

Old Dominion University

ODU Digital Commons

Educational Foundations & Leadership Theses
& Dissertations

Educational Foundations & Leadership

Winter 2014

Educational Policy Decisions Effect Upon Same-Gender Public Education

Richard Gerard Catoire
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/efl_etds



Part of the [Educational Leadership Commons](#), and the [Education Policy Commons](#)

Recommended Citation

Catoire, Richard G.. "Educational Policy Decisions Effect Upon Same-Gender Public Education" (2014).
Doctor of Philosophy (PhD), Dissertation, Educational Foundations & Leadership, Old Dominion University,
DOI: 10.25777/r1ee-rz98
https://digitalcommons.odu.edu/efl_etds/97

This Dissertation is brought to you for free and open access by the Educational Foundations & Leadership at ODU Digital Commons. It has been accepted for inclusion in Educational Foundations & Leadership Theses & Dissertations by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.

EDUCATIONAL POLICY DECISIONS
EFFECT UPON
SAME-GENDER PUBLIC EDUCATION

by

Richard Gerard Catoire

Bachelor of Science in Electrical Engineering, December 1981, University of New Orleans
Masters of Science in Electrical Engineering, April 1992, Florida State University
Masters of Science in Education, December 2002, Old Dominion University

A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

EDUCATION

OLD DOMINION UNIVERSITY

DECEMBER 2014

Approved by:

William A. Owings (Director)

Steve Myran (Member)

John Ritz (Member)

ABSTRACT

EDUCATIONAL POLICY DECISIONS EFFECT UPON SAME-GENDER PUBLIC EDUCATION

Richard Gerard Catoire
Old Dominion University, 2014
Director: Dr. William A. Owings

The No Child Left Behind (NCLB) Act of 2001, with emphasis on greater choice and flexibility for parents and students in public education, to include the provision for same-gender public schools and classrooms, led to a resurgence in same-gender public education in the United States. With the results of the research on same-gender education presenting conflicting evidence and mixed-perspectives on the outcomes of same-gender education in improving academic achievement or attainment, there are still questions to be answered, not only to the effectiveness of same-gender education, but also to policy decisions to establish same-gender public education programs. While proponents of same-gender public education advocate that same-gender schooling supports increased educational opportunity and achievement while freeing students from gender stereotypes, opponents claim “separate but equal” is discriminatory and unconstitutional. As a result, public policy decisions by local educational agencies to establish same-gender public education programs, no matter how well intentioned, and irrespective of the provisions for same-gender schools and classrooms within NCLB, can be left open to questions on the rationales, justifications, and resources behind such decisions.

This non-experimental, mixed methods study gathered and analyzed data on same-gender public education programs in the United States using a descriptive cross sectional survey with telephone interviews to question principals of 92 K-12 same-gender

public schools on the proponents, rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. Fifty-four respondents agreed the establishment and maintenance of same-gender public education programs results from actions of local educational agencies and the leadership of the same-gender school, and they agreed this leadership is knowledgeable on the requirements for same-gender public education programs. Respondents to the study also agreed school choice for low-income students is a key reason for the establishment of same-gender public schools. Respondents to the study further agreed that supplementary funding, whether federal, state, or local, was not critical in the establishment and maintenance of same-gender public education programs.

This dissertation is dedicated to my wife Roxanne, who through her personal example as a teacher taught me the true meaning of selfless service. To my five children, who have continually reminded me to live up to my own principles, especially when it comes to “finishing what you start,” even if it takes much longer than first thought. Finally, to my parents, Alvin and Helen, who, while never graduating from college themselves, instilled in their three children the importance of higher education and an appreciation for the educational opportunities found in the United States of America.

Richard Gerard Catoire

ACKNOWLEDGEMENTS

I want to thank Dr. William A. Owings for his guidance and support during this extended journey, but most especially for his patience. With more than enough doctoral candidates to fill his schedule, Dr. Owings still made room for a “Troops to Teacher” graduate who often had to choose between work and research. I am confident in saying that under a different advisor the ending to this journey could have been much different.

I also want to thank Dr. Myran and Dr. Ritz for their assistance in the development of the research proposal, their contributions to the development of the research paper, and their participation as members of the dissertation committee. Their comments, inputs, and recommendations throughout the research process provided the necessary external experience, expertise, and perspective to guide the study to a successful outcome.

Finally, I would be remiss if I did not acknowledge the efforts of Ms. Dawn Hall in the success of students in Educational Foundations and Leadership. As the Administrative Assistant for the Darden College of Education Department of Educational Foundations and Leadership, her attention to keeping students informed of the numerous and varied requirements for graduation cannot be underestimated and should not be overlooked.

TABLE OF CONTENTS

	Page
LIST OF TABLES	xi
LIST OF FIGURES	xiii
Chapter	
I. INTRODUCTION	1
Background	1
Statement of the Problem	10
Purpose of the Study	11
Significance of the Study	11
Research Questions	12
Overview of the Methodology	13
Limitations of the Study	15
Definition of Key Terms	15
Summary of the Study	20
II. REVIEW OF THE LITERATURE	23
Background	23
History of Same-Gender Public Education in the United States	33
Background	33
Title IX of the Educational Amendments of 1972	35
Reemergence of Same-Gender Public Education	37
Prevalence of Same-Gender Education in the United States	43
Same-Gender Public Education and the Law	54

No Child Left Behind (NCLB) Act of 2001	54
Same-Gender Public Education and the United States Supreme Court	57
Philosophies and Pedagogies Behind Same-Gender Education	59
The Science in Support of Same-Gender Education	60
Same-Gender Public Education for Low Income and Minority Students	62
Same-Gender Education Across Nations, Cultures, and Faiths	66
North America and Western Europe	68
Australia and New Zealand	71
Southeast Asia	72
Africa	75
Trinidad and Tobago	76
Culture and Faith	77
Financial Costs of Same-Gender Public Education	79
Policy and Decision-Making Process for Same-Gender Public Education	82
Summary	86
III. METHODOLOGY	88
Restatement of the Problem	88
Restatement of the Research Questions	90
Research Design and Procedures	90
Study Population and Sample	92
Instrumentation	94

Validity of the Instrument	101
Reliability of the Instrument	104
Data Collection Procedures	106
Data Analysis Procedures	108
Response Bias	109
Ethical Considerations	110
Summary	111
IV. ANALYSIS OF THE DATA	112
Reliability	118
Response Bias	119
Quantitative Results	120
Research Question 1	121
Research Question 2	123
Research Question 3	125
Research Question 4	126
Research Question 5	129
Quantitative Data Analysis	132
Research Question 1	133
Research Question 2	134
Research Question 3	136
Research Question 4	136
Research Question 5	139
Qualitative Results	143

Research Question 1	143
Research Question 2	144
Research Question 3	146
Research Question 4	147
Research Question 5	148
Summary	149
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	151
Summary of the Study	151
Summary of the Findings	154
Research Question 1	154
Research Question 2	155
Research Question 3	156
Research Question 4	157
Research Question 5	157
Limitations of the Findings	158
Response Bias	159
Response Rate	161
Conclusions	163
Recommendations	166
State Educational Agencies	166
Local Educational Agencies	166
Future Studies	167
REFERENCES	171

APPENDIXES	Page
A. STATE EDUCATIONAL AGENCIES	184
B. LIST OF IDENTIFIED SAME-GENDER PUBLIC SCHOOLS	189
C. SURVEY (PILOT TEST) FOR PRINCIPALS OF SAME-GENDER PUBLIC SCHOOLS	191
D. SURVEY (FINAL) FOR PRINCIPALS OF SAME-GENDER PUBLIC SCHOOLS	194
E. TELEPHONE INTERVIEW COVER LETTER	196
F. TELEPHONE INTERVIEW QUESTIONS	197
G. ON-LINE SURVEY (PILOT TEST) COVER LETTER	198
H. ON-LINE SURVEY (FINAL) COVER LETTER	199
I. MAILED SURVEY COVER LETTER	200
VITA	201

LIST OF TABLES

Table	Page
1. Number of Same-Gender Private Schools in the United States by State and Gender	45
2. Population and Required Sample Size	93
3. Literature Review Content Matrix	95
4. Instructions for Completing the Survey	113
5. Review of the Survey Statements	115
6. Time to Complete the Survey	116
7. Reliability Pearson r	118
8. Response Bias Pearson r	120
9. Proponents for Establishing Same-Gender Public Education Programs	122
10. Proponents for Maintaining Same-Gender Public Education Programs	123
11. Knowledge of Same-Gender Public Education Programs	124
12. Reasons for Establishing Same-Gender Public Education Programs	126
13. Use of Scientifically Based Research in Establishing Same-Gender Public Education Programs	127
14. Supplementary Funding for Same-Gender Public Education Programs	129
15. Use of Metrics to Assess Same-Gender Public Education Programs	131
16. Use of Assessments for Same-Gender Public Education Programs	132
17. Statistical Analysis: Proponents for Establishing Same-Gender Public Education Programs	133
18. Statistical Analysis: Proponents for Maintaining Same-Gender Public Education Programs	134

19. Statistical Analysis: Knowledge of Same-Gender Public Education Programs	135
20. Statistical Analysis: Reasons for Establishing Same-Gender Public Education Programs	136
21. Statistical Analysis: Use of Scientifically Based Research in Establishing Same-Gender Public Education Program	138
22. Statistical Analysis: Supplementary Funding for Same-Gender Public Education Programs	140
23. Statistical Analysis: Use of Metrics to Assess Same-Gender Public Education Programs	142
24. Statistical Analysis: Use of Assessments for Same-Gender Public Education Programs	143

LIST OF FIGURES

Figure	Page
1. CRDC Webpage – School Characteristics and Membership	47
2. CRDC Webpage – LEA Characteristics and Membership	47

CHAPTER I

INTRODUCTION

Background

Public education in the United States has undergone a variety of reforms over the course of its 238-year history (Brown & Russo, 1999). Evolving educational philosophies, changing economic and social circumstances, geopolitical challenges, concerns with instructional methods or results, or some combination of, have often been the catalyst behind many of these efforts (Brown & Russo, 1999; Burnett, 2007). Significant milestone events and educational philosophies related to these past educational reform efforts have included:

- The Progressivist Education movement of John Dewey;
- *Brown v. Board of Education* of Topeka, Kansas (1954);
- The National Defense Education Act (Public Law [P. L.] 85-865, (1958);
- The “Back to Basics” movement of the 1960s and 1970s;
- Title I of Elementary and Secondary Education Act of 1965 (P. L. 89-910, 1965);
- and
- Title IX, Education Amendments of 1972 (Brown & Russo, 1999; Burnett, 2007; Herr & Arms, 2004).

