, with specific attention focusing on raising achievement scores for girls in math and science and "developing positive attitudes and a sense of academic identification" for minority students, particularly boys, may be beneficial. Gill (2004, p. 96) suggested that "[s]etting up a single-sex class within the coeducational school . . . may work best when it is directed against the grain of established attitudes." Addressing the needs of girls, Deak (2002) stated in *Girls Will Be Girls* that time should be spent in the areas that girls are not hardwired to choose of their own initiative. The inference would apply likewise to boys.

The emergence of single-sex classes in coeducational, public schools in Australia and the United Kingdom was initially intended as an equal opportunity for girls (1970-1995), and is currently an intervention to support underachieving boys (Younger & Warrington, 2006). When considering the appropriate grade levels for single-sex classes, it is important to examine the statistical data and the differences in gender attainment, which are varied and can be identified during the early school years (Forde, Kane, Condie, McPhee, & Head, 2006).

The appropriate level for implementation of single-sex classes has yet to be determined. One Australian study (Wills, Kilpatrick, & Hutton, 2006) recommended "that if the single-sex concept is to achieve its full potential, it must begin early in the primary school and may not have achieved its full potential until children reach adolescence" due to "an extended lag between establishing changed and social relationships and measurable academic outcomes" (p. 277). Research from this study indicated positive benefits from single-sex classes in coeducational primary schools for children and teachers. Standardized achievement test results did not indicate an increase in academic achievement. This study was limited to two single-sex classes, one in third grade and one in fourth grade, both of which had been in existence for two years. While the school's culture and climate along with classroom management and student behavior are suggested to have improved, the "formalized indicators of academic achievement do not seem to show an equal level of improvement" (p. 288).

Jackson (2002) studied pupil perceptions in one inner city, coeducational school in England that had instituted

single-sex mathematics classes. Pupil perceptions of single-sex and mixed-sex math classes found that girls' perceptions of single-sex classes are more favorable than boys' and that boys-only classes reinforce competition and aggression. A recurring theme by those advocating single-sex classes is that separating the genders will eliminate distractions. Jackson (2002) concluded that the boys might in fact be more distracted by other boys than they are by the girls. The study focused on grades 7 through 11.

Singh, Vaught, and Mitchell (1998, p. 165) suggested that consideration be given to ethnicity and race, stating, "It is possible that single-sex classes may not enhance the educational environment for white males in the same way it affects females and students of non-white minority groups." Herr and Arms (2004, p. 551) suggested that "underserved" and "disenfranchised" students might be offered better opportunities and possibilities by single-sex teaching.

School Culture

The literature indicated the importance and effectiveness of school culture on education in general, and single-sex education in particular. School culture

affects every aspect of a school, influencing the way stakeholders think, feel, and act (Peterson, 2002). Bolman and Deal (2003) viewed culture as a product and a process.

Embedded in the culture of a school is the school's vision. Vision turns the core sense of purpose into future possibilities (Bolman & Deal, 2003). Caulfield (1989, p. 13) stated, "Vision is a somewhat elegant, somewhat clouded sense of what it would be like to offer every child from preschool to grade twelve what is exactly the best 'fit' for his abilities and aspirations." The implementation of single-sex classes and educational alternatives is one of many strategies that educators may develop toward the goal of "[o]pening one door of opportunity for one more child" (Caulfield, 1989, p. 13).

School culture can act as a socializer of thought and a programmer of change (Sergiovanni, 2000). Culture does not evolve but is created through the ownership and contributions of all its stakeholders. School culture is the existence of interplay of three factors: the attitudes and beliefs of persons inside the school and in the external environment, the cultural norms of the school, and

the relationships between persons in the school (Boyd, 1992).

Wills et al. (2006) contended that single-sex education will be "influenced by the organizational, social, and cultural settings of the school," finding that "the structure and operation of single-sex classes were aligned to the school's commitment of creating a learning communities philosophy." A school culture that includes a commitment shared by all staff develops a team ethic, promotes the intervention of all stakeholders, and emphasizes that achievement is vital to a single-sex program and must be actively promoted to all stakeholders to be sustained (Younger & Warrington, 2006). Staff commitment and discussions with stakeholders regarding the rationale for single-sex classes must be part of the preparation process (Forde et al., 2006). An inclusive school culture provides all stakeholders the choice of whether or not to participate in single-sex education (Watterson, 2001, p. 11).

Sergiovanni (2000, pp. 4-5) described the school culture in terms of a balance between the systemsworld and the lifeworld. The systemsworld is the world of policies,

management, and rules; the lifeworld reflects the values, norms, and beliefs of the school. In today's era of high-stakes testing and accountability, the systemsworld can overtake the lifeworld of a school. When there is an imbalance between these two worlds, one where the systemsworld is dominant, the school culture is destroyed (Sergiovanni, 2000). This was evident in the SSA project (Herr & Arms, 2004), where the school, reconstituted due to high-stakes testing, had to rebuild its culture at a time when the school was the most vulnerable. Peterson (2002) suggested a school culture that supports structural changes is necessary if standards-based reforms are to be successful.

In a study, Wills, Kilpatrick, and Hutton (2006) found that the entire school community perceived an improvement in the overall school climate as a result of single-sex classes. Younger and Warrington (2005, p. 597) concluded that single-sex education was one of the strategies that contributed to the overall culture of achievement within the school, stating:

Senior management within a school must embrace the single-sex approach, giving clear and unequivocal

support, keeping parents, teachers, and students themselves fully informed of the rationale behind the school's approach by promoting the issue in a high profile way within the community.

Parker and Rennie (2002) concluded in their qualitative, gender-inclusive study that teacher success was dependent on the support they felt from colleagues, parents, and the community.

Peterson (2002) discussed common features observed in the school culture of successful professional learning communities. "In these cultures, staff, students, and administrators value learning, work to enhance curriculum and instruction and focus on students" (Peterson, 2002, p. 1). Professional learning communities with a successful culture exhibit a shared sense of purpose, continuous learning and improvement, a commitment to the learning of all students, collaborative relationships, and collective inquiry (Dufour & Eaker, 1998; Fullan, 2001; Lambert, 1998; Peterson, 2002).

Pedagogy

Scholarly research and data on student learning and performance indicate areas where single-sex education may prove beneficial:

It is important we acknowledge the cognitive and affective continua as girls and boys develop from young children into adolescents, the impact of these progressive changes on learning, and the implications for teaching and gender organization. We must also consider the intersection of gender, race, and social class to fully identify the educational differences that explain why separating some students by sex at any point in their schooling might prove beneficial. Only then can we begin to define goals, develop specific strategies, and ultimately measure outcomes. (Salomone, 2006, pp. 786-787)

Educational strategies and techniques with a focus on gender learning can provide a fundamental foundation for the implementation of single-sex classes. Teachers adapt their classroom instruction in response to the educational trends and policy demands of educational reform mandates (Valli & Buese, 2007). The goal of single-sex programs is

one that develops classes that address the way students learn and where an environment is created in which the students feel comfortable (Caplice, 1994). That is not to suggest that coeducational classes fail to address the way students learn but rather, as noted in Caplice (1994, p. 2), single-sex education is "a form of education that is individualized to the greatest degree possible" and "when offered as an exception to the general rule, coeducation" is a legitimate and worthwhile option. Teaching that accommodates gender differences provides tasks and activities to address a variety of learning styles, creating a positive impact from single-sex education (Forde et al., 2006).

Teachers' beliefs, attitudes, and expectations have been associated with the success and failure of single sex classes (Warrington et al., 2005). As with single-sex education, the research on single-sex pedagogy is varied and inconclusive. Martino, Mills, and Lingard (2005) examined an Australian coeducational, government primary school where single-sex classes were established for the purpose of addressing boys' educational and social needs. This study suggested that the teacher, the kind of

pedagogies adopted, and the teacher knowledge of gender were crucial factors impacting the educational and social outcomes for students in single-sex classes rather than just the single-sex class alone. This study was limited to one school in Years 6 and 7 (ages 10-12), and focused on the pedagogical effects of the single-sex initiative. Martino, Mills, and Lingard (2005) concluded in their study that teacher knowledge and assumptions regarding the genders are important to the execution of single-sex pedagogies.

The research of Younger and Warrington (2005) found little evidence to support different learning styles between the genders. The authors stated, "Pedagogies which appeal to and engage boys are equally girl-friendly." This appears to contradict an earlier study in which they stated the following:

That such groupings may offer more advantages for girls than for boys; we argue that the potential of the system will only be fully realized when it is explicitly recognized that girls and boys do respond differently, in certain contexts, to different

teaching-learning styles. (Younger & Warrington, 2001, p. 339)

Single-sex classes attempt to provide alternative programs and interventions for diverse learners. Martino, Mills, and Lingard (2005) found that teachers often modify their pedagogical practices based on stereotypical constructs of male and female learning. In a case study of one coeducational high school providing single-sex teaching, Younger and Warrington (2002) found evidence suggesting that some of the teachers explicitly adjusted their teaching styles based on the gender of the class. The majority, however, did not.

Martino and Meyenn (2002) interviewed eighth-grade English teachers (N = 7) in an Australian Catholic coeducational school. The researchers suggested that curriculum and pedagogical practices should be considered when implementing single-sex classes. The researchers concluded that the implementation of single-sex classes is not sufficient to impact student academic outcomes. The teacher, the kind of pedagogies adopted, and teacher knowledge of gender-differentiated learning are crucial factors impacting and enhancing the educational and social

outcomes of the students in these classes rather than the single-sex class strategy alone (Martino, 2005; Martino & Meyenn, 2002).

Single-sex classes may have the potential to raise the academic levels of students; however, the potential will only be maximized when differential teaching approaches are systematically planned, implemented, monitored, and evaluated (Younger & Warrington, 2002, p. 371). The studies by Gray and Wilson (2006) and Jackson (2002) appear to have similar conclusions with Jackson stating that while the curriculum for an all-girls class may benefit girls, it may not have the same effect in an all-boys class.

Single-sex reforms are neither exclusive nor independent of other initiatives that schools implement to improve academic achievement and student behavior. High-stakes testing relies on standardized test data in determining the academic growth and achievement of students, possibly to the detriment of other reforms. "When standardized tests are the indicators of success and curriculum is crowded out by the skill-and-drill types of pedagogy, the positive possibilities of single-sex schooling can be compromised" (Herr & Arms, 2004, p. 532).

Gender Differentiation

Learning differences in boys and girls are the focus of gender research. Research indicates that boys and girls appear to learn differently (Caplice, 1994). The study of child and adolescent brain development has grown with the advent of magnetic resonance imaging (MRI) (Debellis et al., 2001). Good, Johnsrude, Ashburner, Henson, Friston, and Frackowiak (2000) found that sex differences in the structure of the brain are observed as asymmetrical hemispheres in boys and more symmetrical hemispheres in girls. Cahill (2005, p. 42) stated that "some sex differences in the brain arise before a baby draws its first breath" and "at least some sex differences in cognitive function do not result from cultural influences or the hormonal changes associated with puberty—they are there from birth." Kimura (1999) discussed the effects of sex hormones on brain organization, maintaining, "[f]rom the start the environment is acting on differently wired brains in boys and girls." Kimura also observed that the most important factor in the differentiation of boys and girls, or even the differentiation within a given sex, is the level of exposure to various sex hormones early in

life. Research findings highlight the influence of sex on many areas of cognition and behavior, including memory, emotion, vision, hearing, the processing of faces, and the brain's response to stress hormones (Cahill, 2005).

In the book *Why Gender Matters*, Sax (2005, p. 9) maintained that educators and policymakers fail to recognize the innate and biological differences between girls and boys, not fully appreciating that boys and girls enter school with differing needs, abilities, and goals. Sax presented the biological and physiological differences of boys and girls, including differences in brain anatomy, hearing, social interest, seeing, and language development, suggesting that the teaching method, with an understanding of gender differences, is what matters. Research indicates that girls are more concerned than boys with pleasing teachers and following their example (Pomerantz, Altermatt, & Saxon, 2002; Valeski & Stipek, 2001); girls ask "what" while boys ask "where" (Overman, 1996), girls draw nouns while boys draw verbs (Tuman, 1999), and girls prefer playing with dolls while boys prefer playing with trucks (Serbin, 2001).

Sommers (1994, 2000) stated that boys and girls are hardwired differently. Girls have greater verbal skills and emotional expressiveness, and boys have better spatial reasoning, are physically active, and take more risks. Sommers does not believe that differences in learning are "socially constructed" and therefore capable of being addressed through environmental changes.