More recently, *A Nation at Risk: The Imperative for Educational Reform* Report (National Commission on Excellence in Education, 1983), *America 2000: An Education Strategy* (USDOE, 1991), and the *No Child Left Behind (NCLB) Act of 2001* (P. L. 107-110) have driven public school reform efforts. These recent efforts, among other aims, established goals for educational effectiveness and acceptable elementary and

secondary school learning outcomes to be realized through accountability measures and higher standards for teachers (Brown & Russo, 1999; Burnett, 2007). Attendant efforts to improve educational achievement have included bilingual education programs, school voucher programs, and as provided in NCLB, same-gender educational programs (Brown & Russo, 1999; Burnett, 2007; Moses & Gair, 2004; NCLB, 2001).

These educational reform efforts required supporting policy decisions at the federal, state, and local levels to prioritize the actions and resources necessary to achieve the implied or stated goals specific to the reform (Brown & Russo, 1999; Burnett, 2007). In a perfect world, objective research findings absent cultural, political, religious, or societal biases would inform educational policy decisions (Moses & Gair, 2004; Pasch & Greene, 1984). Unfortunately, it is the real world and not a perfect world that determines educational policy decisions. In the real world, economics, politics, and student achievement compete in their contributions to such decisions, and in the real world, policy decisions affect the delivery of instruction (Burnett, 2007), presenting educational policymakers with difficult decisions to make about when to modify policies or when to establish new policies as they examine their educational goals (Klein, 1987). As such, actions that may seem innocuous at the start, even those begun with the best of intentions, can still result in bad policy and unintended consequences.

As described by Robertson (2009) in comments on Feuer's *Moderating the Debate*, educational policy makers may often overreach in the search for the optimal solutions to educational challenges. As further described by Robertson, this overreach can manifest itself in rhetoric and goal setting, in unsupportable claims on the effectiveness of educational innovations, in the hope for technological solutions to

optimize student learning, and on the tendency to focus on the negatives of reform. The result is often actions that hinder, versus facilitate, educational reform, and as a result, academic achievement and attainment. To the issue of improved academic achievement and attainment, Robertson emphasized Feuer's claim that it is necessary to understand why educational policy makers may overreach, and with this understanding, develop rhetoric, policies, and practices that are more reasonable, and as such, supportive to educational reform.

Ashcraft (2004), in writing on an issue involving diversity and democracy in public education, also addressed the issues of rhetoric and discourse on educational policy. In doing so, Ashcraft (2004) underscored the critical relationship of language, rational discourse, and rhetoric on educational policy and practice, concluding that in deliberating educational policy, while it is important for the public to be able to question proposed policy decisions, it is even more important to ensure to ask the right questions.

Brown and Russo (1999) provided similar comments on the issues of rhetoric and discourse in education in examining same-gender public education in the United States pre-NCLB. While describing the issue of same-gender public education as both noteworthy and political, it was also cited as one of the more controversial of the recent public school reform efforts and one sometimes found lacking in rational discourse.

Whether noteworthy, rational, or reasonable, the discourse and rhetoric on same-gender public education spans an amalgamation of many issues, to include cultural leanings, economics, policy overreach, politics, religious preferences, societal mores, and student achievement. Dependent on who is asking the questions, these issues translate

into numerous, varied, and often times conflicting rationales for same-gender public education, to include:

- addressing learning style differences between male students and female students;
- rectifying underachievement for female students in Science, Technology, Engineering, and Mathematics (STEM) fields;
- rectifying underachievement for male students in reading and language arts;
- avoiding post-pubescent sexual distractions between male students and female students;
- reducing disciplinary issues with male students;
- addressing cultural or religious preferences; and
- promoting social justice by offering lower income families equivalent choices in K-12 public schools that higher income families obtain through private and parochial schools (Hughes, 2007; Martino, Mills, & Lingard, 2005; Meyer, 2008; Pahlke, Hyde, & Allison, 2014).

In underlining this broad spectrum of questions and rationales on the benefits of same-gender versus coeducational education, Bracey (2007) addressed four positions spanning the continuum on this subject. These positions ranged from “co-education is best for all,” to “co-education is best for most, but there is value in same-gender education for some,” to “same-gender education is best for certain student groups,” to “same-gender education is best for all.” From this continuum, Bracey (2007) argued that there is a lack of sound, definitive research on same-gender education to guide policy decisions on same-gender public education. Friend (2006) posited that the results of studies on same-gender public education in the United States present conflicting evidence

and mixed perspectives on the outcomes of these programs to improve academic achievement and attainment. The positions and statements presented by Bracey (2007) and Friend (2006), if nothing else, are at least consistent with earlier studies on the issue of same-gender versus coeducational education.

In a paper that predates the No Child Left Behind Act of 2001, Mael (1998) examined seven theoretical propositions on same-gender and coeducational education.

These included:

- same-gender schooling has positive benefits for the academic achievement of both male students and female students;
- same-gender schooling is positive for female students in gender-typed subject areas, such as mathematics and the natural sciences;
- same-gender schooling is beneficial for female career aspirations;
- same-gender schooling is beneficial for positive gender-role attitudes and self-esteem;
- coeducational classrooms foster gender inequities;
- coeducational schooling is beneficial in improving discipline with male students; and
- coeducational physical fitness programs adversely affect both sexes.

In reviewing the literature on both same-gender and coeducational education as expressed in these propositions, Mael (1998) generally concluded there was a role for same-gender education, at least for some students. Mael further concluded that limitations within the current research, especially to the issue of determining which individuals or populations would gain the most from same-gender education, necessitated

the need for additional study on the subject. Sixteen years later the same discussions and issues on the subject of same-gender versus coeducational education remain, with both proponents and opponents of same-gender education referencing research to support their positions on the issue.

For improving academic achievement and attainment, proponents of same-gender public education argue that same-gender education can -

- address learning style differences between male students and female students;
- rectify underachievement for female students in Science, Technology, Engineering, and Mathematics (STEM) fields;
- rectify underachievement for male students in reading and language arts;
- avoid post-pubescent sexual distractions between male students and female students;
- reduce disciplinary issues with male students;
- address cultural or religious preferences; and
- promote social justice by offering lower income families equivalent choices in K-12 public schools that higher income families obtain through private and parochial schools (Hughes, 2007; Martino, Mills, & Lingard, 2005; Meyer, 2008; Pahlke, Hyde, & Allison, 2014).

From the opposite side of the debate, opponents of same-gender public education present arguments to the effect that -

- separation by gender in public education is equivalent to separation by race;
- same-gender public education is a rollback of Title IX gains for females; and

- current research does not support same-gender education as a means, of and by itself, to improve academic achievement or attainment for male students or female students (Bracey, 2007; Friend, 2006, 2007).

To the latter point, Karpiak, Buchanan, Hosey, and Smith (2007) examined the declared academic majors of 1,210 students (750 female, 460 male) who had attended a medium-sized Jesuit university in Pennsylvania. Of these 1,210 students, 627 attended coeducational public high schools, 572 attended private Catholic high schools, and 11 attended private independent high schools, with 136 from an all-girls school and 116 from an all-boy schools. While acknowledging multiple factors limited the results of the study, they found no significance difference in college majors or follow-on professions between students who had attended coeducational or same-gender secondary schools, whether public or private. This debate on the issue of academic achievement or attainment and same-gender education, however is not limited to just a single study and just to education in the United States.

In a longitudinal study from the United Kingdom, Sullivan, Joshi, and Leonard (2010) addressed the question of the long-term benefits and outcomes of same-gender education. Examining a sample of male students and female students born in 1958, the study found advantages for females attending same-gender schools through the age of 16, but they found no significant impacts on academic attainment for male students and no significant impacts on the level of later academic attainments for either gender.

In contrast, results drawn from the Christchurch Health and Development Study, a longitudinal study of 1,265 individuals born in Christchurch, New Zealand, in 1977, same-gender schooling appeared to mitigate disadvantages in academic achievement for

male students (Gibb, Ferguson, & Horwood, 2008). The study examined the outcomes of same-gender and coeducational schooling on any gender gap in academic achievement to age 25. At coeducational schools, there was a statistically significant gap in favor of female students, while at same-gender schools there was an insignificant gap in favor of male students. This result was similar for both high school and undergraduate academic achievement.

Additional studies on same-gender education from outside the United States include Africa, Asia, Australia and New Zealand, the Caribbean, North America, and Western Europe. While these international studies on same-gender education broaden the scope of the debate on the issue, they can also complicate the discussion on same-gender public education occurring in the United States at present. With differences in cultural, religious, and societal mores, economic circumstances, and educational programs, results and conclusions from studies on same-gender education programs from outside the United States, pro or con, while informative, require generalizations or inferences to apply to the public school system in the United States, if at all (Bracey, 2007; Pahlke, Hyde, & Allison, 2014). Questions on the applicability of international studies on same-gender education programs to the public school system in the United States notwithstanding, the research base on same-gender public education in the United States is open to questioning as well.

Because of the restrictions on same-gender public education in the United States with the adoption of Title IX of the Education Amendments Act of 1972, there is a recent, but limited research base on same-gender public education in the United States (Bracey, 2007; Friend, 2006). Even if one would accept the volume of research on same-gender

public education in the United States as sufficient, there are still those who would question the value of that research, citing human biases and partisanship on the subject from both sides of the debate. Pinzler (2004) echoed such a concern when stating that discussion on the topic of same-gender education can lead to intense arguments, bringing out especially fervent emotions, strong opinions, and steadfast policy positions in people. The amount of effort and emotion directed toward same-gender education, and specifically same-gender public education, is even more remarkable considering the relatively small number of same-gender education programs in the United States (Pinzler, 2004).

Despite the conflicting evidence on the outcomes of same-gender education programs to improve academic achievement or attainment, the potential for human biases and partisanship on the subject, and the often-polarizing nature of the issue itself, same-gender public education programs have gained in prominence since the passage of NCLB in 2002. The number of public schools in the United States offering same-gender education grew from four in 2001 prior to passage of NCLB, to between 500 and 1,000 today (Klein, 2012; NASSPE, 2011; Zubrzycki, 2012). This dichotomy between the research on same-gender education and decisions to establish same-gender public education programs in the United States has prompted questions on the rationales and justifications behind the decisions (Bracey, 2007; Friend, 2006). As a result, a study to determine the proponents, rationales, justifications, and resources behind decisions by local educational agencies to establish same-gender public education programs is relevant, timely, and warranted.