Rather than addressing the individual learning styles of boys and girls, Deak (2002, p. 46) suggested in the book *Girls Will Be Girls* that for optimal brain growth, boys and girls should spend time in "areas that are counter to their neurologic grain." Girls must spend time in the block corner while boys spend time in the writing and drawing corner. Deak (2002, p. 46) concluded that "against-the-grain gender experiences help create a well-balanced brain that is better equipped to handle the range of tasks and challenges the brain will have to contend with all through life."

In the book *Boys and Girls Learn Differently*, Gurian (2001) noted the physiological and neurological differences between male and female brains and discussed how the

differences affect learning. In addressing academic performance:

Girls study harder, get better grades, and are quieter in class; boys goof off more, get worse grades, and are louder . . . the latter tend toward impulsive behavior, the former toward the sedentary, males tend to be loud, females quiet; males tend to be less mature, females more considered; males tend to be aggressive and competitive in a classroom, females passive. (Gurian, 2001, p. 58)

In addition to presenting the physiological differences, Gurian (2001) presented pedagogical strategies for teachers at all grade levels. While recognizing and accepting the chemical and structural differences between male and female brains and the effect on learning, Gurian suggested a message that addresses the pedagogical differences of both genders at all levels of schooling.

Teacher Professional Development

NCLB states that professional development should reinforce teacher knowledge and be an integral part of school-wide improvement plans. In a study, Gray and Wilson

(2006, p. 297) identified the impact of organizational factors on single-sex classes, particularly the need for "preliminary and in-service training to equip teachers with the skills necessary to successfully implement new systems." Younger and Warrington (2005) stated that the emphasis of professional development should be on learning styles, such as visual or auditory, and how learning takes place rather than on gender-learning differences or gender-specific teaching styles. Younger and Warrington (2002, p. 371) suggested there are dangers in implementing single-sex classes without coherent staff development programs, which address teaching and learning strategies. Martino, Mills, and Lingard (2005) maintained that teacher knowledge has the possibility to impact, produce, and reinforce gendered pedagogical effects.

Gray and Wilson (2006) examined teachers' experiences in one coeducational, postprimary school in Northern Ireland, where single-sex classes had been established to raise boys' academic achievement and improve behavior. The majority of teachers in this study (N = 15) indicated that since single-sex classes had been implemented, academic performance and classroom behavior had deteriorated. Gray

and Wilson (2006, p. 279) submitted that the implementation of single-sex classes for all subjects and inadequate teacher preparation may have led teachers to believe that "academic failure and poor behaviour were the result of single-sex classes."

Summary

Today, single-sex education in the United States is viewed differently from the historical past. Legal constraints for single-sex education in public schools have been eased. Single-sex education is tied to the "broader issue of educational diversity and particularly to school choice initiatives that now dominate much of the discussion on school reform" Salomone (2003, p. 39). Advocates of single-sex classes cite academic benefits, individual needs, and specific gender learning rationales. Opponents cite violations of civil rights and Title IX.

Single-sex reform initiatives, from approximately 1970 to 1995, focused on equal opportunities for girls, with the current focus on underachieving boys (Bracey, 2007). Disadvantaged students appear to benefit academically and developmentally from single-sex education when compared to

their coeducational counterparts on standardized tests, with significant improvement noted in homework, class work, and behavior (Herr & Arms, 2004; Singh, Vaught, & Mitchell, 1998). While the research is contradictory and controversial, it does suggest that single-sex classes have the potential to raise academic achievement levels of both genders provided the initiative is "developed within gender-relational contexts" (Younger & Warrington, 2006, p. 579).

This literature and research review of single-sex education within the organizational variables of culture, pedagogy, and professional development included controversial and inconclusive findings, indicating the need for further research. Past research in the United States has failed to control for certain variables, was conducted in private and parochial schools, or compared private and parochial schools to public schools.

This qualitative study examines principals' perceptions of single-sex classes in coeducational public elementary schools specifically on the variables of culture, pedagogy, and professional development. The related literature regarding the implementation of single-

sex classes appears to support the importance of these variables toward the successful implementation of such programs. The number of schools offering single-sex classes in coeducational public elementary schools continues to rise within the United States. The paucity of research regarding the implementation of single-sex classes in coeducational public elementary schools within the variables of culture, pedagogy, and professional development warrants further study.

Chapter 3: Methodology

Introduction

The purpose of this qualitative study is to focus on principals' perceptions of single-sex classes in coeducational elementary public schools, specifically on the variables of school culture, pedagogy, and professional development. The number of public schools implementing single-sex classes as an intervention strategy to address academic achievement, student behavior, students at-risk, and differentiated gender learning is increasing. There is scant research in the United States regarding these programs.

Subjects

Voluntary participants of this study included 6 principals (N = 6) from coeducational, public elementary schools in the United States, where single-sex classes were implemented during the 2006-2007 school year.

Procedure

In this qualitative study, principals are interviewed by telephone regarding their perceptions of single-sex

classes. Only principals assigned in the 2006-2007 school year to a public elementary school where single-sex classes were held were considered. Participation was strictly voluntary.

A letter of solicitation introducing the study (Appendix A), the Informed Consent Form (Appendix B), the participation form (Appendix C), the interview questions (Appendix D), and a self-addressed stamped envelope were sent to principals in schools identified on the NASSPE website as having single-sex classes. The researcher initiated a follow-up telephone call (Appendix E) approximately 1 week after the mailing, to determine if the letters were received and if there were any questions. Principals who elected to participate were asked to return the Informed Consent Form and participation form in the self-addressed stamped envelope. Based upon information on the participation form, a telephone interview was arranged at a mutually agreed-upon time between the researcher and the subject.

The interviews were audio recorded, with the permission of the subjects, using a speakerphone and an Apple iPod. Semi structured, open-ended questions were used

in the interview. The researcher transcribed the interviews. Data were analyzed and patterns identified in the responses.

Data analysis of specific statements and themes allowed for an understanding of how the principals experienced single-sex classes through the variables of school culture, pedagogy, and professional development.

Instrument

This study used a semi structured, open-ended questionnaire consisting of seven questions, developed by the researcher. After careful reading of the literature, the researcher determined that principals' perceptions of single-sex classes within the variables of school culture, pedagogy, and professional development would be beneficial due to the limited number of schools that implement single-sex classes and the limited research in the United States. The interview questions were read by a jury of experts, composed of a superintendent of schools, a middle-school principal and a coordinator of secondary education, to determine the face and content validity of the instrument.

After feedback was received, revisions were made to improve clarity.

Interview Questions

Question 1

Which grade levels and subjects have single-sex classes?

Rationale. Wills, Kilpatrick, and Hutton (2006) recommended that to gain the most benefit from single-sex education, it must begin in the early years of schooling.

Question 2

What are the goals of the single-sex (classes) program?

Rationale. Salomone (2006, p. 782) contended that with the lifting of legal constraints and the increase in single-sex programs, the questions that researchers ask will have significant bearing on the conclusions. "Those questions, in turn, necessarily must flow from the underlying rationales and specific goals of each program."

Question 3

In what ways does the school's culture promote the goals of single-sex class program?

Rationale. Younger and Warrington (2006) maintained that a school culture, which includes a commitment shared by all staff, develops a team ethic, promotes the intervention of all stakeholders, and emphasizes achievement is vital to a single-sex program and must be actively promoted to all stakeholders in order be sustained.

Question 4

To what extent, if any, were stakeholders (administration, teachers, parents, students) included in the decision-making process toward the implementation of single-sex classes?

Rationale. Staff commitment and discussions with stakeholders regarding the rationale for single-sex classes must be part of the preparation process (Forde et al., 2006).

Question 5

What obstacles, if any, have occurred regarding implementation of single-sex classes?

Question 6

To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes—Do teachers “teach” the genders differently?

Rationale. Curriculum and pedagogical practices should be considered when implementing single-sex classes. The implementation of single-sex classes is not sufficient to impact student academic outcomes. The teacher, the kind of pedagogies adopted, and teacher knowledge of gender-differentiated learning are crucial factors impacting and enhancing the educational and social outcomes of the students in these classes rather than the single-sex class strategy alone (Martino, 2005; Martino & Meyenn, 2002).

Question 7

To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

Rationale. Gray and Wilson (2006, p. 297) identified the impact of organizational factors on single-sex classes, particularly the need for "preliminary and in-service training to equip teachers with the skills necessary to successfully implement new systems."

Design

The design of this exploratory research study is qualitative. Qualitative research allows the researcher to get close to the participants in the setting through firsthand experience and allows the researcher to draw on the participants' personal knowledge. Qualitative methods study small numbers of special cases facilitating the study of issues in depth, producing a wealth of detailed information about a smaller number of people and cases (Patton (2002, p. 14)).

Data Analysis

Qualitative data analysis is defined as "working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what

you will tell others" (Bogdan & Biklen, 1992). The recorded, transcribed interviews provided the data for the study. The interviews were examined to determine patterns and outliers for each question. There was no anonymity in this study, in that the interviews were conducted over the telephone. To preserve confidentiality and accuracy, each subject was assigned a number code (1-6) so no one will be able to link the data to the subject.

Chapter 4: Presentation of the Data

Introduction

The purpose of this study was to examine principals' perceptions of single-sex classes in coeducational public elementary schools. This study considered the impact, if any, of the variables culture, pedagogy, and professional development on the implementation of single-sex classes. To gain insight on principals' perspectives, a qualitative methodology was employed. Principals' perceptions relevant to implementation of single-sex classes form the data of this study. This chapter presents the findings of the study. The findings are based upon the analysis of data collected.

Nature of the Study

The research population of this study consisted of principals from coeducational public elementary schools in the United States. The researcher, inviting principals to be interviewed regarding single-sex classes in their schools, wrote a letter. Sixty principals were sent letters inviting them to participate in the research. Included with the letter of invitation were a participation form, an

informed consent form, the interview questions, and a stamped return envelope. A total of 9 principals responded.

Seven principals agreed to participate; 1 indicated that he did not have a single-sex program, and 1 principal indicated that she did not feel comfortable discussing the program. The first 6 principals to respond and agree to be interviewed were used in the research. (The 7th principal indicating participation responded several months after all data had been collected.) All of the 6 principals interviewed had implemented single-sex classes during the 2006-2007 school year. The principals were contacted by phone to arrange a mutually agreed-upon time for the interview. The principals agreed to be audio taped. Each interview lasted approximately 20 minutes.

Principals were asked seven open-ended, semi structured interview questions. The first question established the grade(s) and subject(s) where single-sex classes were implemented. Questions 2, 3, 4, and 5 discussed single-sex classes and aspects of school culture. Question 6 addressed the classroom pedagogy of single-sex classes, and question 7 addressed professional development, focusing specifically on single-sex education.

The semi-structured, open-ended, interview questions produced the qualitative data for the study. The data were organized and analyzed according to the responses given by the principals to each question. The analysis process determined the similarities and differences in the responses to the interview questions by the principals regarding single-sex classes.

Demographic information for each school is presented in Table 1. Data for each interview question are presented in a table to emphasize the similarities and differences in the principals' responses and to identify patterns or recurrent themes. Statements following the tables illustrate prominent findings for each question. Excerpts from principals' statements are presented for understanding, interpretation, and clarification.

Presentation and Analysis of Findings

Demographics

Demographic information, available through the National Center for Education Statistics for the 2005-2006 school year, was obtained for each school. The information

presented in Table 1 suggests dissimilar demographic data for the schools in this study, indicating a high degree of diversity and suggesting a well-rounded representation of schools.

Table 1

Demographic Information

	Principal 1	Principal 2	Principal 3	Principal 4	Principal 5	Principal 6
Title I School	N	N	N	Y	Y	Y
Migrant students	0.3%	0%	0%	0%	15.1%	4.2%
Free lunch	43.3%	12.8%	18.1%	52.3%	81.2%	47.7%
Reduced lunch	8.5%	7.4%	7.4%	2.3%	9.6%	5.4%
Total students	790	594	537	396	856	631
Student/teacher ratio	15.2	22.3	16.3	12.8	19.9	13.7
Grade span	PK-5	K-6	K-5	PK-6	2-6	PK-5
Locale	Small city	Large suburb	Midsize city	Rural	Large suburb	Large suburb
White	W 50%	W 63%	W 45%	W 0%	W 14%	W 51%
Black	B 29%	B 7%	B 48%	B 100%	B 11%	B 39%
Hispanic	H 20%	H 26%	H 3%	H 0%	H 65%	H 8%
Asian	A 1%	A 4%	A 3%	A 0%	A 9%	A 2%

American Indian	N	0%	N	0%	N	1%	N	0%	N	1%	N	0%
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Note. From CCD (Common Core of Data) Public School Data 2005-2006 school year.