Statement of the Problem

The NCLB, with its emphasis on greater choice and flexibility for parents and students in K-12 public education, to include the provision for same-gender schools and classrooms (P. L. 107-110, 2001), led to a resurgence of same-gender public schools and classrooms in the United States. This resurgence occurred despite a research base on same-gender education, both in the United States and internationally, that presents conflicting evidence and mixed-perspectives on the outcomes of same-gender education programs to improve academic achievement or attainment for male students or female students. Furthermore, with the research base on same-gender public education in the United States limited as a result of Title IX restrictions, coupled with the fact that much of the existing research has been described as weak and contradictory (Bracey, 2007), the ability of same-gender education to improve academic achievement or attainment of and by itself remains open to questioning.

Moreover, a critical NCLB requirement to guide educational practice and policy decisions is the requirement for supporting, “scientifically based” research. With questions still remaining on the value of the research on same-gender education (Bracey, 2007; Friend, 2006), it is certainly arguable which research on same-gender education rises to the condition of the “scientifically based” criteria mandated by NCLB to guide educational practice and new policy decisions on same-gender public education.

As a result, public policy decisions by local educational agencies to establish same-gender public education programs, no matter how well intentioned, and irrespective of the provisions for same-gender schools and classrooms within NCLB, can be left open to questions on the rationales, justifications, and resources behind such decisions. These

questions, if not properly addressed, can lead to legal challenges to the bases and circumstances under which a same-gender public education program was established.

Purpose of the Study

The purpose of the study was to determine the who, the what, the why, and the how behind local public policy decisions to establish, maintain, and measure same-gender public education programs. Specifically, the purpose of this study was to determine under what bases and circumstances local educational agencies established same-gender public education programs, to include proponents, rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. The study also investigated if local educational agencies referenced “scientifically based” research to guide educational practice and new policy decisions on same-gender public education programs.

Significance of the Study

Same-gender public education programs have gained in prominence across the United States since the adoption of NCLB in 2002 (Billger, 2009). In spite of the passage of NCLB and resultant amendments to Title IX to better support same-gender public education programs, there is considerable debate on the effectiveness of same-gender education, as well as to any unintended consequences that may result from implementation. While proponents of same-gender public education advocate that same-gender schooling supports increased educational opportunity and achievement while freeing students from gender stereotypes, opponents claim “separate but equal” is discriminatory and unconstitutional (Friend, 2006).

With the limited research base in the United States on same-gender public education, and considering the mixed results of that research to date, due diligence warrants continued studies on the ability of same-gender education programs to improve academic achievement or attainment. More significantly though, due diligence also necessitates studies on policy decisions to establish same-gender public education programs, especially when considering that such studies are notably lacking in the literature. Additionally, with the NCLB requirement for “scientifically based” research to guide educational practice and new policy decisions, a study to investigate if and how local school systems referenced “scientifically based” research to guide policy decisions on same-gender public education programs is particularly germane.

Research Questions

In recognition of the conflicting evidence and mixed perspectives on the outcomes of same-gender education programs to improve student academic achievement or attainment, the purpose of this study was to ask the right questions to determine the who, the what, the why, and the how behind local public policy decisions to establish, maintain, and measure same-gender public education programs. To that end, the research questions developed to guide and inform the purpose of the study are as follows:

RQ₁: Who are the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States?

RQ₂: Were the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs knowledgeable on

requirements for same-gender public education programs in the United States?

RQ₃: What were the reasons put forward for establishing K-12 same-gender public education programs in the United States?

RQ₄: Were the identified proponents of K-12 same-gender public education in the United States knowledgeable of “scientifically based” research on same-gender public education programs?

RQ₅: How are same-gender public education programs in the United States established and maintained?

The research design determined most effective to address the research questions was a non-experimental, mixed-methods study employing a self-administered survey followed by telephone interviews with a sample of the respondents to the survey. The design of the survey and interview questions was to describe and explain local public policy decisions to establish same-gender K-12 public education programs in the United States by questioning principals of K-12 same-gender public schools in the United States on their knowledge of and experiences with the same-gender education program at their school.

Overview of the Methodology

Principals of an identified 92 K-12 same-gender public schools in the United States across 21 states and the District of Columbia received the survey. The survey included eight statements on the same-gender public education program at their school. Each statement employed a series of Likert-type response options to obtain information on the decision to establish a same-gender education program at their school, with five to

eight possible responses per statement, for 46 total responses. The survey included questions on -

- proponent(s) behind decisions to establish and maintain same-gender public education program(s);
- proponents knowledge of same-gender public education programs;
- bases for policy decisions to establish same-gender public education program(s);
- adherence to the NCLB requirement for use of “scientifically based” research to guide educational practice and new policy decisions;
- requirement for supplemental federal, state, local, or private funding to establish and maintain same-gender education program(s); and
- requirement for use of metrics to assess the success of same-gender education program(s) in improving student academic achievement and attainment, as well as for the continuation of the same-gender education program(s).

As this was a mixed-methods study, a qualitative method of investigation employing six open-ended interview questions to a random sample of the respondents to the survey supplemented the quantitative data to address more fully the purpose of the study and the five research questions. To complete the qualitative part of the study, a random sample of four principals responding to the survey participated in a telephone interview on the decision to establish a same-gender education program at their school. Responses to the telephone interview enhanced and supplemented the quantitative survey data. The inclusion of multiple data sources contributed to the reliability of the study.

Limitations of the Study

The study was limited to K-12 public schools in the United States with an identified same-gender education program. For a school to be included in the study, the establishment of the same-gender program must have occurred following enactment of NCLB, as well as having to meet one of the following three criteria:

- be a same-gender campus; or
- be a co-ed campus, but students have all (or mostly all) of their academic activities in same-gender classroom setting; or
- be a distinct same-gender “academy” within a larger co-ed school, with students in the academy having all (or mostly all) of their academic activities in same-gender classroom settings.

Definition of Key Terms

To enhance understanding of this study, the following is a glossary of key terms in the research paper:

American Civil Liberties Union (ACLU). A non-profit organization founded in 1920 whose mission is "the defense and preservation of individual rights and liberties guaranteed to every person in this country by the Constitution and laws of the United States. The ACLU provides legal assistance in cases when it considers civil liberties to be at risk. Legal support from the ACLU can take the form of direct legal representation, or preparation of amicus curiae briefs expressing legal arguments when another law firm is already providing representation.

American Council for Co-Educational Schooling (ACCE). With a mission to promote and improve coeducation in schools from preschool through higher education,

ACCE works with educators, families, and communities to promote and improve coeducation in schools towards a goal of enhancing children's development and achievement by encouraging cooperation, respect, and the development of skills for interacting with one another. The American Council for Co-educational Schooling operates from and through the T. Denny Sanford School of Social and Family Dynamics at Arizona State University.

Charter School. A K-12 public school established by a charter between a granting body (such as a school board) and an outside group (parents, teachers, community organizations, and for-profit companies) which can operate outside most local and state educational regulations to achieve a clearly defined set of goals. While Charter schools receive tax dollars, the sponsoring group may also provide supplemental private funding. As a public school, charter schools do not charge tuition. There are approximately 6,500 public charter schools in the United States.

Equal Educational Opportunities Act of 1974 (EEOA). The EEOA is a federal statute that prohibits states from denying equal educational opportunity to an individual because of race, color, sex, or national origin. The statute specifically prohibits states from denying equal educational opportunity by the failure of an educational agency to take appropriate action to overcome language barriers that impede equal participation by its students in its instructional programs [20 U.S.C. §1203(f)].

Elementary and Secondary Education Act (ESEA). The Elementary and Secondary Education Act (ESEA), passed in 1965, is a federal statute that provides funds for primary and secondary education to enable equal access to education and shorten the achievement gaps between students by providing each child with fair and equal

opportunities to achieve an exceptional education. Congress originally authorized the act through 1965, but has reauthorized it every five years since its enactment. The current reauthorization of the ESEA is the No Child Left Behind Act of 2001.

Local Educational Agency (LEA). As defined in the ESEA, a public board of education or other public authority legally constituted within a State. The purpose of an LEA is either administrative control or direction of, or to perform a service function for, public elementary schools or secondary schools. LEAs can be for a city, county, township, school district, or other political subdivision of a State, or for a combination of school districts or counties recognized by a State as an administrative agency for its public elementary schools or secondary schools.

Magnet School. A magnet school is a publicly funded K-12 school of choice operated by school districts or a consortium of school districts. Magnet schools have a focused curriculum aligned to themes like Science, Technology, Engineering, and Mathematics (STEM), Fine Arts, Performing Arts, International Baccalaureate, International Studies, MicroSociety, Career Tech, World Languages (immersion and non-immersion), and others. Magnet schools are often highly competitive and highly selective. Students who apply to magnet schools may go through a rigorous testing and application process. Some magnet schools have boarding facilities to allow students from other communities to attend. Student diversity is an explicit goal of most magnet schools.

Magnet Schools of America. Magnet Schools of America, or *The National Association of Magnet and Theme-Based School*, is a leading source for information on excellence in public school Magnet programs, providing leadership for high quality

innovative instructional programs that promote choice, equity, diversity, and academic excellence for all students.

National Alliance for Public Charter Schools. The National Alliance for Public Charter Schools is a leading national nonprofit organization committed to advancing the quality, growth, and sustainability of charter schools. The National Alliance for Public Charter Schools speaks and advocates for the millions of students attending and hoping to attend a charter school, providing assistance to state charter school associations and resource centers, developing and advocating for improved state and federal policies, and serving as a united voice for a large and diverse movement at the state and national levels.

The National Alliance for Public Charter Schools focuses on key policy priorities such replicating and expanding high-quality charter schools, lifting arbitrary “caps” on charter school growth, and closing the funding gap between charters and other public schools.

National Association for Choice in Education (NACE). The NACE is a 501(c)(3) non-profit organization founded in April 2002, with a mission to promote and support girls’ schools and boys’ schools, whether in the public sector, private sector, or Catholic sector. NACE evolved from the National Association for Single-Sex Public Education, or NASSPE, in November 2011. More information on the National Association for Choice in Education is available at <http://www.4schoolchoice.org/>.