The data suggest that schools across a broad socioeconomic and demographic spectrum are implementing single-sex classes. The student population of the schools ranged from just under 400 to more than 850. Locales of the schools included rural, urban, and suburban settings. Fifty percent of the schools were classified as Title I. In three schools, the majority students were White; in two schools, the majority students were African American; and in one school, the majority of students were Hispanic. In one school, the migrant population was 15%. Schools varied in the percentage of students on free lunch, from approximately 12% to 81%.

Interview question 1: Which grade levels and subjects have single-sex classes? (N = 6)

The first interview question was asked to ascertain information regarding the grade level and subject areas where single-sex classes were implemented. The format and appropriate grade levels for effective implementation are unclear. Wills, Kilpatrick, and Hutton (2006) recommended

that to gain the most benefit from single-sex education, it must begin in the early years of schooling.

Table 2

Grade Level and Subject Area of Single-sex Classes

	Grade level of single-sex classes	Gender of single-sex classes	Subject(s) of single-sex classes
Principal 1	5 th	Male (2006-2007) Female (2007-2008)	All
Principal 2	6 th	Female & Male	All
Principal 3	3 rd , 4 th , 5 th	Female (2006-2007) Male (2007-2008)	All
Principal 4	4 th , 5 th , 6 th	Female & Male	All

Principal 5	4 th , 5 th	Female & Male	All
Principal 6	5 th	Female & Male	All

The data indicate that a majority (83%) of schools implemented single-sex classes at the fifth-grade level. Principals' responses indicate that 50% of the schools implemented single-sex classes at multiple grade levels. The majority of single-sex classes were clustered around grades 4 through 6 with an outlier in grade 3. The data suggest that a majority (67%) of schools offered single-sex classes to both genders, with 33% offering single-sex classes to only one gender. The two schools, where single-sex classes were available for one gender during the 2006-2007, changed the gender of the single-sex classes during the 2007-2008 school year. Principals indicated that the change occurred based on a needs rationale. All 6 principals indicated that all subjects were taught in the single-sex format:

Principal 1: Absolutely, we only have one classroom, which is single-sex. It's a fifth grade and it is female . . . (last year was our first year, we had an

all boys class). . . all subjects. It's an all-day thing. We call it the academy.

Principal 2: It was sixth grade, and we were in a rotation so that it was all subjects. We had all the girls and their rotations and all the boys together in their rotations.

Principal 3: Presently, we have grades 3, 4, and 5 in all the subjects, and they are all boys' classes.

Principal 4: Well, uh, grades 4 through 6 have single-sex classes. Our accelerated classes are single-sex, and our classes that are mediocre are combined. In each grade, there is one class that is coeducational.

Principal 5: Well, last year was the first year for the pilot program, and last year we had one class of girls at the fourth-grade level and one class of boys at the fourth-grade level.

Principal 6: Our fifth grade only. All of the academic and activity classes in the fifth grade.

Subsidiary Research Question 1: How does the school's culture support single-sex classes?

Questions 2, 3, 4, and 5 of the interview were asked to identify aspects of the schools' cultures including goals, involvement of stakeholders, and obstacles. (Categorical information, which may have arisen in different questions, has been grouped to fit accordingly.)

Interview question 2: What are the goals of the single-sex (classes) program? (N = 6)

Interview question 2 was asked to ascertain the goals of the single-sex class in the schools. Wills, Kilpatrick, and Hutton (2006) contended that to be successful, the structure and operation of single-sex education must be aligned to the schools' commitment of creating a learning community. The commitment to a learning community "must flow from the underlying rationales and specific goals of each program" (Salomone, 2006, p. 782).

Table 3

Goals of the Single-sex Classes

	Program Goals
Principal 1	Improve behavior Academic achievement for lower-ability students
Principal 2	Regain student focus Gender-differentiated instruction Separate boys and girls
Principal 3	Academic achievement Socialization goals Improve behavior
Principal 4	Academic achievement Improve behavior Gender-differentiated instruction
Principal 5	Academic achievement Improve behavior Address student needs
Principal 6	Academic achievement Gender-differentiated instruction Eliminate distractions

The principals' answers indicate that the goals of the single-sex classes cluster around academic achievement, behavior, and gender-differentiated instruction. The responses of the principals indicate that 67% cite academic achievement as the primary goal of single-sex classes. Sixty-seven percent of the principals' responses include behavior as a goal, and 50% specifically named gender-differentiated instruction as a goal. One principal indicated one of the goals of single-sex classes was to eliminate gender distractions:

Principal 1: When we choose the children who are going to be in our single-sex classrooms, we look at both behavior and academics, and as principal, I think they frequently go together. Generally, we try to look at behavior first because we believe that if we can get the behavior under control, and get them ready for middle school, their academics will follow.

Principal 2: Well, the initial goal was to regain the student focus and have the opportunity to do some differentiated instruction prior to the state test.

Principal 3: Well, of course you know the academic goal is to have their grades and test scores go up but also work on the socialization goals . . . Another thing, it has really helped with our discipline. For some reason, the boys just get along very well, and there's not a lot of discipline problems.

Principal 4: We use the same-sex classes to increase our academic competition among the genders, which in turn raised our test scores tremendously.

Principal 5: It's designed to be an intervention for students who are having difficulty succeeding, who are not succeeding in school in terms of academics, behaviors, attendance, and discipline referrals. So this was seen as just another way to address the needs of students in a different manner.

Principal 6: Our goals were to improve achievement by tailoring the instruction to be more suitable to the gender needs by eliminating distractions and helping students to seek their individual strengths without

regard to how they were perceived by the opposite gender.

Interview question 3: In what ways does the school's culture promote the goals of single-sex class program?

(N = 6)

Interview question 3 was asked to ascertain how the schools culture promotes the goals of the single-sex classes. Wills, Kilpatrick, and Hutton (2006) stated that single-sex education will be "influenced by the organizational, social, social and cultural settings of the school." Younger and Warrington (2006) maintained that a school culture, which includes a shared commitment, the intervention of stakeholders, and an emphasis on achievement is vital to the success of single-sex classes.

Table 4

School Culture and Single-sex Classes

	School culture
Principal 1	Focus on accomplishment High goals, high aspiration Involvement of stakeholders (teachers)
Principal 2	Focus on achievement Involvement of stakeholders (teachers)
Principal 3	Character Counts Program
Principal 4	Academic achievement through competition
Principal 5	Addressing students' needs
Principal 6	Involvement of stakeholders (teachers and parents)

Fifty percent of the schools in this study appear to suggest that a culture of academic achievement promotes the effectiveness single-sex classes by providing an alternate program for success. In 50% of the responses, a school culture that promotes stakeholder involvement enabled both the consideration and implementation of single-sex classes in the schools. Teachers brought forward, to administration, the concepts regarding single-sex classes.

One principal indicated that the school maintains a culture, which promotes many intervention strategies to meet the needs of students with the single-sex class initiative as one of several interventions:

Principal 1: Our school culture is very much about accomplishment, and it is a very sought-after program to get into. I believe, myself, it is because of the teacher . . . she is very, very strict, has high goals, high aspirations for all of her students and . . . a strong belief in them.

Principal 2: My teachers actually brought forward the idea; they had done some research and looked at some studies about many, many schools using single-sex classes, and it was shown to improve achievement. So that was really their initial desire, it was to look at it from that point of view.

Principal 3: Well, our school does a character counts initiative, that we reinforce in all classes, not just the single-sex classes . . . We really just

incorporate what we were doing in the school, already, with the all-boys class.

Principal 4: Well, like I said, we go back to the competition part of it. We encourage the competition between the girls and our boys in the single-gender class.

Principal 5: The school culture, well, I think the class is a small part of the overall school programs, so it is seen by the staff and by the school community as just another intervention program that is available out there.

Principal 6: The concept was actually initiated by the teachers; however . . . both the assistant principal and I have a background in middle school administration, and therefore we were ripe for the idea . . . We have sought the impact of the parents prior to the implementation.

Interview question 4: To what extent, if any, were the stakeholders (administration, teachers, parents, and students) included in the decision-making process toward the implementation of single-sex classes? (N = 6)

Question 4 was asked to ascertain the involvement of all stakeholders regarding the implementation of single-sex classes. Younger and Warrington (2006) maintained it is vital that a single-sex program is actively promoted to all stakeholders to be sustained. Principals must keep parents, teacher, and students informed of the goals and rationales of each school's single-sex program (Younger & Warrington, 2005). Staff commitment and discussions with stakeholders regarding the rationale for single-sex classes must be part of the preparation process (Forde, Kane, Condie, McPhee, & Head, 2006).

Table 5

Stakeholder Involvement and Single-sex Classes

Involvement	
Principal 1	Teacher initiated Program developed by teachers and administration Parents of students addressed
Principal 2	Teacher initiated Program developed at school level Parents of students addressed
Principal 3	School administration asks parents to trust them Parent support of program
Principal 4	Principal initiates for accelerated students Discussions with superintendent, parents, teachers, and students
Principal 5	Pilot study Teachers recommend students to the program Parents request students' placement in program
Principal 6	Experimental pilot study All stakeholders from parents to School Board part of the decision-making process

The involvement of stakeholders' participation toward the implementation of single-sex classes appears both inclusive and limited. This dichotomy is evident among all stakeholders. In all schools, only those teachers and parents directly involved with the single-sex classes at the specific grade levels appear to be involved. The teachers who initiated and developed the classes received support from the administration. Student referrals were discussed in terms of meeting student needs with teachers and parents. Parent participation appears, in most if not all of the schools, to be limited to agreeing to allow their children to participate in the program and accepting the rules and regulations of the programs:

Principal 1: It was actually more of a decision with the teachers . . . They sat down and discussed who would best fit in that classroom . . . the parents were individually explained the goals of the single-sex classes and also the rules because they are different, and they had to agree to be a major third part of the triangle—that we look at school, student, and parent.

Principal 2: It started out as the teachers bringing forth the research to me and asking me about the idea, if we could do it, if it would be possible. We then looked at the student population and determined that we did have an even number of boys and girls . . . and then we brought it forward to our parent community.

Principal 3: Really, we have had a lot of parent support. We maybe had some skeptical parents at the beginning, but we asked them just to trust us and to see what happens . . .

Principal 4: Well, as I said, we talked to our superintendent; we talked to our teachers, parents; because our teachers had to buy into it in order to be a success, as well as the students. Well, you had some sentiment on the part of the parents 'cause they don't understand when you say single-sex class . . .

Principal 5: I think many people were confused or intimidated by the fact that we were going to pilot [the single-sex classes]. Yes, these are all parent

request students. Every student in the classrooms had to be chosen. I mean parents had to select and want to be in that classroom. There were referrals made by the third-grade teachers, and then those students who were referred, their parents were contacted. We also sent a letter to all the third-grade parents to ask if they were interested in being in the program. The idea was we would get some teacher referrals, some parent referrals, and some student referrals, and then go from there.

Principal 6: Parents were involved, they had a voice in this. And, of course, all of the powers that be had to approve it as an experimental pilot program, all the way to the School Board.

Interview question 5: What obstacles, if any, have occurred regarding the implementation of single-sex classes? (N = 6)

Question 5 was asked to ascertain whether there were obstacles to the program, which could affect successful implementation of the single-sex program thereby impacting

the goals and vision. Sergiovanni (2000) described school culture as a balance between the systemsworld and the lifeworld. When there is an imbalance between the two worlds, the culture can be destroyed.