National Association for Single-Sex Public Education (NASSPE). NASSPE was a 501(c) (3) non-profit organization founded in April 2002, dedicated to the advancement of single-sex public education for both female students and male students. NASSPE became NACE in November 2011.

National Association of Charter School Authorizers (NACSA). The National Association of Charter School Authorizers, with a mission to achieve the establishment and operation of quality charter schools through responsible oversight in the public interest, is committed to advancing excellence and accountability in the charter school sector and to increasing the number of high-quality charter schools across the nation.

NACSA works to improve the policies and practices of authorizers—the organizations designated to approve, monitor, renew, and, if necessary, close charter schools. NACSA provides professional development, practical resources, consulting, and policy guidance to authorizers, while advocating for laws and policies that raise the bar for excellence among authorizers and the schools they charter.

Principal. For the purposes of this study, the title “Principal” refers to the head of each of the identified 92 same-gender public school programs in the United States, regardless of what the official title used at each school for the head position may be.

Public Law PL 107-110, the No Child Left Behind Act of 2001 (NCLB). An Act to close the achievement gap with accountability, flexibility, and choice, so that no child is left behind.

Public School. Schools that receive all or most of their financing from local, state, and federal government funds, to include Charter and Magnet schools.

RMC Research Corporation. RMC Research Corporation is a national leader in program research and evaluation, professional development, consultation, and product development, supporting national, state, and local clients who serve schools, families, and communities from small studies to multi-year projects.

State Educational Agency (SEA). A state educational agency, or state department of education, is a formal governmental label for the state-level government agencies within each U.S. state responsible for providing information, resources, and technical assistance on educational matters to local educational agencies, local public schools, and residents.

Title IX. A portion of the Education Amendments of 1972, Public Law No. 92-318, 86 Stat. 235 (June 23, 1972), codified at 20 U.S.C. sections 1681 through 1688. Title IX protects people from discrimination based on sex in education programs or activities that receive federal financial assistance. Title IX states (in part) that “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance.”

34 CFR 106. Code of Federal regulations – nondiscrimination on the basis of sex in education programs or activities receiving federal financial assistance. The purpose of 34 CFR 106 is to effectuate Title IX of the Education Amendments of 1972, which is designed to eliminate (with certain exceptions) discrimination on the basis of sex in any education program or activity receiving Federal financial assistance.

Summary of the Study

The objective of this study was to investigate and determine the bases and circumstances for the establishment of same-gender K-12 public schools in the United States. To that end, the study reviewed the available literature for the background and history of education in the United States, to include same-gender education, as well as research on same-gender education from various international studies from Africa,

Australia and New Zealand, Asia, the Caribbean, North America, and Western Europe. The study included examination of the cultural, financial, legal, scientific, and socio-economic issues that influence decisions on same-gender education in the United States and internationally.

From the review of the literature, research questions to guide and inform the purpose of the study were developed. To address the research questions, principals of an identified 92 K-12 same-gender public schools in the United States received a descriptive, cross-sectional survey on the decision to establish a same-gender education program at their school. The survey included eight statements on the same-gender public education program at their school. Each statement employed a series of Likert-type response options to obtain information on the decision to establish a same-gender education program at their school, with five to eight possible responses per statement, for 46 total responses. The survey included questions on -

- proponent(s) behind decisions to establish and maintain same-gender public education program(s);
- proponents knowledge of same-gender public education programs;
- bases for policy decisions to establish same-gender public education program(s);
- adherence to NCLB requirement for use of “scientifically based” research to guide educational practice and new policy decisions;
- requirement for supplemental federal, state, local, or private funding to establish and maintain same-gender education program(s); and

- requirement for use of metrics to assess the success of same-gender education program(s) in improving student academic achievement and attainment, as well as for the continuation of the same-gender education program(s).

As this was a mixed-methods study, a random sample of five principals responding to the survey participated in a telephone interview. The telephone interview consisted of six questions designed to enhance and supplement the quantitative survey data to address more fully the purpose of the study and the five research questions. The inclusion of multiple data sources contributed to the reliability of the study. Following collection and analysis of the responses to the survey and interview questions, results were determined and conclusions reached on same-gender public education programs in the United States.

CHAPTER II

REVIEW OF THE LITERATURE

To understand the issue of same-gender public education in the United States, it was necessary to examine the background and history of same-gender education, to include the cultural, financial, legal, scientific, and socio-economic issues that influence decisions on same-gender public education today and as a result, the prevalence of same-gender public education in the United States going forward. This review examined research on same-gender education from the United States and numerous international studies from Africa, Asia, Australia and New Zealand, the Caribbean, North America, and Western Europe to provide a diverse background on same-gender education.

The review of the literature also included the various philosophies behind same-gender education, as well as the potential for same-gender education to improve the academic achievement or attainment of both male students and female students. Philosophies behind same-gender education involve consideration of physiological differences between male students and female students, to include brain development, hearing, and hormone levels as reasons male students and female students may not only learn differently, but also learn at different rates at different ages across different subject areas. Other philosophies on same-gender education address benefits specific to low-income and minority students, as well as benefits because of cultural, ethnic, national, or religious backgrounds, and finally, same-gender public education as a social justice issue.

Background

Public Law (P. L.) 107-110, titled “An Act to close the achievement gap with accountability, flexibility, and choice, so that no child is left behind,” was signed into law

on January 8, 2002, by President George W. Bush (P. L. 107-110, 2001). Cited as the No Child Left Behind (NCLB) Act of 2001, this 670-page document reauthorized the Elementary and Secondary Education Act of 1965, but with increased accountability for states, school districts, and schools. NCLB also allowed for greater choice for parents and students in public education, as well as more flexibility for state and local educational agencies in the use of federal education dollars (P. L. 107-110, 2001). To the issues of greater choice and flexibility, Title V, Part A, Subpart 3, Section 5131 of NCLB provided for the local use of funds for innovative assistance programs. As designed by then senators Hillary Clinton (D-NY) and Kay Bailey Hutchison (R-TX), and as described in sub-section 5131(a)(23), innovative assistance programs included “Programs to provide same-gender schools and classrooms (consistent with applicable law).”

For advocates of same-gender public education, NCLB provided federal funding and changes to the law to enable that objective, and the impact was almost immediate. Citing statistics from the National Association for Single Sex Public Education (NASSPE), Meyer (2008) and Billger (2009) documented a steady increase in the number of same-gender public schools in the United States following passage of NCLB. The number of public schools offering same-gender public education grew from four, all female, prior to the enactment of NCLB in 2001, to 22 by the end of 2002, and included both male programs and female programs (Meyer, 2008; Vanze, 2010). By November 2007, the number of same-gender public schools had increased to 86, with an additional 277 coeducational public schools in 37 states and the District of Columbia offering same-gender educational programs through same-gender classrooms (Meyer, 2008). For the 2007-2008 school year, the number of same-gender public schools increased to 96, while

the number of public schools that offered same-gender educational programs through same-gender classrooms increased to 295 (Billger, 2009). As of the end of 2011, the number of public schools in the United States that offered same-gender educational programs had increased to 506 (NASSPE, 2011). Of these 506 schools, 116 were considered as same-gender campuses, with 67 listed as all-female schools, 44 listed as all-male schools, and five listed as dual-academies, which are coed-campus with all-male or all-female classes (NASSPE, 2011).

In reviewing the literature, the NASSPE website was the only primary source found with a comprehensive by-name, state-by-state listing of same-gender public schools and classrooms in the United States, and as a result, both opponents and proponents of same-gender education repeatedly referenced this website when addressing the number and type of same-gender public schools and classrooms in the United States. The NASSPE state-by-state listing of same-gender public schools and classrooms in the United States included 37 states and the District of Columbia. Citing the use of the listing by the American Civil Liberties Union to, in NASSPE's words, "harass" public schools that provided same-gender educational programs, NASSPE removed the by-name state-by-state listing of same-gender public schools from its website in 2011 (NASSPE, 2011). This was not the first time, nor would it be the last time, NASSPE made changes to its organization or website in its efforts to advocate better for same-gender public education.

Initially founded in April 2002 as the National Association for the Advancement of Single Sex Public Education, or NAASSPE, the National Association for Single Sex Public Education was a 501(c) (3) non-profit organization dedicated to the advancement

of same-gender public education for both female students and male students (NASSPE, 2011). In an attempt to simplify the organizational name, NAASSPE became the “National Association for Single Sex Public Education,” or NASSPE, later in 2002 (NACE, 2014). In remarks posted on the current website, the organization states, “in retrospect, that [the name change] may have been a mistake. Whereas NAASSPE reflected an advocacy position for same-gender public education without necessarily being against co-educational public education, the name NASSPE comes across as leaning to, versus supporting, same-gender public education” (NACE, 2014). In November 2011, NASSPE evolved yet again, this time to NACE, or the “National Association for Choice in Education.” As explained on the NACE website at www.4schoolchoice.org, this change reflected an expansion in organizational mission to promote same-gender education in the public sector, the private sector, and the Catholic sector, a mission not reflected in the name NASSPE (NACE, 2014). With the change to NACE came a new, but much less robust website, and while the NASSPE website is still open, it no longer remains current. This change in mission and name occurred coincident with the establishment of the “American Council for Coeducational Schooling,” or ACCES.

With a stated mission to promote and improve coeducation in public schools from preschool through higher education (ACCES, 2014), ACCES is the antithesis of NACE. The mission of ACCES is to work with communities, educators, and families to promote and improve coeducation in schools towards a goal of enhancing children's development and achievement by encouraging cooperation, respect, and the development of skills for interacting with one another (ACCES, 2014). Behind the motto “Families are co-ed,

Work is co-ed, Life is co-ed,” the goal of ACCES is to build a foundation for success in a coeducational world by promoting harmonious and productive interactions between men and women in their families, in schools, and in the workplace. ACCES operates from and receives financial support through the T. Denny Sanford School of Social and Family Dynamics at Arizona State University (ACCES, 2014).

It is against this backdrop of competing ideologies on same-gender education as evidenced in these two organizations, with each side presenting research and results supporting their position on the issue, that state and local educational agencies make policy decisions on same-gender public education. Two extensive literature reviews on same-gender education further highlight the challenges faced by state and local educational agencies in attempting to reference research on same-gender education to inform public policy decisions on same-gender public education.