Table 6

Obstacles in Single-sex Classes

Obstacles	
Principal 1	District support Publicity Negative feedback from older women
Principal 2	Publicity Negative feedback from parents Lack of communication to all stakeholders
Principal 3	Inability to accommodate all parental requests Physical space limitations of the schools
Principal 4	Rural school setting affects parental understanding of the program Communication
Principal 5	Communication
Principal 6	Student transfers into the school affecting class size Parental requests

Communication among stakeholders appears to be an obstacle in 50% of the schools. Communication obstacles appear to occur when the goals of the single-sex program are limited to parents of those students directly involved in the program. Two schools specifically named publicity as an obstacle, which would also suggest limited understanding and communication among all stakeholders within the community. In one school, publicity led to discontinuation of single-sex classes at the end of the 2006-2007 school year, and in another school, the publicity led to a feminists' response at the school and the district levels. One principal stated that parents of passive boys believed their sons learned better with calmer girls. Two principals indicated the effect on class size and physical space limitations presented as obstacles to the single-sex programs:

Principal 1: Actually, we had to fight pretty hard with the district. They were worried about single-sex lawsuits . . . The newspaper did a real big article about being the first single-sex classroom in the district, and we had some horrible feedback from

women, believe it or not, who were much older, I would say in their 70s and 80s saying that they had fought long and hard all their lives to not have children discriminated against . . . The district almost folded . . . luckily, our superintendent is a strong person, and he agreed to keep going forward.

Principal 2: Just the notoriety in the press. We had a lot of attention for it because it was something new and different. That kind of makes people nervous, and one of the comments from one of the parents, a third-grade parent, when they found out about this because our initial discussion was with our sixth-grade parents, because they were the parents being affected, and the third-grade parent called down to the superintendent and said, "What's she going to do next, separate everybody and make it a Catholic school?"

Principal 3: More parents requesting that their child be in there; we just don't have enough space for it.

Principal 4: Believe it or not, very, very, little. We live in a rural area, very rural, so, therefore, you had people when you said single-sex, you know, well they thought this was going to make girls become boys and boys become girls, so that was just one of the stigmas we had to explain . . . it wasn't a whole bunch, you know. When people don't understand something, you just have to explain it to them a bit more to make certain things clear.

Principal 5: I think there was some difficulty in the communication process at first, and the staff, they were not aware of the program early enough in the process. I think that took some people by surprise so I think some of the stakeholders need to be addressed earlier in this process.

Principal 6: The intake of new students last year that caused bulging class sizes. The parents of more passive boys didn't particularly like that they were in there with what they consider ruffians. They said that their boys learned better with calmer girls.

There are circumstances and individualities that probably aren't completely addressed with the same-gender programs.

Subsidiary Research Question 2: To what extent, if any, does the pedagogy differ in single-sex classes?

Interview question 6: To what extent, if any, does the pedagogy differ in single-sex classes? (N = 6)

Interview question 6 was asked to determine whether or not the pedagogy of the single-sex classes was altered to address gender differences. Martino, Mills, and Lingard (2005) suggested that the teacher, the kind of pedagogies adopted, and the teacher knowledge of gender are crucial factors impacting the educational and social outcomes of students in single-sex classes rather than just the single-sex class alone.

Table 7

Pedagogy of Single-sex Classes

	Classroom pedagogy
Principal 1	Instruction adapted to specific gender; needs met differently
Principal 2	Gender-differentiated instruction based on teacher experiences
Principal 3	Gender-differentiated instruction
Principal 4	Gender-differentiated instruction
Principal 5	Research on gender-specific strategies Use of different pedagogical techniques Differentiated delivery of standards
Principal 6	Attempting to gain skills to teach genders differently Research on gender differences

All principals indicated that teachers do alter their classrooms based on gender. Information on specific gender learning techniques within the schools appears to be based on teachers' experiences and the reading of professional literature. Principals commented specifically on the external gender adaptations such as types of books made available for reading, arrangements of the classroom, and

acceptable forms of behavior rather than specific learning styles based on gender-specific brain research:

Principal 1: She absolutely does. She created in her classroom an environment that is very friendly to whatever sex she is teaching . . . She tailored her writing and her social studies, anything she could, and the reading curriculum, around things she thought were have high interest to them . . . She just meets their needs definitely differently than you would see in a two-sex classroom.

Principal 2: I think we haven't done any extensive research on the pedagogical differences, just from our own experience from being in the situation.

Principal 3: We follow a lot of the research materials as far as what the atmosphere of the classroom needs to look like. We do a lot of differentiating, anyway, with all our classes . . . We ordered a lot of books that sparked their interest: sports books, a lot of car books, a lot of books about conflict, war, stuff you know that the boys like. You kind of change a

little bit of their reading selections to meet their interests.

Principal 4: The teachers have to be trained, and we were trained.

Principal 5: They do use different pedagogical techniques. For instance, the boys' . . . class . . . is a very active and participatory class, you know we allow for student movement, we allow for physical activity . . . In the girls' class, you will see more often, instructions being distributed in written form, the class structure is slightly different in the way they do groupings and things like that. There are some differences. They are not so extreme as to be, you know, you wouldn't look at this class and go, "Wow! They are getting a whole different curriculum."

Principal 6: The teachers are honing their skills looking at the emotionalities of the two genders and being more responsive to them. They have tried to allow more activity for the boys because they like

movement . . . The girls tend to like the, I guess you would say, the calmer more traditional environment.

Subsidiary Research Question 3: To what extent, if any, does professional development address single-sex classes?

Interview question 7: To what extent if any, are the teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques? (N = 6)

The purpose of interview question 7 was to ascertain if teachers had been trained in single-sex education through professional development. Gray and Wilson (2006) identified the need for both preliminary and in-service training in order to provide teachers with the necessary skills to successfully implement a single-sex program.

Table 8

Professional Development and Single-sex Classes

	Professional development
Principal 1	Teacher attended workshop
Principal 2	No professional development Research information gained through educational reading
Principal 3	Possible workshop, however not the teacher teaching the class Implement techniques from educational book
Principal 4	Book study on how boys and girls learn differently; some professional development
Principal 5	Read books on single-gender classes Teachers went to the Gurian Institute Teachers attended four-day conference
Principal 6	Teachers received minimal in-service training and workshops prior to implementation

The principals indicated that very few workshops or in-services were made available to teachers. Most of the information on single-sex classes came from teachers reading professional educational articles and books. Where

teachers did receive professional development in the form of in-service training, it was limited to those teachers who were directly involved in teaching the single-sex class. Professional development attendance was subsequent to the implementation of single-sex classes:

Principal 1: She took one last year, and I cannot tell you the name of it.

Principal 2: No, we did not. It's just that the research we had, we did a lot of research reading newspaper articles, you know, documentation, different things that had been talked about . . . but actual in-services, no. I have not found any true in-services specifically to teach those classes. I think that is something that could definitely be looked at [and] should be developed because I think it was really important.

Principal 3: I think they did when we first started, if I can remember correctly. But we had a school-wide book club, and we had the book *Boys and Girls Learn Differently: An Action Guide for Teachers*. We use this

as our study guide and used some of those techniques and things they mentioned in that book.

Principal 4: We did a book study on how boys and girls learn differently and then we had some professional development in helping our teachers to uh better understand how to teach the single-gender class.

Principal 5: All four teachers went to the Gurian Institute this summer, and they participated in that and I believe it was a four-day conference. They learned a lot of strategies and different techniques and things that worked there, and we have done some research on our own.

Principal 6: They have been to one workshop on the males, specifically males. The male teachers went to that one. It's very critical, and we did not have enough of it prior to the start of our last year's implementation.

Summary

The purpose of this study was to investigate principals' perceptions of single-sex classes in coeducational public elementary schools. The study examined the specific variables of school culture, classroom pedagogy, and professional development. Qualitative research methodology was used to gain insight regarding these findings.

Emerging themes as indicated in principals' responses, include the following: (a) Single-sex classes appear to be implemented at the intermediate level for both genders and incorporate all subjects. (b) Goals of single-sex classes focus on student achievement, behavior, and differentiated instruction. (c) Stakeholder involvement appears limited to those directly involved with the intervention or program. (d) Pedagogical strategies are based on teacher experiences and readings of professional articles and books, with an emphasis on external modifications of classrooms and student/teacher behaviors. (e) Early and frequent communication among all stakeholders, a knowledge of differentiated instruction, and professional development

are significant components of the implementation of single-sex classes.

Chapter 5: Summary and Recommendations

Introduction

The purpose of this study was to explore principals' perceptions of single-sex classes in public coeducational elementary schools. After careful reading of the literature, the researcher determined that principals' perceptions of single-sex classes within the variables of school culture, pedagogy, and professional development would be beneficial. Specifically, the rising number of schools implementing single-sex classes and the limited amount of research available on single-sex classes in coeducational public elementary schools within the United States indicate the need for further research.

A qualitative methodology was used for this study. The study implemented a semi structured, open-ended questionnaire consisting of seven interview questions, developed by the researcher. Based on the interview data of participating principals (N = 6), findings that focused on school culture, classroom pedagogy, and professional development were presented. Interviewed principals implemented single-sex classes during the 2006-2007 school year.

The number of coeducational public schools offering single-sex classes is on the rise, due to NCLB and revised Title IX legislation. The controversial legislation highlights the need for research data that inform all stakeholders (Salomone, 2006). Contentious research findings, limited research in the United States, and the growing number of schools offering single-sex classes indicate the need for further study (Bracey, 2007; Salomone, 2006). The literature on single-sex classes in public schools indicates the need to address organizational variables with specific consideration given to the culture of the school, the pedagogy of the classroom, and the professional development of teachers (Bracey, 2006; Salomone, 2006). The primary research question asked: What are principals' perceptions of single-sex classes in coeducational public elementary schools?

Findings Related to Demographic Data

The demographic data obtained for the schools in this study suggest a wide representation of schools across the United States, with dissimilar data relating to Title I, migrant students, free and reduced lunch, student/teacher

ratio, locale, and race/ethnicity. These data suggest schools across a broad socioeconomic and demographic spectrum are implementing single-sex classes.

Grade Levels

Forde, Kane, Condie, McPhee, and Head (2006) contend that when considering the appropriate grade levels for single-sex classes, it is important to examine the statistical data and the differences in gender attainment. This did not appear to be the locus of the majority of programs. The data of this study indicate that a majority (83%) of the schools implement single-sex classes at the fifth-grade level. While the overall range of grade levels was third through sixth, grade 3 and grade 6 were outliers. Little if any research suggests optimal grade levels for the implementation of single-sex classes.

Wills, Kilpatrick, and Hutton (2006, p. 277) maintained "that if the single-sex class concept is to achieve its full potential, it must begin early in primary school and may not have achieved its full potential until children reach adolescence." It would appear then that the schools in this study are implementing single-sex classes

at a time when the suggested potential could begin to be realized had the classes begun at the earlier primary levels. Future longitudinal studies may determine the most effective grade level(s) in which to implement single-sex classes within the elementary-school level.

Gender of the Classes

Gill (2004) stated that the research on single-sex classes is rare, with contradictory results. Gray and Wilson (2006) found that schools in the United States, generally, use single-sex classes to address underachievement in specific subjects, such as math and science. Responses indicate that principals did not implement single-sex classes to specifically address underachievement in specific subjects.

In 66.7% of the schools in this study, single-sex classes were offered to both genders and incorporated all subject matter. Both of the schools, where single-sex classes were available for only one gender during the 2006-2007 school year, changed the gender of the classes at the onset of the 2007-2008 school year. The principals of the

two schools indicated a needs-based rationale as the impetus for change.

Principals did not clearly define the criteria for placement in the classes. One principal indicated that placement was done in a haphazard way, while others determined placement based on discipline, accelerated academics, at-risk students, parent requests, and teacher recommendations. Future studies may determine criteria for placement in a single-sex class when implemented as an alternate intervention program.

To comply with NCLB mandates, a coeducational class that is substantially equal must be offered to students who are not in the single-gender class; and schools may have to provide a single-sex class for those students of the excluded sex (Chadwell, 2008). While the majority of schools appear to operate the single-sex programs within the parameters established by NCLB, it is questionable whether all did. More than one principal simply divided the grade levels by gender, offering no coeducational opportunities. One principal stated that there were not enough teachers to provide the "non-option" and therefore the students at the grade levels where single-sex classes

were taught must transfer to another school in the area, if the parents want a coeducational classroom. The lack of coeducational classes takes away stakeholders' choice of participation, which Watterson (2001) viewed as necessary for an inclusive school culture.

If the rationale for single-sex classes is needs based, future studies may examine the costs and benefits associated with the implementation of single-sex classes as alternate programs. Additionally, a comparative study of the educational benefits, if any, between grade levels divided by gender and single-sex classes as alternate programs within the grade levels, may provide invaluable information.

Findings Related to School Culture

Subsidiary Question 1: How does the school's culture support single-sex classes?