The first review, conducted by the American Institute for Research (USDOE, 2005) for the U.S. Department of Education (USDOE) presents a position that is supportive somewhat of same-gender education (Weiss, 2007). The second, from the Centre for Education and Employment Research, University of Buckingham, presents a position that challenges the benefits of same-gender education (Smithers & Robinson, 2006). These two reviews underscore the difference in the conclusions on the benefits of same-gender education, as well as how indefinite such conclusions can be (Weiss, 2007).

The literature review conducted by American Institute for Research (AIR) for the U.S. Department of Education found that same-gender schooling had some advantages over coeducational schooling, although the results were tempered by “significant qualifiers” (USDOE, 2005; Weiss, 2007). A summary of the findings included:

- a third of all studies reported findings supporting same-gender schools, while the results of the remaining two-thirds of the studies were split between no difference or mixed-results between same-gender and coeducational schools;
- same-gender schooling did not result in increases in long-term academic achievement and attainment; and
- issues such as changes in teen pregnancy, college performance, differences in treatment or expectations of teachers, and teacher satisfaction regarding same-gender and coeducational schools was lacking in the studies (USDOE, 2005).

Conversely, in reviewing hundreds of studies from Australia, Canada, Ireland, New Zealand, the United Kingdom, and the United States conducted over four decades, researchers at the Centre for Education and Employment Research found little conclusive, and often contradictory, evidence on the benefits of same-gender education (Weiss, 2007).

Key results of the study include:

- limited evidence of advantages in either same-gender or coeducational settings;
- no evidence to suggest that same-gender schools result in changes in elective curriculum choices for male students or female students;
- no consistent findings in relation to student performance, attitude, or teacher's reactions between same-gender and coeducational schools;
- contradictory findings with regard to behavior and emotional development between same-gender and coeducational settings;
- male students and female students with experience in both same-gender and coeducational schools generally tended to prefer coeducational schools; and

- parents generally tend to choose schools on reputation and exam results, and not whether they are same-gender or coeducational, although some parents elect same-gender schools for religious or cultural reasons (Smithers & Robinson, 2006).

In a second look at same-gender public education following enactment of NCLB, the USDOE contracted with RMC Research Corporation in October 2003 to conduct a descriptive study of existing same-gender public schools (USDOE, 2008). After conducting a systematic review of 40 quantitative studies that met established criteria, surveying same-gender public schools, and observing a subsample of existing same-gender public schools, the overall results on the effects of same-gender public education on academic achievement and attainment remained mixed. Other research on same-gender education was more critical of its benefits.

In examining the National Educational Longitudinal Study, Private School Survey, Billger (2009) concluded that any perceived benefits of same-gender education are generally attributable to bias in selection of students who participate in same-gender education. Similar conclusions were reached by Gilson (1999) in examining differences in middle-school mathematics achievement and attitudes towards mathematics between female students attending independent all-girl schools or independent coeducational schools, as well as by Hubbard and Datnow (2005) in a study of low-income and minority students who attended experimental same-gender public academies in California. In a mixed-methods study of eighth grade science classes in a public middle school, Friend (2006) concluded that same-gender classes did not result in a more positive

classroom climate or higher student science achievement for either male students or female students.

Putting the conflicting evidence and mixed-perspectives on the benefits of same-gender education aside, opponents of same-gender public education equate separation by gender in public education to separation by race, argue same-gender education reinforces gender and racial stereotypes, and contend same-gender public education is an attempt to roll back Title IX gains for female students (McNeil, 2008).

Equally, proponents of same-gender education argue that same-gender education addresses learning style differences and achievement gaps between male students and female students. Further, same-gender education eliminates sexual distractions resulting from interactions of male students and female students in the same classroom and offers economically disadvantaged and minority students the same educational choices available to more advantaged families (Hughes, 2007; Martino, Mills, & Lingard, 2005; Meyer, 2008). Taking the discussion a step further, Mulvey (2009) argued that the innate learning differences existing between male students and female students, unless properly addressed, could result in biases against both male students and female students. Further, Mulvey (2009) described the current coeducational elementary classroom culture and curriculum as more in alignment with the behaviors and learning preferences of female students, and as a result, male students start at a disadvantage from the very beginnings of their education. Mulvey (2009) also cited physiological differences in the developmental of the male and female brain as a further contributor to a male student disadvantage within a coeducational elementary curriculum biased towards female students. As one of several possible solutions to address specific gender- and brain-based learning styles,

Mulvey (2009) suggested same-gender public education for both male students and female students.

Clark, Lee, Goodman, and Yacco (2008), in analyzing gender differences in educational achievement across two elementary schools, two middle schools, and one secondary school within one school district, found male students had lower grades, significantly more disciplinary problems, and higher levels of special education placement than female students did. The potential causes for male student underachievement within these schools included (a) learning style differences between male students and female students, (b) a female to male teacher ratio of three to one, (c) classroom environments more attentive to female student learning preferences, and (d) a higher instance of male student disciplinary infractions. While not specifically advocating for same-gender education, Clark et al. (2008) highlighted the need for increased teacher training in the areas of gender, equity, and the social environment of the school and the classroom.

Presenting a more nuanced approach to same-gender education, Pollard (1999) highlighted three issues inherent in the research and practice of same-gender education that result in difficulties in assessing the long-term benefits from and implications of establishing same-gender public education programs. These issues were (a) disparities in the goals of same-gender public education programs, (b) differences in the ways public education implements same-gender programs, and (c) the lack of systematic, long-term research on the benefits of same-gender education. With the goals of same-gender public education programs varying between academic achievement and attainment, behavioral improvement, cultural accommodations, social justice, and a combination of some or all

(Pollard, 1999), differing conclusions can be reached on the benefits of same-gender education dependent on the desired or expected outcomes.

So while same-gender education programs may address NCLB objectives of increased flexibility and choice in public education, the initial review of the literature presented a mixed perspective on whether same-gender education, of and by itself, improves academic achievement or attainment for either male students or female students. Additionally, because of the restrictions on same-gender public education in the United States following passage of Title IX of the Educational Amendments of 1972, research on same-gender public education programs in the United States is limited (Friend, 2006).

As a result, in addition to literary resources, the examination of same-gender education included review of education related websites. The websites examined in conducting the review included:

- U.S. Department of Education;
- State Educational Agencies;
- American Council for Coeducation;
- International Boys' Schools Coalition;
- Magnet Schools of America;
- National Alliance for Public Charter Schools;
- National Coalition of Girls' Schools;
- National Association for Single Sex Public Schools;
- National Association for Choice in Education;
- National Association of Charter School Authorizers; and
- National Association of Independent Schools.

Critical keywords used in conducting the electronic searches included (a) curriculum, (b) education, (c) educational, (d) finance, (e) funding, (f) independent, (g) international, (h) nations, (i) parochial, (j) policy, (k) private, (l) public, (m) same-gender, (n) same-sex, schools, (o) single-sex, and (p) United States.

History of Same-Gender Public Education in the United States

Separate educational programs for male students and female students in the United States date back to the very beginnings of British colonization of the North American continent (Friend, 2007; Kaplan & Owings, 2011). Societal and cultural norms that prescribed differing roles for males and females as adults resulted in different, and often separate, educational programs and policies for male students and female students to fulfill those roles (Datnow, Hubbard, & Woody, 2001; Sadker, Sadker, & Klein, 1991). Additional critical factors that shaped early views and decisions on education in the 13 British colonies included local economic conditions, local religious practices, and local views on government involvement in education, and reflected the beliefs, cultures, and traditions that the colonists brought with them from Europe (Kaplan & Owings, 2011). The result was often fathers teaching their sons the necessary skills to manage the household, farm, or workshop, while mothers taught daughters necessary domestic skills. So even as the public education system developed differently across the varied demographic and geographic regions of the colonies, it contained, across all regions, a level of separation between the education of male students and female students.

Background.

While the beginnings of public education in the United States tended towards separate education systems for male students and female students, by the early 19th

century co-education had become the norm for the vast majority of public schools in the United States (Brown & Russo, 1999; Datnow et al., 2001; Hughes, 2007; Sadker et al., 1991). This shift in public education to an increasingly coeducational system resulted from changes in policy to both contain costs as well as to create cultural homogeneity (Datnow et al., 2001). The exceptions were large affluent urban centers in the Northeast and a few cities in the South (Brown & Russo, 1999; Datnow et al., 2001; Mael, 1998). The continuation of same-gender public education in these regions had nothing to do with educational practices as such, but rather reflected a desire by middle and upper class families to safeguard their daughters from the sons of immigrants and the poor (Brown & Russo, 1999; Datnow et al., 2001; Kaplan & Owings, 2011). Still, as referenced by Brown and Russo (1999), by the beginning of the 20th century, less than two percent of public school districts in the United States reported same-gender schools.

Even as co-education schools became the norm for public education policy in the United States, segregation by gender continued in the classroom. Reflecting an ongoing belief in separate roles for males and females in society, public schools continued to track male students and female students along separate vocational lines, offering male students technology education, while female students received family, consumer science, and business education (Cable & Spradlin, 2008; Datnow et al., 2001; Friend, 2007; Sadker et al., 1991). This pattern of educating male students and female students along separate vocational lines within coeducational settings, or the maintenance of same-gender public schools, would continue in the public school system in the United States until the passage of Title IX of the Educational Amendments of 1972.

Title IX of the Educational Amendments of 1972.

Passage of Title IX was a key event in the area of equal rights, especially as it related to female students and public education policy. Title IX generally prohibits the exclusion of individuals from participation in, the denial of benefits of, or the discrimination of any kind under any education program or activity receiving federal funds because of gender (Brown & Russo, 1999; Cable & Spradlin, 2008; Kasic, 2008; Mead, 2003; Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681, 1682). While Title IX allowed for same-gender public education in some circumstances (Brake, 1999), it made vocational tracking by gender illegal, mandated equal opportunity for male students and female students in both curriculum and athletics, and provided the basis for legal decisions that resulted in same-gender public education programs closing or becoming coeducational (Brown & Russo, 1999). The result was that same-gender public (and private institutions that received public funding) education programs across all levels were essentially required to take one of four actions: (a) not accept public funding; (b) become coeducational; (c) show legal justification for a position to remain same-gender; or (d) close (Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681, 1682).