This study examined each school's culture through the goals of the single-sex program, stakeholder involvement, and obstacles to the single-sex program as perceived by the principals. Principals' answers indicate the goals of the single-sex classes cluster around academic achievement,

behavior, and gender-differentiated instruction. This appears consistent with Salomone's (2003) contention that public school single-sex education focuses on student achievement, students at-risk, and gender diverse learning.

With the exception of the two pilot schools, the inception and implementation of single-sex classes were based on teacher readings, teacher book clubs, and 1 principal's reading of articles and books. Three principals indicated that teachers brought forth the idea of single-sex classes after reading an article or book. One principal, after reading an article on how boys and girls learn differently, reflectively thought, "There may be something to this boys and girls learning differently."

The principals indicated the need to obtain district support. Several principals were able to name the authors of the books that were read on single-sex education, such as Sax (2005) and Gurian (2003). One principal was unable to recall the article the teacher read, and 1 principal indicated that teachers follow Gurian and Ballew's (2003) action guide for teachers. Several principals related they did additional research on their own.

The implementation of single-sex classes as alternate programs, however, must adhere to the NCLB requirement whereby newly created programs and curricula must be based on and supported by scientific research. This becomes difficult when the current research on single-sex classes, available to educators, appears weak and contradictory (Bracey, 2007; Salomone, 2006). It could not be determined whether or not the individual readings and research at the school level met the NCLB requirement of scientific research. Further study may be necessary to determine research-driven studies and scholarly information available to educators wishing to implement single-sex classes.

Wills, Kilpatrick, and Hutton (2006) contend that single-sex education must be aligned to a schools' commitment of creating a learning environment. Salomone (2006) suggests that the commitment to a learning community comes from the rationales and goals of the single-sex programs. All principals indicated goals that addressed educational objectives as listed in the NCLB mandates (Chadwell, 2008).

Student academic achievement was a common goal among all 6 schools. The literature and research on student

achievement are varied, inconclusive, and inconsistent. The individual academic achievement goals of this study's schools were varied, inconsistent, and included recapturing student focus to increase achievement on state tests, optimizing competition among and between the genders in order to meet Adequate Yearly Progress (AYP) goals, improving academics by improving behavior, and providing intervention strategies for students having difficulty succeeding academically and behaviorally. While this study did not determine the impact of single-sex classes on academic achievement, future studies may be necessary to examine the effect of high-stakes testing on the implementation of single-sex classes and a comparative study of single-sex classes on student achievement in the classroom with standardized, norm-referenced tests may be necessary.

The research and literature indicate that single-sex classes may not benefit all students equally. Herr and Arms (2004) and Singh, Vaught, and Mitchell (1998) discuss the academic benefits of single-sex classes for girls, non-White minority groups, and underserved and disenfranchised students. While this study encompassed a broad spectrum of

schools, specific research is suggested pertaining to the academic benefits of these programs on the variables of socioeconomic status, gender, and ethnicity/race at the elementary levels. Specifically, further research may examine the percentage of minority students placed in single-sex classes, where the single-sex classes are created to improve behavior.

Younger and Warrington (2006) maintained that a successful school culture, one that promotes a commitment shared by all staff, develops a team ethic, promotes the intervention of all stakeholders, and emphasizes that achievement is vital to a single-sex program. With the exception of the two pilot schools, the principals' answers suggest the commitment to single-sex education appeared limited to the teachers and administration directly involved in the program. All of the principals interviewed appear to have a school culture that actively promotes academic achievement, supports teacher-based initiatives, and encourages the professional growth of teachers through the reading of professional journals and books.

Principals, in this study, actively promoted and supported the single-sex class program to the affected

stakeholders, including those faculty, staff members, parents directly involved with the single-sex classes, and the administrators of the school districts. However, the involvement of the stakeholders' participation in some schools appeared inclusive and limited at the same time. The dichotomy was evident among the various stakeholders, especially in the area of communication.

Principals agreed that communication among stakeholders was an obstacle. The principals of pilot schools with single-sex programs indicated that communication among stakeholders appeared somewhat limited and untimely, with one principal specifically citing the need for earlier communication. An inclusive school culture informs all stakeholders of alternate educational programs available to students.

Media coverage of the implemented single-sex classes in two of the schools resulted in negative stakeholder support. One principal viewed press coverage as responsible for making "people nervous." The school discontinued single-sex classes at the end of the 2006-2007 school year. Another principal reported that press coverage resulted in "horrible feedback" from older women who saw single-sex

classes as a form of discrimination, something "they had fought long and hard all their lives." This negative attention may have been avoided had the goals and rationales been available to all stakeholders, including the media, rather than only the involved participants.

Early communication among all stakeholders allows for the understanding and support of the visions and goals within the schools' cultures. The principals' answers suggested the importance of a supportive and inclusive school culture, one that promotes interventions and educational alternatives, academic achievement, improved behavior, communication among stakeholders, and the support of teacher-based initiatives. Future studies may be necessary to identify weak areas of communication among all stakeholders. Marketing or public relations personnel, within a school district, may provide information to the community at large to avoid negative perceptions among stakeholders.

Findings Related to Pedagogy

Subsidiary Research Question 2: To what extent, if any, does the pedagogy differ in single-sex classes?

Younger and Warrington (2002) asserted that the benefits of differential teaching will be realized only when the approaches are systematically planned, implemented, and monitored. All principals indicated that teachers do alter the pedagogy of the classroom, in varying degrees, to address the genders. Principals commented specifically on the external gender adaptations to the classrooms, such as types of books made available, arrangements of the classroom, and acceptable forms of behavior rather than specific learning styles based on scientific gender-specific brain research.

All of the principals indicated, once again, that the information regarding gender-differentiated teaching came from newspapers and professional articles, books, and teacher experiences. This process of basing intervention strategies can limit the interventions to the parameters of the books or articles read, and to the individual interpretations of the readings, thereby constraining the depth of the program and bringing the research-based foundation of the program into question. In 2 of the 6 schools, the principals indicated that the single-sex classes were pilot studies and part of a larger initiative.

All of the principals provided the teachers with the flexibility to adapt their classrooms to a single-sex format. None of the principals indicated, however, that the pedagogy of the single-sex classes was formally planned, implemented, and monitored. This can result in a pedagogy as different and independent as the teachers of the classes, including years of experience, suggesting a foundation that is not based on scientific research.

Gender-differentiated studies have examined the cognitive, physiological, neurological, and processing differences between male and female brains (Cahill, 2005; Good et al., 2000; Kimura, 1999). These differing needs and abilities become evident in a school setting, suggesting a teaching method that understands gender differences (Sax, 2005). Principals commented specifically on the external gender adaptations, such as types of books made available for reading, arrangements of the classroom, and acceptable forms of behavior rather than gender-differentiated instruction based on gender-based brain research.

Implementing gender-differentiated instruction for optimal brain growth includes teaching that focuses on areas that are "counter to the neurologic grain" (Deak,

2002). Boys generally tend to be deductive in conceptualizations, while girls generally tend to be inductive, continuously adding to their base of conceptualizations (Gurian, 2001). This would suggest the possibility of addressing the curriculum such as girls' math classes or boys' reading classes, building on the strengths of each gender.

The principals' responses indicated that all subjects were taught in the single-sex classes rather than specific subjects such as girls' math or boys' language arts. This reinforced the perception that few, if any, formal changes were made to the curriculum that addressed how genders build knowledge. Future research may include the adaptation of the curriculum to meet the needs of the genders, in addition to the external adaptations. Additionally, future research is needed to determine whether teaching all subjects in a single-sex format or teaching specific subjects, against the grain, is more beneficial to overall student achievement.

Findings Related to Professional Development

Subsidiary Research Question 3: To what extent, if any, does professional development address single-sex classes?

All principals indicated a limited amount of professional development available to teachers regarding single-sex classes. Only 1 principal stated that the entire faculty participated in professional development specifically designed for single-sex education. Gray and Wilson (2006) identified the need for preliminary and in-service training to provide teachers with the necessary skills to successfully implement a single-sex program.

Principals maintain there is scant professional development available on single-sex education but do agree that it would be beneficial. In-services that are available were often attended after single-sex classes were implemented. Future studies may determine the effects of professional development on single-sex classes, and address the impact of professional development on the pedagogy of single-sex classes in the development of best practices.

Conclusion

This study consisted of 6 principals from schools with dissimilar demographic data. The demographic differences suggest a broad representation of schools implementing single-sex classes. Single-sex programs were developed by individual teachers and administrators in four of the schools based on the books and articles the educators had read and past teaching experiences. Two of the schools implemented single-sex classes as part of a pilot program. Four of the schools offered single-sex classes for both genders, with two schools implementing the classes for only one gender. While the grade levels implementing single-sex classes ranged from third to sixth grade, the majority of schools implemented single-sex classes at the fourth- and fifth-grade levels. Single-sex classes at the elementary level are relatively new. Effective grade levels for implementation have not been determined.

The literature suggests the importance of examining the rationales and goals of the single-sex programs (Salomone, 2006, p. 782). Due to the current era of high-stakes testing, educators continue to incorporate alternate forms of education and intervention strategies in an effort

to increase academic achievement. The principals' responses suggest that the goals of single-sex classes cluster around academic achievement, behavior, gender-differentiated instruction, and students' needs.

The amendments to Title IX give "public school districts the flexibility to establish single-sex schools and classes, as long as enrollment is voluntary and a comparable coeducational opportunity is available (Cooper, 2006, p. 14). However, in one of the schools, single-sex classes became the only option because the school divided the grade levels according to gender. The legality of this decision may be questioned. One principal suggested that students had the ability to transfer to another neighborhood school if they did not want to attend single-sex classes.

Principals indicated that teachers differentiated instruction and addressed the interests and personalities of the genders in the single-sex classes. However, perceptions of gender differences largely depend upon the literature read and the personal interpretations of the literature. While principals stated that teachers' adaptations included the classroom setting, available

reading material, and the structure of the classes, the classes did not appear to be based on physiological scientific-based research relating how male and female brains process and learn information differently.

Principals stated that pedagogical strategies were based on readings and teacher experiences. To allow for greater generalizing, a replication of the study without the limitations from chapter 1 is warranted.

Professional development can occur in many forms such as job-embedded, workshops, and in-services. Few workshops address single-sex classes. Faculties and administrations are developing individualized single-sex structures within schools. Five of the 6 principals in the study appeared to enthusiastically support single-sex classes in their schools, with only one school discontinuing the program at the end of the 2006-2007 school year. Principals' responses indicated that early and frequent communication among all stakeholders, a school culture of academic achievement, a knowledge of differentiated instruction, and professional development, whether through the reading of literature or in-services, are significant components to the successful

implementation of single-sex classes in coeducational public elementary schools.

Summary of Recommendations for Future Research

There is little research in the United States on single-sex classes in coeducational public elementary schools. The number of public schools implementing single-sex classes as an alternate educational strategy or intervention program increases yearly. Based on the data obtained from the principals' interviews, the following recommendations are made: (a) The study should be replicated without the limitations cited in chapter 1, which may affect the generalizing of the study. (b) Longitudinal studies should be conducted to determine the most effective grade levels to implement single-sex classes within the elementary level. Further study is needed to determine criteria for placement in single-sex classes when gender-specific programs are implemented as alternate intervention programs. (c) A study examining the cost and benefits associated with the implementation of single-sex classes as an alternate program should be conducted. (d) A comparative study of the educational benefits, if any,

between grade levels divided by gender and single-sex alternate programs within a grade level should be conducted. (e) A study to determine current research-driven studies and scholarly information within the United States should be conducted. (f) Studies to determine the effect of high-stakes testing on the implementation of single-sex classes should be conducted. (g) A comparative study of the effect of single-sex classes on student achievement in the classroom and standardized, norm-referenced tests should be conducted. (h) Research on the academic benefits of implementing single-sex programs and the variables socioeconomic status, gender, and ethnicity/race at the elementary levels should be performed. (i) Future studies should focus on the perceptions of all stakeholders within the professional learning community. (j) Future research should focus on the adaptation of the curriculum to meet the needs of the genders. (k) A study to determine the best format for single-sex classes should be conducted. (l) A study to determine the impact of professional development on the pedagogy of single-sex classes should be conducted. (m) A study to determine effective pedagogical strategies and practices for single-sex classes should be performed.