Following passage of Title IX, and continuing a trend in same-gender education that began in the 1950s, the number of female only colleges dropped from 228 in 1970 to less than 80 by the 1990s, while the number of male only colleges decreased from 228 in 1950 to two during that same period (Brown & Russo, 1999; Mael, 1998; Meyer, 2008). Additionally, by 1995 there were just two same-gender public high schools operating in the United States (Meyer, 2008). These public high schools, both founded in the 19th

century, were specifically oriented to female students preparing to attend college (Mead, 2003). Western High School (HS), established in 1844 in Baltimore, Maryland, is the oldest same-gender public school in the United States. Western HS had an enrollment of 956 students for the 2014-2015 school year (<http://www.baltimorecityschools.org>). The Philadelphia High School for Girls, founded in 1848 with a similar purpose as Western HS, serves nearly 1,000 students (<http://webgui.phila.k12.pa.us/schools/g/girlshigh>).

The decline in the number of male only colleges subsequent to the passage of Title IX included long standing, male only, public institutions, which were now required to enroll female students. Key all-male schools and institutions that became coeducational following passage of Title IX were the five U.S. Service Academies, the Virginia Military Institute (VMI), the Citadel, Boston Public High School, and Philadelphia Central High School. In their attempts to keep these schools and institutions male only, proponents of the status quo argued on the benefits and value of same-gender education. While each of these attempts eventually failed, court decisions on same-gender education, while necessary to allow female students to enroll in these schools, were not indictments on same-gender education per se, but were more so about equal protection under the 14th Amendment to the United States Constitution (Brake, 1999; Brown & Russo, 1999; Mead, 2003). In fact, the 1996 Supreme Court decision on the all-male selection policy for VMI University (*U.S. v Virginia*, 1996), while a defeat for those who fought to retain the school's male only admission policy, proved a victory for same-gender public education in general (Meyer, 2008).

Writing for the majority opinion, Justice Ginsburg noted, "same-sex education affords pedagogical benefits to at least some students, Virginia emphasizes, and that

reality is uncontested in this litigation” (*U.S.*, 1996, p. 535). In a concurring but separate opinion, Chief Justice Rehnquist emphasized that “Had Virginia made a genuine effort to devote comparable public resources to a facility for women, and followed through on such a plan, it might well have avoided an equal protection violation” (*U.S.*, 1996, p. 563). Further, Chief Justice Rehnquist wrote, “it is not the exclusion of women that violates the Equal Protection Clause, but the maintenance of an all-male school without providing any - much less a comparable - institution for women” (*U.S.*, 1996, p. 565).

The Supreme Court writings on *U.S. v. Virginia* highlighted potential pedagogical benefits of same-gender education and provided an opportunity for state and local educational agencies to look again at same-gender education as a means to improve academic achievement or attainment for both male students and female students. In the absence of such programs in the public sector, educators looked to the private and parochial school systems for evidence that same-gender education resulted in increased academic achievement or attainment.

Reemergence of same-gender public education.

While Title IX did not apply to private or parochial schools unless they received federal education dollars (Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681, 1682), nonetheless, the movement away from same-gender education in the United States extended beyond the confines of the public education system (Brown & Russo, 1999). Even as private and parochial same-gender schools continued uninterrupted and without the restrictions imposed upon public schools following passage of Title IX (Friend, 2007), they were not immune to the societal drift away from same-gender education. The percentage of all-female private schools within the National Association

of Independent Schools declined from 24% (166 out of 682) in 1963 to 13% (109 out of 870) in 1998, while the number of same-gender parochial secondary schools declined 10% during the decade of the 1990s (Brown & Russo, 1999). Still, the continuation of same-gender education in private and parochial schools would prove critical to eventually reversing the decline of same-gender public education in the United States.

Beginning in the late 20th century, calls for school policy reform, to include greater school choice, cited gender inequity in academic achievement and attainment between male students and female students as a rationale for same-gender public education. The initial arguments for same-gender education concerned the issue of gender bias against female students in Science, Technology, Engineering, and Mathematics, or STEM, courses, and the subsequent enrollment and performance of female students in these courses, to include post-secondary education (Durost, 1996; Fennema, Carpenter, Jacobs, Franke & Levi, 1998; Karp & Shakeshaft, 1997; Karpiak et al., 2007; Perry, 1996). Advocates in support of same gender public education argued it remedied gender bias against female students in STEM and other courses, even while acknowledging continuing advances in academic achievement by female students in STEM courses, both in absolute and relative terms, as compared to their male counterparts, without the existence of same-gender educational programs in the public school systems.

Similarly, Sadker (1999), while highlighting the advances of female students in academic achievement over the previous 20 years, including numerous instances where female students had surpassed male students in achievement and attainment, still considered the education system biased towards male students. Identifying 10 areas of

gender bias within the U.S. public school system, to include science, technology, engineering, mathematics, and teacher biases, he concluded seven favored male students, two favored female students, and one was neutral. Karp and Shakeshaft (1997) reported female students entered high school more mathematics ready than their male student counterparts, but they were outdistanced in achievement by the time they graduated. Even when female students in-class grades equaled or exceeded those of their male student counterparts, their scores on standardized tests were significantly lower (Karp & Shakeshaft, 1997).

The primary outcomes of this mathematics achievement gap for female students included a lack of self-confidence in mathematics ability and a corresponding avoidance of higher-level mathematics classes. The secondary outcomes were reduced opportunities for college acceptance and subsequent limits on career opportunities (Linn & Hyde, 1989) and lower lifelong earnings (Karp & Shakeshaft, 1997). Recommendations to address this issue included changes in course design and instructional styles and the establishment of same-gender mathematics classrooms for female students (Karp & Shakeshaft, 1997).

Crombie, Abarbanel, and Anderson (2000) identified similar issues regarding female enrollment in high school technology courses, and the subsequent second and third order effects concerning college placement, career opportunities, and career earnings. One explanation for this technology gap offered by Brunner and Bennett (1997), Carr-Chellman, Marra, and Roberts (2002), and Swain and Harvey (2002) is a difference in the way male students and female students viewed technology, and subsequently, the method of instruction. Similar to the recommendations for improving

the performance of female students in mathematics courses, advocates for same-gender education proposed changes in technology course design and instructional styles to better support female students, to include technology classes for female students only (Brunner & Bennett, 1997; Carr-Chellman et al., 2002; Swain & Harvey, 2002).

While the initial literature advocating for same-gender education initially focused on lowered achievement and attainment for female students in the areas of STEM, more recently, the literature has also begun to examine falling academic achievement and attainment for male students. Falling academic achievement and attainment for male students is evidenced in lowered test scores in reading and writing, the much higher percentages of male students in high school special education programs, and the fact that female students outnumber male students in high school graduation rates (Clark et al., 2008; Weaver-Hightower, 2003). Additionally, female students outnumber male students in enrollment in collegiate undergraduate, graduate, and medical degree programs (Clark et al., 2008; Sadker, 1999; Weaver-Hightower, 2003). This achievement gap has become the latest cause for examination of public education practices and has generated calls for same-gender public educational programs for male students (Clark et al., 2008; Weaver-Hightower, 2003).

To the issue of falling academic achievement for male students, Weaver-Hightower (2003) categorized research on the issue of male students in education along four key divisions, even while acknowledging the groupings were informal and artificial (though grounded). These four divisions were (a) popular-rhetorical literature, (b) theoretically-oriented literature, (c) practice-oriented literature, and (d) feminist and pro-feminist critiques on the “boy turn.”

Weaver-Hightower (2003) provided that popular-rhetorical literature argues on the feminization of schools, with a resulting disadvantage to male students. The “proof” for these type arguments is data showing male students are falling behind female students in literacy measurements, school engagement, and college enrollment, while outnumbering female students in areas such as suspensions and expulsions, dropout rates, special education placements, and diagnoses of attention deficit disorder. Supporting this issue of male academic underachievement, Clark et al. (2008) found male students had significantly more disciplinary and special education referrals, higher absenteeism rates, and lower grade point averages than female students in examining gender and gender equity issues at two elementary schools, two middle schools, and one secondary school.

The second division, theoretically-oriented literature, is based on qualitative research, and examines how schools produce and modify masculinities (Weaver-Hightower, 2003). Major themes resonating through this literature are:

- there are multiple definitions for masculinity;
- race, ethnicity, class, and sexuality all influence definitions of masculinity;
- the emergence of a hegemonic masculinity will place other masculinities at a disadvantage;
- males will gravitate towards the hegemonic masculinity to avoid being disadvantaged;
- symbols and structures in schools produce as well as reflect the masculinity within a school; and
- macro-level formation of masculinity around larger social processes.

Practice-oriented literature addresses school and classroom based actions to address the academic “underachievement” of male students (Weaver-Hightower, 2003). The two overarching categories practice-oriented literature covers are (1) learning and outcomes and (2) social and psychological consequences. The critical pedagogical and programmatic issues from the practice-oriented literature include:

- adopting whole-school approaches to the problem of male student underachievement rather than attempting to remedy through piecemeal approaches;
- considering the gender of teachers when assigning to programs to address underachievement by male students;
- training teachers to teach specifically to male students, despite misgivings or potential obstacles;
- providing identifiable reasons for male students to change their behavior and improve their academic performance;
- implementing respectful, non-blaming approaches to teaching male students;
- addressing the gendering of textbooks and other learning materials; and
- teaching male students about gender by the use of critical literacy and its construction through text.

The fourth and final category Weaver-Hightower (2003) addresses is the response to the boy turn by feminist and pro-feminist groups. Critiques of the “boy turn” question the need to focus on male students, challenging the basic premise that schools today are somehow failing male students (Keddie & Mills, 2009; Weaver-Hightower, 2003). To this point, Okopny (2008) has deconstructed and countered physiological arguments that

males' brains are different from female brains and male students are struggling academically because of the feminization of schools. Keddie and Mills (2009) not only reject the premise that schools have become feminized, but assert that the development of "boy-friendly" pedagogies detracts attention away from the genuine educational disadvantages faced by female students. Keddie and Mills further maintain that basic accepted assumptions about masculinity result in educational environments that are oppressive to others and can even result in self-harm. These critiques to the "boy turn" aside, even if one accepts that male students are in a crisis in education today, many see education resources as a zero-sum gain, thus actions and resources applied to address issues with male students must come at the expense of female students (Weaver-Hightower, 2003).

With achievement, attainment, and equity concerns now coming to the head of the gender debate from both sides, the issue of the benefits of same-gender public education returned to the forefront of the school reform discussion. Effort towards same-gender public education received a significant boost with the enactment of the NCLB on January 8, 2002. The number of same-gender public education programs grew from two, both female, in 2001, to anywhere from between 500 to 1000 today (Klein, 2012; NASSPE, 2011; Zubrzycki, 2012), and, as discussed, further opportunities for same-gender education exist in the private and parochial school systems.

Prevalence of Same-Gender Education in the United States

To begin to understand the complexity of the issues surrounding same-gender public education in the United States, it is only necessary to attempt to determine the type, number, and location of same-gender K-12 schools, public or private, in the country.

The U.S. Department of Education (USDOE), through the Institute of Education Sciences and National Center for Education Statistics (NCES), maintains databases of both public and private schools in the United States (NCES, 2014). Either database can sort between states and the District of Columbia, as well as between various school types such as alternative, special education, and vocational, but only the private school database allows users to sort between coeducational, male, or female schools. The private school database lists 488 all-female schools in 42 states and the District of Columbia. There were no all-female private schools listed for Alaska, Idaho, Iowa, Kansas, Nevada, North Dakota, Oklahoma, or Wyoming. Additionally, the database lists 635 all-male private schools in 44 states and the District of Columbia. There were no all-male private schools listed for Alaska, Montana, New Mexico, Oklahoma, South Dakota, or West Virginia. The NCES database, in total, listed 1,123 all-male or all-female private schools in 48 states and the District of Columbia. The two states with neither an all-female nor an all-male private school listed in the database were Alaska and Oklahoma. The NCES database further differentiated these 1,123 schools by religious affiliation or association membership, with the result being that of these 1,123 same-gender schools, 390 are Roman Catholic, 333 are Jewish, 306 are non-sectarian, and 2 are Islamic. The remaining 92 schools cover various Christian denominations. Table 1 provides the NCES listing of the number of same-gender private schools in the United States sorted by state and gender.

Table 1

Number of Same-Gender Private Schools in the United States by State and Gender

State	Gender		State	Gender	
	Female	Male		Female	Male
Alabama	1	4	Montana	1	0
Alaska	0	0	Nebraska	3	3
Arizona	4	3	Nevada	0	1
Arkansas	1	2	New Hampshire	1	7
California	55	51	New Jersey	37	62
Colorado	3	2	New Mexico	1	0
Connecticut	10	16	New York	127	166
Delaware	2	3	North Carolina	6	8
DC	3	6	North Dakota	0	1
Florida	14	15	Ohio	16	17
Georgia	5	9	Oklahoma	0	0
Hawaii	4	2	Oregon	4	5
Idaho	0	6	Pennsylvania	23	37
Illinois	22	22	Rhode Island	4	4
Indiana	2	3	South Carolina	1	5
Iowa	0	1	South Dakota	1	0
Kansas	0	1	Tennessee	8	21
Kentucky	5	4	Texas	10	13
Louisiana	12	8	Vermont	9	12
Maine	1	1	Utah	2	4
Maryland	23	24	Virginia	10	15
Massachusetts	26	30	Washington	4	4
Michigan	4	8	West Virginia	1	0
Minnesota	1	2	Wisconsin	7	9
Missouri	2	2	Wyoming	0	2
Mississippi	12	14	Total	488	635

While the USDOE NCES database does not provide information on same-gender public schools, the USDOE Office for Civil Rights began including information on same-gender public education in the Civil Rights Data Collection (CRDC) report beginning in 2011 (Zubrzycki, 2012). The USDOE Office for Civil Rights conducts the Civil Rights Data Collection (CRDC), formerly the Elementary and Secondary School Survey (E&S Survey), to collect data on key education and civil rights issues in the public schools

(CRDC, 2014). The most recent report posted on the website is for the 2011-2012 school year.

The CRDC webpage allows the user to query the database by state, school district, school identification number, or school name and address for information on individual schools, including whether a school offers same-gender education (CRDC, 2014). The database does not however allow the user to search for same-gender public schools or programs, but only to determine (1) if a local educational agency has schools that offer same-gender education classes, or (2) if an individual school offers same-gender education classes. To utilize the CRDC webpage to query the 14,000 local educational agencies or 98,000 public schools in the United States for same-gender public schools or programs, it is necessary to know the name of each local educational agency or school, as the webpage only returns the first 200 schools for each state or local educational agency entered.

That being so, analysis of local educational agencies and public schools with known same-gender classes resulted in numerous instances of inconsistencies and omissions in the information provided on these schools in the CRDC webpage. As an example, the student demographics profile for the Urban Assembly School of Business for Young Women in New York City identifies the gender make-up of the school as 100 percent female, yet under the school information section “Offers Single-sex Classes” the box for “No” is checked (see Figure 1). Further, despite the Urban Assembly School of Business for Young Women being just one of many same-gender public schools in New York City, in the summary of selected facts for the New York City local educational agency, the number of schools offering single-sex classes is shown as zero (see Figure 2).

With the limitations found in U.S. Department of Education databases regarding same-gender public education, due diligence necessitated a review of state educational agency websites for each of the 50 states and the District of Columbia for information on local educational agencies and public schools with same-gender education programs. Contact information on each state educational agency is at Appendix A.

Confirming the findings of Klein (2012), the South Carolina Department of Education website was the only state educational agency website to list information on local educational agencies and public schools implementing same-gender public education programs. The listing, current as of the 2012-2013 school year, provides both a by district listing and a map identifying 69 South Carolina elementary and middle schools offering some form of same-gender education; no South Carolina high schools are identified as offering same-gender education. While the listing identifies Grade(s) within each school that offer same-gender classes, it does not provide information as to whether the entire Grade or Grades are same-gender, or just classes within each Grade or Grades.

The South Carolina Department of Education website listing of South Carolina public schools offering same-gender education programs provides further insight into the difficulty and uncertainty in attempting to identify the number and type of same-gender public education programs in one state, much less the United States as a whole. In a state with a supposedly deliberate focus on implementing same-gender public education, to include an Office of Single-Gender Initiatives from 2007-2011 (Klein, 2012; Rex & Chadwell, 2009), there is a limited amount of information on the South Carolina Department of Education website on the same-gender public education programs in the

state, and what information is available, is two-years old. What is not provided on the website is that the number of South Carolina public schools offering same-gender education programs peaked at 232 in the 2009-2010 school year, subsequently decreasing to 129 for the 2011-2012 school year and to 69 for the 2012-2013 school year (Rex & Caldwell, 2009; Zubrzycki, 2012).

This lack of information and attention to detail on same-gender education programs exhibited on the South Carolina Department of Education website appears to have carried over to individual school websites, where in many cases information on the same-gender education program at the school was absent, or as with the South Carolina Department of Education website, dated. Therefore, with South Carolina the only state educational agency to list information on local educational agencies and public schools implementing same-gender public education programs on its website, coupled with the limitations in U.S. Department of Education databases regarding same-gender public education, the next attempt to determine information on same-gender public schools in the United States was to examine non-government sources.

The database repeatedly referenced in the literature on same-gender public schools in the United States came from the website of the National Association of Single-Sex Public Schools, or NASSPE. The NASSPE website had provided a listing of same-gender public schools identified by state and local educational agency, and categorized between same-gender schools and coeducational schools with same-gender classrooms (Zubrzycki, 2012). The listing, which NASSPE identified as self-reported, included 506 public schools offering same-gender education, with 390 being coeducational schools with same-gender classrooms and 116 being same-gender schools (Zubrzycki, 2012).

This NASSPE listing of public schools offering same-gender education included 37 states and the District of Columbia; that listing is no longer available on the website. As posted on the website, NASSPE removed the listing in 2011 after learning the American Civil Liberties Union (ACLU) had been using the list to “harass” schools that provided same-gender educational programs (NASSPE, 2011).

To the NASSPE claim, in 2011 the ACLU reached agreements with local school boards in Pittsburgh, Pennsylvania; Tallapoosa, Alabama; and Adrian, Missouri; and won a lawsuit against Vermillion Parish, Louisiana, resulting in the end of same-gender public education programs in those localities (NASSPE, 2011; Zubrzycki, 2012). Nonetheless, the courts do not always find for the plaintiff in legal challenges to same-gender public educational programs. In a lawsuit in 2008 against the Breckinridge County, Kentucky, School Board, the courts dismissed a complaint the ACLU brought over the establishment of same gender public education programs in that community (Zubrzycki, 2012). In the end, win or lose, listing or no listing, legal challenges to same-gender public educational programs will persist, and not just against individual schools, as the ACLU continues to contest broader USDOE regulations supporting same-gender public education as exceeding Title IX regulations (Zubrzycki, 2012). The result then of the removal by the NASSPE of its listing of public schools in the United States offering same-gender educational programs may be little more than symbolic, especially as other sources exist for information on same-gender public education programs in the United States.

In a study detailing the extent of same-gender public education in the United States for the years 2007-2009, Klein (2012) provides a by-name listing of 82 all-male or

all-female public schools and dual academies across 26 states and the District of Columbia. Additionally, the study further identified 646 public schools across 42 states and the District of Columbia offering same-gender education through same-gender classrooms, though without providing a by-name listing. The study also provides data on public schools with same-gender classrooms from the 2006 and 2010 Civil Rights Data Collection, with the number of schools ranging from a low of 1,003 to a high of 20,181 across 48 states (Florida and New York were not included) and the District of Columbia.

Klein (2012) also addressed differences in numbers between the 82 all-male or all-female public schools and dual academies identified in her study, as compared to the 92 all-male or all-female public schools and dual academies reported by NASSPE in September of 2009. Klein referenced one additional source, the National Coalition of Single-Sex Public Schools, or NCSSPS, as reporting 95 all-male or all-female public schools and dual academies in the United States for 2009. Attempts to research this organization were unsuccessful, as the website address listed in the study, www.ncssps.org, did not exist, and a Google search for “National Coalition for Single-Sex Public Schools” did not return any matches.

In a further example of the on-going evolution in the number of public schools in the United States offering same-gender public education programs, Klein (2012) identified one high school and one middle school in the Long Beach Unified School District (LBUSD) that contained separate male and female academies within the larger co-educational school. A search of the LBUSD website found 19 schools (8 High Schools and 11 Elementary/Middle schools) with listed male and female leadership academies. Following communication with the LBUSD point of contact for the listed

academies, it was clarified that LBUSD no longer conducts same-gender public education programs, and that the academies have evolved into leadership/mentorship organizations, meeting for one period each day in a non-academic classroom setting.