(n) A study comparing the effectiveness of single-sex classes that implement gender-specific pedagogies and coeducational classes should be performed. (o) A study to determine if gender-specific pedagogies can be successfully incorporated in coeducational classes should be conducted. (p) A study to determine the impact of single-sex classes on student achievement and behavior in the primary grades should be conducted. (r) A study to determine the composition of single-sex classes, created to address behavior relating to gender, race, and socioeconomic status should be conducted. (s) A study to determine whether gender achievement is greater when all subjects are taught in the single-sex format or within specific subjects should be conducted. (t) A study on single-gender classes that have been implemented at the primary level should be conducted. (u) A study of principals' perceptions at the middle- and high-school levels, where single-sex classes have been implemented, should be conducted. (v) A study of the statewide single-gender initiative in South Carolina should be conducted. (w) Future studies should include strategies that effectively address the pedagogy of the single-sex classes and the development of best practices.

(x) Future studies should determine the effects of professional development on the implementation single-sex classes at the elementary level.

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Appendix A
Letter of Solicitation

Dear Principal:

My name is Patrice P. DeMartino. I am completing a doctoral dissertation in Educational Leadership, Management and Policy at Seton Hall University, College of Education and Human Services.

The purpose of this research is to investigate principals' perceptions of single-sex classes in coeducational public elementary schools, specifically in terms of school culture, pedagogy, and professional development.

The telephone interview should take approximately 20 to 30 minutes. The interview will ask approximately seven open-ended questions (enclosed). The telephone interview will be held at a mutually convenient time and day after work hours. To facilitate the note taking of your responses, I would like permission to audio record our conversation using a speakerphone and iPod.

Your participation is completely voluntary, and you may withdraw at any time. Refusal to participate in the study or discontinuing participation will involve no penalty or loss of benefits. If you choose not to participate, simply throw the packet away.

There is no anonymity in this study in that I am conducting telephone interviews. The confidentiality of all interviews and principals will be preserved. To maintain accuracy and confidentiality, each principal will be assigned a number code (1-6) on the audio recording. No one will be able to link the data to any individual.

The research information will be used for the purpose of analysis. All computer data and recordings will be stored on a USB memory key. All USB keys and notes will be kept in a locked cabinet in my private home office for a period of 3 years.

It is my hope that this study will add to the understanding of single-sex education in coeducational public elementary schools. If you are willing to participate in this research, you are asked to complete the participation form and return it, along with the Informed Consent Form, in the enclosed self-addressed, stamped envelope. I will contact you by phone to arrange a convenient time to conduct the interview. If you decide not to participate in this study, simply discard the entire packet.

Thank you for your time and potential participation in
this research.

Sincerely,

Patrice P. DeMartino

Appendix B
IRB Consent Form

Informed Consent Form

Researcher's Affiliation

Patrice P. DeMartino is completing a doctoral dissertation in Education Leadership, Management and Policy at Seton Hall University, Executive Ed.D. Program, College of Education and Human Services.

Purpose

The purpose of this study will be to explore perceptions of principals regarding single-sex classes in coeducational public elementary schools specifically in terms of school culture, pedagogy, and professional development. The telephone interview should take approximately 20 to 30 minutes.

Procedures

The researcher will interview subjects over the telephone. The researcher will take notes and audio record the interview using an iPod and a speakerphone. Interviews will be conducted with subjects who had single-sex classes

in a coeducational public elementary school setting during the 2006-2007 school year.

Instruments

The interview will consist of the researcher asking approximately seven open-ended questions to gain subjects' perspectives on single-sex classes in coeducational public elementary schools. A sample question is provided: *What obstacles, if any, have occurred regarding implementation of single-sex classes?*

Voluntary Nature

Participation is completely voluntary, and subjects may withdraw from the study at any time. Refusal to participate in the study or discontinuing participation at any time will involve no penalty or loss of benefits to the subjects otherwise entitled.

Anonymity

There is no anonymity in this study in that the researcher is conducting telephone interviews. The

information gathered through the interviews will be used solely for the purposes of analysis.

Confidentiality

The confidentiality of the interviews and of the subjects will be preserved. To maintain accuracy and confidentiality, each subject will be assigned a number code (1-6) when the interviews are recorded. No one will be able to link the data to any individual. Recordings will be saved on a USB memory key and stored in a locked cabinet in the researcher's private home office for 3 years.

Benefits

There are no direct benefits to the participants as a result of participating in this research. The results of this research may provide data on single-sex classes in coeducational public elementary schools. The results of the research may add to the knowledge base on single-sex education.

Remuneration

The participants in this study will not receive monies or remuneration of any kind for their participation in this study.

Contact Information

Contact information for answers to questions regarding the research and research subject's rights is provided:

Patrice DeMartino (researcher), 609-247-7766, email: pdemartino@shsig.com; Dr. Mary Ruzicka (mentor), 973-275-2723, email: ruzickma@shu.edu; and the IRB office, 973-313-6314, email: irb@shu.edu.

Audio Recordings

Participants, by signing the Informed Consent Form, give permission to be audio recorded. When the interviews are recorded, the subjects will be identified by a number (1-6). Only the researcher and her mentor will have access to the audio recordings. The researcher will transcribe the recordings. The audio recordings will be kept on a USB memory key in a secure and locked cabinet in the researcher's private home office for a period of 3 years.

At the end of 3 years, the USB memory key will be erased and destroyed.

Informed Consent Form

A copy of the signed Informed Consent Form will be mailed to you.

Subject/Participant

Date

Appendix C
Participation Form

Principals' Perceptions of Single-sex Classes
in Coeducational Public Elementary Schools

Name: _____

School: _____

Phone: _____

Best time(s) to call: _____

Best evening(s) to call: _____

Yes, I agree to participate and be audio recorded: _____

Signature: _____

Please return in the enclosed self-addressed, stamped envelope along with the signed Informed Consent Form.

Thank you for your time.

Patrice DeMartino

Appendix D
Interview Questions

Interview Questions

1. Which grade levels and subjects have single-sex classes?
2. What are the goals of the single-sex (classes) program?
3. In what ways does the school's culture promote the goals of single-sex class program?
4. To what extent, if any, were stakeholders (administration, teachers, parents, students) included in the decision-making process toward the implementation of single-sex classes?
5. What obstacles, if any, have occurred regarding implementation of single-sex classes?
6. To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes? Do teachers "teach" the genders differently?
7. To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

Appendix E
Telephone Script

Telephone Script

Hello, this is Patrice DeMartino from the Executive Doctorate Program at Seton Hall University. I recently mailed you information on a research study I am conducting on principals' perceptions of single-sex classes in coeducational public elementary schools. The purpose of my call is to ascertain that you received the information and to answer any questions you may have regarding any aspects of the research.

Appendix F
Principal Interviews

Principal 1

Question 1 Which grade levels and subjects have single-sex classes?

Absolutely, we only have one classroom which is single sex. It's a fifth grade, and it is all females, all subjects. It's an all-day thing. We call it the academy.

Question 2 What are the goals of the single-sex (classes) program?

When we choose the children who are going to be in our single-sex classroom, we look at both behavior and academics, and as a principal, I think they frequently go together. Generally, we try to look at behavior first because we believe that if we can get the behavior under control, and get them ready for middle school, their academics will follow.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs

Our school culture is very much about accomplishment, and it is a very sought-after program to get into. I believe myself it is because of the teacher. She's an outstanding teacher and has been recognized as so in our county, but she is very, very strict, has high goals, high aspirations for all of her students, and because of that, because she has a strong belief in them, everyone wants to be in her class so the people who are in that class are the envy of the school. They like them. They are very supportive of them. Interestingly enough, her class is the only one that is required to have a uniform in the whole school.

Would you say these are the high-level students?

Generally, they are not; generally they are the ones that are fairly far behind. They are not the ones that have learning disabilities because, of course, they would have been in another classroom, but sometimes they have a disability or a behavior disability that is not strong enough to be in a separate classroom, so she does have some of those but we are an inclusive school for low to medium ability.

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents, and students) included in the decision-making process toward the implementation of single-sex classes?

It was actually more of a decision with the teachers from their last year. This was fifth grade. We brought them in with all the fourth-grade teachers came together to meet with the teacher that was going to teach the single-sex classroom. They sat down and discussed who would best fit in that classroom, and we met with the teachers individually, I'm sorry, the parents were individually explained the goals of the single-sex classroom and also the rules because they are different, and they had to agree to be a major third part of the triangle that we look at: school, student, and parent.

So whose idea was it to originally start this program in the school?

Actually, the particular teacher. She read an article, and I cannot tell you the name of the article. I should tell you what it was, but I can tell

you two summers ago she and came to us and asked, I was the assistant principal at the time, and asked if she could go forward with it. So we had to get the approval from the school district, and then when we got all that in place, she had, last year was our first year, we had an all-boys class and so this year we looked at the fourth grade, I'm sorry, in the spring of last year we looked at the fourth grade and decided that actually we needed it more in the girls class this year, and it has been highly successful. We had some severe behavior problems with these girls last year, and they are model students this year. Now were the boys somewhat upset that they then did not have this opportunity this year to follow through?

Actually, the boys went to middle school so that wasn't an option. They were spread out among several middle schools—you mean the boys that were in last year?

I mean the boys that were in the fourth grade last year, had they possibly been looking forward to going into this program in fifth grade and then it was switched to the girls?

No, I don't know. We did talk about having one of each this year, and we didn't have a teacher that really wanted to do that so we did not go forward with that, and I didn't hear any negativity from the boys. So—it's an interesting concept, I never thought about it. As of right now, in November, we have not had any negative feedback from the boys they could not have gone in there.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

Actually, we had to fight pretty hard with the district. They were very worried about single-sex lawsuits, and we had to bring up some court cases and show them the fact that they had been approved in the United States, and then the newspaper did a real big article about being the first single-sex classroom in the district, and we had some horrible feedback from women, believe it or not, who were much older, I would say probably in their 70s and 80s, saying that they had fought long and hard all their lives to not have children discriminated against when it was an all-male

classroom, and said how dare we and the district almost folded and made us put them back out in the regular population, but luckily our superintendent is a strong person, and he agreed to keep going forward, and it all went away.

Would use this mostly for children at risk?

Basically, that is what we are ending up doing. It wasn't our purpose, but they are the ones that needed it the most.

So you are creating this program to fit your needs for any given year.

Exactly.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' to the genders differently?

She absolutely does. She creates in her classroom an environment that is very friendly to whatever sex she is teaching. Last year, she had a lot of, she went out and bought a lot of books that were more high interest for male-type things. She asked them what

they wanted to read about; she made sure it was available so they read more. She tailored her writing and her social studies, anything she could in the reading curriculum, around things she thought were of high interest for them. This year, she has redecorated her whole room as "frou frou" and putting big pillows around, and they have little, I can't think what she calls it, she has little groups where they can sit and talk. They are not allowed to gossip. She says there is a difference between gossip and having a talk between close friends, and they of course did not have that last year, not because they were able, some of the boys did, but they also had football games last year that were definitely a way to get out. She just meets their needs definitely differently than you would see in a two-sex classroom.

And does she speak to them differently?

Than she did last year you mean?

Yes, perhaps in tone or assertiveness with one group more than another?

I would say at the beginning she did not, but with the boys, she is a very assertive person, and

with the boys she had to continue being that way throughout the year. That's just who they are, and they listened better. With the girls, she is definitely softer this year, and it's been interesting to me the conversations she's gotten into because a lot of our girls don't have moms that want to discuss the facts of life, and in this particular school we have a number of girls that have failed, and we have some that are 13, 14, and they are starting their period, and she's been able to really discuss that in a risk-free environment, and it has been really good for them.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

She took one last year, and I cannot tell you the name of it. We sent her to Orlando for one. We both have been really involved in *A Framework for Understanding Poverty* with Ruby Payne, so she has been involved in that, and she actually does like the children to be taught in a single-sex classroom,

especially for the kids at risk, because she thought it was better for them. I think that may be where she started at, believing in that, but it was also, it was something about teaching boys separately that really captured her interest.

Principal 2

Question 1 Which grade levels and subjects have single-sex classes?

It was 6th grade, and we were in a rotation so that it was all subjects.

OK and what specific sex did you have it for?

We had all the girls and their rotations and all the boys together in their rotations. They went to all three teachers throughout the day, but they were all separated.

Question 2 What are the goals of the single-sex (classes) program?

Well, the initial goal was to regain the student focus and have the opportunity to do some differentiated instruction prior to the Standards Test.

And so it didn't really pertain to at-risk students?

No, because it was just all girls, all boys, and we didn't, within each rotation, we do have some clustering of students due to individual needs, and

but no, it was just to separate the boys and the girls.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs?

Well, we had parent buy-in at first. You know, we had to talk to the parents, and they supported that. And I think the boys and the girls themselves in the sixth grade, they really liked the idea of having the opportunity of being in a separate class, especially that time of year, toward the end of the year, and then my teachers are actually the ones that brought forward the idea. They had done some research and looked at some studies about many schools using single-sex classes, and it has shown to improve achievement so that was really their initial desire. It was to look at it from that point of view. The added effect, of course, was that it also supported some better behavior in the classroom.

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents, and

students) included in the decision-making process toward the implementation of single-sex classes?

It started out as the teachers bringing forth the research to me and asking me about the idea, if we could do, if it would be possible. We then looked at the student population and determined that we did have an even number of boys and girls and that we would be able to set up that, work within the rotation. We had two girls classes and two all-boy classes, and then we brought it forward to our parent community.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

Well, because we did it on a small scale, I don't believe we faced any of those obstacles except for just the notoriety in the press. We had a lot of attention for it because it was something new and different. Um, that kind of makes people nervous, and one of the comments from one of the parents, a third-grade parent when they found out about this, because our initial discussion was just with our sixth-grade parents so because they were the parents being

affected, and the third-grade parent called down to the superintendent and said what's she going to do next, separate everybody and make it a Catholic school? They said no.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' the genders differently?

What they found when they started the process of differentiated instruction was that, number one, there was a lot more participation. The girls were more wanting to demonstrate that they were smart. They found that the girls liked sitting in circles and doing round-table discussions and having that opportunity to dialogue through content area. The boys needed or preferred to have more activity-based, project-based instruction where they were performing and doing things. So those are some of the things I noticed, and they adhered to those differences in the instructional piece. They certainly grabbed on to what was working with each set of students and they

accentuated that, but I think we haven't done any extensive research on the pedagogical differences, just from our own experience from being in that situation.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

No, we did not. It's just research that we did. We did a lot of research through newspaper articles you know documentation, different things that had been talked about, so it was just that kind of literary research, but no actual in-services, no.

Principal 3

Question 1 Which grade levels and subjects have single-sex classes?

Presently, we have grades 3, 4, and 5 in all the subjects and they are all boys' classes.

And so I guess it is all-boys classes and all-girls classes? You do not have any coeducational classes?

We don't have any all-girls classes. We don't have enough girls in one grade level, and also we decided to do a little more research on the girls. We tried an all girls last year, and it wasn't as successful as the boys that we felt we needed to do a little more research. So, it's really just an all-boys class, and the rest of the classes are coed.

Question 2 What are the goals of the single-sex (classes) program?

Well, of course you know the academic goal is to have their grades and test scores go up but also work on the socialization goals as far as being in one group and being able to talk about different social

scenarios that can happen and to talk freely without having girls around, or when we did the all-girls classes, if the boys are around, to brainstorm and think of things together that we can do treat each other better on the playground. You know, just be all-around good citizens. Another thing, it has really helped with our discipline. For some reason, the boys just get along very well, and there's not a lot of discipline problems, and we used, well, our first-boys class, who are fifth graders now, a lot of them had a lot of discipline problems way back in second grade so when they went to third grade and into the boys class, the discipline dropped significantly for some reason. So when you formed the boys classes then, was it for at-risk students?

No, not necessarily, it's more, we just figure, how we did it was kind of haphazardly. We put some boys that we knew were having a lot of discipline problems, and then we put a lot of boys who were doing just fine. We decided maybe if we mix them together and had them feed upon each other just to see what

happens, and it's been a positive result ever since then.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs?

Well, our school does a character counts, character initiative. That's one way that we reinforce in all the classrooms, not just the single-sex classrooms. We also have every week a student is recognized for princi-PAL, who has exhibited those character traits so they get recognized and get a prize and get their picture taken with the principal. We really just incorporate what we were doing in the school already, but with the all-boys class, it just kind of worked out real well as far as them being very cohesive. As a matter of fact, when we did our SEA elections, they were very supportive of each other. Whoever was running from their room, they were the loudest cheerers. As a matter of fact, one young man was the president. The whole room really supports him so it was amazing to see.

So it's almost like you're giving those students who may not have the opportunity, perhaps because of

behavior or socialization factors, that extra push to become . . .

. . . It's almost like they have formed their own little brotherhood club, I guess.

They do not like the fact that if there is a problem in the classroom, the only thing you have to say is that you have to go to the other classroom for a time out. Well, there are girls in there. They do not like that. Something just as simple as that, especially when we had an all-girls class last year, and if you got sent to an all-girls class, oh that was the worst, that was worse than calling your parents so that has really helped as far as behavior and things of that nature. Could you hold on for just one minute?

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents, and students) included in the decision-making process toward the implementation of single-sex classes?

Really, we have had a lot of parent support. We maybe had some skeptical parents at the beginning, but we asked them just to trust us and to see what

happens, if everyone ends up being happy. Maybe more people wanting to be in there.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

What obstacles? Really, we have had a lot of parent support. We maybe had some skeptical parents at the beginning, but we asked them just to trust us and to see how it happens. But then everyone ended up being happy. Maybe more people wanting to be in there, I think, and you can't accommodate everyone in the all-boys class. We have enough space for it. That's probably it. More parents requesting that their child be in there. We just don't have enough space for it. Did you get a lot of publicity in the newspapers?

We got some, yes, we have, not a lot. Actually, last year our girls class was featured in a little spread, and they did some interviewing with some of the all-boys classes, as well, but we have had a little bit of publicity for that it is positive.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' the genders differently?

Yeah, well kinda, yeah. We follow a lot of the research-based materials as far as what the atmosphere of the classroom needs to look at, like, I am sorry. For example, we have one male teacher that has all-boys class, and we found that through research that the boys hear, he talks really loud, and it doesn't bother the boys at all, as a matter of fact, a lot of times boys need things a little louder than girls. The girls are kind of intimidated in this man's class, not that he was overbearing but that he has a loud voice, but the boys seem to be ok with it. So that was one of the things. Also, boys are more or less get to it without a lot of fluff so the teachers who have them know that you spend just a little bit of time introducing, and let them go ahead and work and build it on their own to see what they get. And then we do a lot of differentiating anyway with all our classes, but with them, we do all the way down to pointers.

When they read that they put pointers on their fingers, monster pointers, just stuff, we ordered a lot of books that sparked their interest: sports books, a lot of car books, a lot of books about conflict, war, all the stuff you know that the boys like. You kind of change a little bit of their reading selections to meet their interests.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

I think they did when we first started if I can remember correctly, but we had a school-wide book club, and we had the book *Boys and Girls Learn Differently Action Guide* for teachers. We use that as our study guide and used some of those techniques and things they had mentioned in that book for that; I know the teacher in the third grade, I think she did go to a workshop for that, not our male teacher, he didn't go, and our fifth grade, they are just new to fifth grade so I know that teacher did not go, but she did also take the book and did a lot of research, and

she also talked a lot to people in the building that had the single-sex classes on things she should be looking out for and things she should be doing.

Principal 4

Question 1 Which grade levels and subjects have single-sex classes?

Well, uh, grades 4 through 6 are single-sex classes.

Are they separated totally?

Yes.

So they are all boys and all girls?

Our accelerated classes are single-sex and our classes that are mediocre are combined.

You mean coeducational?

Yea, in each grade there is one section that is coeducational.

Question 2 What are the goals of the single-sex (classes) program?

Well, let me give you a little history of how we came to this point. What happened was that we were always, when it came to making our AYP as it relates to No Child Left Behind, we always were kept coming up short I mean, you know, we would get 12 out of 13

goals. We might come up short in reading or we might come up short in the math, and it was too close. So what I decided was I needed to take a look at my data, and I looked and some children who were borderline. I mean those that could have gone either way, what I mean either way, could have failed or could have succeeded, but I also looked at ones causing discipline problems as well, and I noted that it was those borderline students who were the ones that were always in my office for disciplinary reasons. So what I decided, I was reading an article about how boys and girls learn different, and so I realized that after looking at my data that my girls seemed to have an edge on my boys and so the thought came to me that maybe there is something to this, that boys and girls learn differently. But I needed something else. I needed to use my single-gender class to promote my academic competition. There was no competition. I mean, boys were in class with girls and nothing happening, so then I thought maybe they could become competitive, and in the process I talked about it a little bit with some of my faculty, even a couple of

parents. And I thought that maybe competing against each other might be the one way I could get a little bit more out of these students academically so we decided to go with the single-sex classes after talking to the superintendent, some parents, and even with the students. And then we realized that if the students are going to buy into it we might have some success. So what we have used so far was to take our school, which was one of the lowest-performing schools in the state to the top. In fact, our school is number 2 ranked school in the whole state. So, to answer your question, we used the same-sex classes to promote our academic competition among the genders, which in turn raised our test scores tremendously.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs?

Well, like I said, we go back to the competition part of it. We encourage the competition between the girls and our boys in the single-gender class. Our data indicates, you know, this is not a defined study,

but it indicates that the girls at Elementary School do outperform the boys. Either they are taking the competition more seriously than my young men, or they might just be more smarter.

When they are competing for these grades, are the girls competing against the girls and the boys against the boys, and it just so happens that the girls do better?

Well, you know, they do, and as they say, data don't lie. In fact, on the AYP we have more girls scored 4 than the boys so you had most of my boys in the single-gender class scored at level 3. The vast majority of the girls scored at level 4.

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents, and students) included in the decision-making process toward the implementation of single-sex classes?

Well, as I said, we talked to our superintendent, we talked to our teachers, parents, because our teachers had to buy into it in order to be a success as well as the students. Well, you had some sentiment

on the part of the parents 'cause they don't understand when you say single-sex class because we live in a rural area, very rural, so therefore you had people when you said single-sex, you know, well, they thought this was going to make, boys you know girls become boys and boys become girls so that was just one of the stigmas so we had to explain that. After, you know, that it wasn't a whole bunch, you know, when people don't understand something, you just have to explain to them a bit more to make certain things clear, and two, so it was bought into 100% by everyone.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

Believe it or not, very, very little, and what I mean by that, when we went into things, single gender, we made sure all stakeholders understood what we meant, what we wanted, what we needed, and so you know everyone got behind us 100% and you know, and we just put it in play, and you know some of the kids and the coeducational class, they quite didn't understand why

they were in their class and why the children were in that class so we also used that as a motivational jump start for those students who are in the coeducational class to pull up their grades academically so they could get into the single-gender class.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' the genders differently?

Well, yes, the studies show that boys and girls do learn differently. Boys, you know, learn better if they are perhaps able to move around, prop their foot up in a chair, lean up against the wall, not so much as being aware in a defined organized setting. Girls, you know, are very vocal. They want to be heard, even if it means screaming after they are raising their hands, saying, "Ooh, ooh me," so the teachers have to be trained, and we were trained, as I said, we did a book study on how boys and girls learn differently and then we had some professional development in helping

our teachers to uh better understand how to teach the single-gender class.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

The single-sex class has been a tremendous success for us, and we understand that boys and girls do learn differently, and according to my data and like, I said this is not a scientific study, my girls are outpacing my boys on standardized tests, but the boys are trying their best to keep up with the girls, and what that has done was to help raise our test scores. Like I said, we are proud of our success since we converted to the single-gender classes.

Principal 5

Question 1 Which grade levels and subjects have single-sex classes?

Well, last year was the first year of the pilot program, and last year we had one class of girls at the fourth-grade level and one class of boys at the fourth-grade level. Then, this year, we have changed the program a little bit, and now we have fourth and fifth graders in both single-gender classes, one class for girls and one class for boys; each of those classes has a reduced number of students and two teachers right now. So, for the girls class, we have two teachers and 34 girls, and for the boys we have two teachers and 34 boys.

Do you have a coeducational class at that grade level?

Oh yes, we do we have several; we have four coeducational fourth-grade classes and five fifth-grade classes.

Question 2 What are the goals of the single-sex (classes) program?

It's designed to be an intervention for students who are having difficulty succeeding, who are not succeeding in school in terms of academics, behaviors, attendance, and discipline referrals. So this was seen as just another way to address the needs of students and in a different manner and was seen as an intervention for kids going into fourth grade. And at the end of the year last year, we had asked the parents and the students how they felt about the program, and we did a little survey, and the data we received was that they were overwhelmingly interested in continuing the program, and they really thought it was a valuable experience for them, so we were able to continue the program with them now for the fourth and fifth graders, and we brought some new kids in and kept the same kids in.

And did it improve the behavior?

Oh, definitely, you know we had a reduction in the number of discipline referrals from that class. We did have a couple of students who continued to get into trouble. There were some discipline referrals and suspensions, but overall, the rate reduced

significantly, and even the students who continued to have some difficulties have improved this year and are continuing in the program this year. We have seen a dramatic improvement in the discipline referrals and as well as their attendance.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs?

The school culture, well, I think the class is a small part of the overall school program so it is seen by the staff and by the school community as just another intervention program that is available out there. I don't think there is a major push or a major shift in our school culture in terms of embracing the different modalities that they are teaching to in those classes or anything like that. It's really those teachers who are in those classrooms that are interested in and dedicated to what they are doing so, but I don't know, I don't think it has changed the overall culture. I think it has in a way made those students who are no longer in the other classes, the kids in there are the kids who are identified as

having difficulty and having behavior issues and social problems and academic issues, and now instead of being spread out throughout the fourth grades and the fifth grades, they are in this one spot, and all of their needs are able to be addressed in that one place so I think it is seen as an intervention that is valuable and useful to the school.

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents and students) included in the decision-making process toward the implementation of single-sex classes?

Many, of course. Like any other class, we had to staff the classroom and that was a challenge at first because I think many people were confused or intimidated by the fact that it was going to be a pilot, that there were going to be some differences going on, and they were going to be, and they didn't know too much about single-sex classrooms. At first there was hesitation in finding the staffing, but once all that got settled, then there have been no more or less obstacles than a regular classroom. The

difference has been there have been a couple of things that we have put into place that were assisting those classes. They at fourth grade last year had one teacher and a paraprofessional in the classroom, which other fourth-grade classrooms did not have. There might have been some resentment about that, but I think it was seen overall as a positive because of the fact that now those students that were having difficulties were no longer in another room. They had a place where they were able to have their needs met and be more successful in class.

So is it the teachers and the parents who decide, and you, who determine the students who go into these classes?

Yes, these are all parent request students. Every student in the classrooms had to be chosen, I mean, parents had to select and want to be in that classroom. There were referrals made by the third-grade teachers, and then those students who were referred, their parents were contacted. We also sent out a letter to all the third-grade parents to ask if they were interested in being in this program. The idea was we would get some teacher referrals, some

parent referrals, and some student referrals, and then go from there. The numbers worked out, and we had the number we needed to form the classes so we didn't have any kids that were on a waiting list or anything like that, and we were able to have a full class without any problems. All parent requests. Even if a teacher suggested it, we would talk to the parents and make sure that they were interested in that kind of a program, explain a little bit about the differences and what it would be like, and see if they wanted to be a part of it.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

That might have been one of the obstacles, this came up as a pilot program, like I said, and I think there was some difficulty in the communication process at first, and the staff at Franklin, they were not aware of the program early enough in the process, and I think that took some people by surprise so I think some of the stakeholders need to be addressed earlier in this process. Families and students were informed,

you know, about the possibility of the program, and then they were, if they were interested, then we touched base with them as to why and what goals they have for it so those ended up coming out of the overall goals of the program.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' the genders differently?

Yes, well, I mean the research on single-sex classrooms tells us that all boys and all girls are on a spectrum on the effectiveness of strategies that are gender specific and so we recognize that and tried not to make either class so far addressing the needs of the kids at the far end of the spectrum. So while they do use different pedagogical techniques, for instance, the boys are often, we try to make activities and programs and learning experiences active. They use competition as part of their incentive towards being successful in the class, and it is a very active and participatory class. You know, we allow for student

movement, we allow for physical activity. It's a big part of their program. They definitely get in their PE minutes. They do that in a way that incorporates it to the other academic subjects, and I think that it's a big part of it. In the girls class, you will see more often instructions being distributed in written form. The class structure is slightly different in the way they do groupings and things like that, but all of these things, I don't think you would walk into the classroom, and go oh it's an all-boys class. If you didn't see the students, you would maybe notice some of the more active techniques that are being used by those teachers. And again I think it is a lot about the teachers' comfort level with different modes of teaching, and I think in our situation while the classes are different because of their gender, you know, there are some differences they are not so extreme as to be, you know, you wouldn't look at this class and go, wow, they are getting a whole different curriculum. They are getting the same standards as the other class, just delivered in a little bit of a different way in each of the classes.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

Yes, definitely, we had a little book club where we read a few of the books out there on single-gender classes. All of the teachers, all four teachers, went to the Gurian Institute this summer, and they participated in that, and I believe it was a four-day conference, and they learned a lot of strategies and different techniques, and things that worked there, and again we have done some research on our own, and some reading and, more importantly, looking specifically at the students that are in the classes and what they need.

Would you recommend this to other schools that are considering, and do you see the expansion in your school?

I would recommend any intervention that offers an alternative mode for students to learn, another chance for kids who are not being successful currently to become successful. I think it is a great way to do it, it allows for some "outside of the box" thinking, and

it encourages teachers to come about their instruction in a little different way, and I would definitely recommend it to someone, a school district or a school who was considering it. I think that I would want to caution that we don't go out and make these classes so vastly different that we are reinforcing negative stereotypes or, you know, changing curriculum for either gender, but I do think though that it something that is a valuable opportunity and option, and I know that there have been single-sex schools and classes throughout history, some very prestigious and popular schools, mostly in the private sector, but this is a strategy that has worked with many people, and I think it would be silly not to take advantage of that opportunity in public schools.

Principal 6

Question 1 Which grade levels and subjects have single-sex classes?

Our fifth grade only. All of the academic and activity classes in fifth grade.

And do they ever come together, coeducationally?

They come together in clubs, in gifted and talented, and special events such as assembly programs, parties, their graduation, and they have the option at lunch, but they never sit together.

Question 2 What are the goals of the single-sex (classes) program?

Our goals were to improve achievement by tailoring the instruction to be more suitable to the gender needs by eliminating distractions and helping students to seek their individual strengths without regard to how they were perceived by the opposite gender.

Question 3 In what ways does the school's culture promote the goals of single-sex class programs?

Well, we have sought the input of parents prior to the implementation, the teachers that were involved, we have had training for, uh, gender differences, for the entire staff, and the concept was actually initiated by the teachers. However, both the assistant principal and I have a background in middle school administration, and therefore, we were ripe for the idea.

Question 4 To what extent, if any, were the stakeholders (administration, teachers, parents, and students) included in the decision-making process toward the implementation of single-sex classes?

Yes.

Parents were involved? They had a voice in this?

And, of course, all of the powers that be had to approve it as an experimental pilot program, all the way to the school board.

And how many years has this been in existence?

This is our second year of implementation.

And would you define it as successful?

It is much more successful this year than last year, and the reason is that last year we, um, the teachers were not as prepared even though there was there seemed to be buy-in. A couple of them had serious reservations, and I guess were not as committed to the success. Um, one of those has moved on to the middle school and the other one has moved down to a lower grade, but the other thing is that we had large classes last year, larger than I want to ever have in fifth grade, and I never want any of our classes to be over 24, and when we started last year we had 21 in all of the sections, and 21 or 22 in all of the sections. Who would have guessed during the year that we would gain nine fifth-grade students, and they would all be boys?

I would have guessed.

I mean to have nine new students, and all of them be boys. So that made the boys classes 26 and 27, and so our rooms are triangular the way our building is made. There were too many people in too small a place, and one thing that occurs is that when you have got a

limited number of sections, you don't have enough space to divide your problematic situations. So this year, we have everyone who is in the grade committed to the same gender. They chose whether they wanted to teach boys or girls. We have a man on board as one of our male teachers, the male-gender-classes teachers. The classes for the girls are 18, and for the boys are 15 and 16. Actually, we have three sections of each this year.

Question 5 What obstacles, if any, have occurred regarding the implementation of single-sex classes?

Well, I just named one, the intake of new students last year that caused bulging class sizes, other obstacles such as the inability to disperse discipline problems because you've got just a limited number of classes for a particular gender. Under the law, you have to offer an option, and the option is you have to go to another school because we did it completely in our fifth grade, and that's a necessity because we don't have enough teachers to do the same gender classes and then offer that nonoption, but our

schools are all within a couple miles of each other in our area. Our district is huge, but in our attendance zone, we have had a couple of good students opt out. But it is not really a hurdle, but it's one of the circumstances you have to work with. The other thing is that we do have, we did have, last year more than this year, some of the more, the parents of more passive boys, didn't particularly like that they were in there with what they consider ruffians. They said that their boys learned better with calmer girls. There are circumstances and individualities that probably are completely addressed with the same gender programs.

Have you gotten a lot of press on this? I know some of the principals I've spoken to really cited so much press that hindered it because it drew so much attention to it.

We have had a couple of news stories about it; one of the news stories in the local newspapers featured the guy from the state department. The guy we started working with last year was in a specific school, and our state department in SC has seen the

widespread application of this though they now have a person in charge of that, and it started the year when we had a workshop with him. We had someone come, and they did a story about that, and then we've had one other story about it and some comments about the students. One news story on TV about it, but that's been it. So it's been like this is an innovation that's being tried, and they said we will follow up in the spring when you get some more data.

Question 6 To what extent are there pedagogical differences in the single-sex classes as opposed to the coeducational classes; do teachers 'teach' the genders differently?

They are attempting to gain the skills to teach the genders differently and to create an environment in the classroom. One thing that we learned is that the boys functioned better in a less dressed-up environment, a more functional environment and to accept from them work that may be in gray, black, and brown that there's are some of the tendencies from the research of Leonard Sax *Gender Matters* book. They have

tried to allow more activity for the boys because they like movement. One of the things they do is have a lot of them working on the smart board or the white board, up-and-at-em and action. They do a lot of interactive, a lot more interactive group work they do it in the girls as well, but the girls tend to like the, I guess you would say, the calmer, more traditional environment. But they have been to one workshop on the male, specifically the males, the male teachers went to that one, and then there is a female one being provided not too far in the distant future, in late January, early February. I would love to give your information to and get you on the distribution list to David Chadwell, who is the state department person because he is always sending out information. The teachers are honing their skills with it, also looking at, you know, the different emotionalities of the two genders being more responsive to them, perhaps the little more dramatic ways of the females in validating them and not dismissing them.

So would you say the girls like more fluff and talk time?

They do. They are very interested in know how you are feeling about this, what everyone is thinking about this. They are very tuned into the personal lives of their teachers as far as just wanting to know, you know, what to you like to cook, what do you like to do. Boys don't seem to be too interested in that kind of thing. They would rather get down to business.

Question 7 To what extent, if any, are teachers trained, through professional workshops or in-service, on gender learning and gender-specific teaching techniques?

And you answered my last question to teacher in-service/training, would you say that it is critical?

It's very critical, and we did not have enough of it prior to the start of our last year's implementation.

I don't think there is that much out there.

That is why I want you to get on this guy's distribution list. He sends out newsworthy information. There is lesson plans, and you will find

out about the workshops in South Carolina. It's getting pretty widespread in South Carolina.

We are considering fourth.

This year we don't have such good reporting on the progress. Last year, we saw demonstration of the progress because we were using formative tests on Edutest so we had comparable data from fourth and fifth, but we changed to a new formative testing this year, MAP Measure of Academic Progress. So it doesn't translate to looks at their last years' Edutest scores and look at their this year's test scores MAP scores so we will be looking more at their the summative tests, the state tests at the end of the year, but I can tell you one statistic on discipline for our first 9 weeks last year. We had 56 office referrals for our first 9 weeks. This year, we had 13, and some of the things we used to experience, and I experienced this a lot at the middle school when I was an administrator there, but some of the things we experienced in fifth grade before: note writing, girls saying don't look at my boyfriend, implications about what who was doing what to whom, accidental touching, oh he bumped me on

my butt. That kind of thing that has virtually been eliminated both last year and this year, and one thing that I have noticed about some of the girls, um, they, um uh, emerge as leaders, seeming confident in front of a group of people. They would never have done that in front of a group of mixed gender. One day we went into the PE class, and they have these little scooter boards, and the girls were in there going wild on those scooter boards having a fabulous time, exercising, racing, whatever. Had the boys been in there, they would have never enjoyed that wild abandon or that activity in that manner.

And there is research to support that the gender stereotypes are reinforced in coeducational classes.