Other sources examined for information on same-gender public schools in the United States, included the International Boys' Schools Coalition, Magnet Schools of America, the National Alliance for Public Charter Schools, the National Association for Charter School Authorizers, and the National Coalition of Girls' Schools. A search of organizational websites for the Magnet Schools of America, the National Alliance for Public Charter Schools, and the National Association for Charter School Authorizers did not yield any information related to same-gender public education. The International Boys' Schools Coalition website lists 68 member schools in the United States, to include public schools (IBSC, 2014), while the National Coalition of Girls' Schools website lists 157 member schools in the United States, to also include public schools (NCGS, 2014). Overall, member schools in these two coalitions include private, public, and religious schools (IBSC, 2014; NCGS, 2014), and for proponents of same-gender public education, the academic record of students attending these schools can serve as a rallying point for same-gender public education.

Following enactment of Title IX, and prior to passage of the NCLB of 2001, same-gender private and parochial schools such as those listed in the International Boys' Schools Coalition and the National Coalition of Girls' Schools, if nothing else, served as a rally point for proponents of same-gender public education. For those who advocated for public school reform to address gender inequities in the public education system, the academic record of students attending same-gender private and parochial schools was

used to justify similar opportunities for students in the public sector (Datnow et al., 2001; Hubbard & Datnow, 2005). Advocates for same-gender public education put forth conclusions and recommendations on same-gender education in comparing the academic achievement and attainment of students attending same-gender private and parochial schools against those attending co-educational private and parochial schools, and by inference, those attending coeducational public schools (LePore & Warren, 1997). These conclusions occurred notwithstanding existing studies that challenged the benefits of same-gender private or parochial school programs over coeducational private or parochial education programs (LePore & Warren, 1997).

Using data from the National Educational Longitudinal Study of 1988 to address questions concerning same-gender education, LePore and Warren (1997) concluded same-gender education in Catholic secondary schools does not result in increased academic achievement over an education in a coeducational Catholic secondary school. To this end, a comparison study addressed three questions:

- Q₁. Are there differences between same-gender and coeducational Catholic secondary school students in academic and social psychological outcomes?
- Q₂. Do any differences especially favor female students in same-gender schools?
- Q₃. Can student pre-enrollment differences account for apparent sector effects?

Results from the comparison study indicated same-gender Catholic secondary schools were not especially favorable academic settings, any advantages favored male students, and any sector differences in achievement test scores resulted from pre-enrollment differences in measured background and prior achievement (LePore & Warren, 1997).

Nonetheless, calls for same-gender educational programs in the public sector continued, but due to the restrictions of Title IX of the Educational Amendments of 1972 remained unanswered. It was not until January 8, 2002, with the enactment of the No Child Left Behind (NCLB) Act of 2001 that the necessary changes to the law to enable efforts to establish same-gender public education programs were possible. These changes to the law provided the legal foundation for same-gender public schools or classrooms, arguably one of the key issues concerning same-gender public education in the United States in the 21st century

Same-Gender Public Education and the Law

No matter the research, science, or public support behind same-gender public education programs, the program must meet the necessary legal standards while ensuring the necessary legal protections. NCLB 2001, while ushering in a change in federal policy towards same-gender public education, still required that same-gender education programs be consistent with applicable law (P. L. 107-110, 2001). These standards and protections involve federal constitutional law as well as federal statutory provisions, and the judicial interpretation of those laws (Brown & Russo, 1999; Mead, 2003). To those ends, same-gender public education programs must be consistent with the Fourteenth Amendment to the U.S. Constitution, Title IX of the Education Amendments of 1972, and the Equal Educational Opportunities Act (EEOA) of 1974 (Mead, 2003).

No Child Left Behind (NCLB) Act of 2001.

The NCLB contained two important provisions relating to same-gender education that would result in changes to the law that would facilitate the establishment of same-gender schools and classrooms in the public education system. The first provision

allowed local educational agencies to use federal funds to support same-gender public schools and classrooms consistent with applicable law (P. L. 107-110, 2001). The second provision required the U.S. Department of Education (USDOE) to issue new guidelines regarding same-gender public education within 120 days of the 2002 enactment date of NCLB (P. L. 107-110, 2001). Following the enactment of the NCLB, USDOE announced its intention to issue new, less stringent regulations on the subject of same-gender public education.

On March 9, 2004, in support of the NCLB, the USDOE published a notice of proposed rulemaking to amend the regulations implementing Title IX of the Education Amendments of 1972 (USDOE, 2004). These proposed amendments were to clarify and modify Title IX regulatory requirements pertaining to the provision of same-gender schools and classes in elementary and secondary schools. The proposed amendments expanded flexibility for recipients that may be interested in providing same-gender schools or classes, and these would explain how school districts could provide same-gender schools or classes consistent with the requirements of Title IX. On October 25, 2006, following the public comment period, the USDOE announced changes to Title IX and 34 CFR 106 (USDOE, 2006). These changes, which took effect on November 24, 2006, allowed recipients to operate same-gender, non-vocational elementary, middle, or secondary schools or classes as long as they met certain qualifying provisions regarding same-gender education.

In accordance with 34 CFR 106 and changes to Title IX, for classes and activities, the regulations allowed non-vocational coeducational elementary, middle, or secondary

schools to provide non-vocational same-gender classes or extracurricular activities if they meet the five qualifying provisions, to include:

1. They substantially relate to the achievement of an important objective such as improving the academic achievement of students, providing diverse educational opportunities, or meeting the particular, identified needs of students.
2. Local Educational Agencies implement the objective in an evenhanded manner, which may require the provision of an equal same-gender class or activity for the opposite gender.
3. Student enrollment in the same-gender class or activity is voluntary.
4. The recipient provides to all other students, including students of the opposite gender, an equal coeducational class or extracurricular activity in the same subject or activity.
5. The recipient conducts a review every two years to maintain that the basis of the program is not generalizations regarding the abilities, talents, or preferences of either gender. The review should also determine whether same-gender classes are still necessary to remedy the previous inequity (34 CFR 106. 34(b)).

The requirement to provide a rationale (provision 1) or to conduct a review (provision 5) applies only to the establishment of same-gender classrooms within coeducational schools. The provision that assignment of students to same-gender public schools or classrooms is voluntary ensured the assignment does not constitute a violation of the 14th Amendment and the Equal Educational Opportunities Act of 1974 (20 U.S.C.

§ 1701 et seq.). Further, the requirement (provision 4) for local educational agencies with either same-gender schools, or coeducational schools with same-gender classrooms, to provide students of the opposite gender equal educational opportunities does not however require that recipients provide same-gender schools, classrooms, or educational units to one gender just because same-gender facilities are provided to the opposite gender (34 CFR 106. 34(b)). This provision provided a further legal basis against claims of violation of the 14th Amendment and the Equal Educational Opportunities Act of 1974 (20 U.S.C. § 1701 et seq.).

Same-gender public education and the United States Supreme Court.

In consideration of the potential for legal challenges relating to the establishment of same-gender public education programs, same-gender public schools or classrooms established under post-NCLB regulations have not yet faced a legal challenge rising to the level of the U.S. Supreme Court. In fact, the U. S. Supreme Court has considered same-gender public education just three times, with only one K-12 case to reach that level of review (Mead, 2003).

In the case of *Vorchheimer v School District of Philadelphia* (1975), a female junior high school honor student unsuccessfully applied for admission to Philadelphia Central High School, the all-male high school, rather than attend the Philadelphia High School for Girls, the all-female high school (Brown & Russo, 1999). After a subsequent legal challenge, the District Court ruled that Central High School was required to admit female students who met the academic standards for enrollment (*Vorcheimer*, 1975). Upon appeal by the Philadelphia School District, the Third Circuit Court of Appeals determined that because the district operated the Philadelphia High School for Girls, and

since attendance at both schools was voluntary, and judging equal educational opportunities existed at both schools, no violation of the 14th Amendment had occurred (*Vorcheimer v. School District of Philadelphia*, 1976). Following appeal, the plaintiffs brought the case to the U.S. Supreme Court, and with the abstention of Chief Justice William H. Rehnquist, the Court affirmed, with a four to four ruling and without opinion, the Circuit Court decision (*Vorcheimer v. School District of Philadelphia*, 1977).

Despite the decision of the U. S. Supreme Court, the legal issue of Central High School and gender discrimination did not end in 1977. In 1982, three female students alleging gender discrimination in the admissions policy of Central High School brought a second lawsuit against the Philadelphia Board of Education (Friend, 2007). The Philadelphia Court of Common Pleas ruled in favor of the plaintiffs, and coupled with the decision by the Philadelphia Board of Education not to appeal, Central High School became coeducational (Friend, 2007). Notwithstanding the 1977 rulings, the Supreme Court has never definitively addressed the question of same-gender public education at the K-12 level (Friend, 2007).

Lacking a definitive Supreme Court ruling on same-gender public education, the limits on what makes same-gender education consistent with applicable law remains to be fully answered (Mead, 2003; Vanze 2010). In the absence of that answer, as well as any successful legal challenges to the new regulations concerning same-gender public education, local educational agencies implemented policy changes regarding same-gender public education based on their understanding and interpretation of Title IX, 34 CFR 106, and the five qualifying provisions. The result was an almost immediate and significant increase in the number of same-gender public schools and classrooms in the

United States following enactment of the NCLB. While these changes occurred despite the conflicting research on the benefits of same-gender education, proponents of same-gender public education are not without their own philosophical and pedagogical arguments in support of establishing same-gender public schools or classrooms.

Philosophies and Pedagogies Behind Same-Gender Education

Philosophical and pedagogical arguments for same-gender education center on several interrelated ideas. Since political arguments often drive reform efforts for public education policy, and as same-gender public education is one of the more controversial recent educational reform efforts (Brown & Russo, 1999), it is important to review and understand the philosophical and pedagogical arguments for and against same-gender public education.

The first argument, the scientific basis, addresses human physiology as it relates to the brain and differences in brain development between males and females and the subsequent influence on learning preferences and academic achievement (Hughes, 2007; McNeil, 2008; Mulvey, 2009; Williams, 2010). Concurrent with this is how same-gender education can account for physiological difference between male students and female students, resulting in an overall improvement in academic achievement and attainment for both genders. The desired end state is an increase in enrollment and performance in upper-level STEM classes for female students and upper level reading and language arts classes for male students, with the effect of reducing gender gaps with regard to academic achievement (Hughes, 2007; McNeil, 2008; Mulvey, 2009; Williams, 2010).

The second argument focuses on how same-gender education can address issues of classroom culture, race, social class, and student behavior in an effort to improve the

academic achievement of low income and minority students (Hubbard & Datnow, 2005; Klein & Ortman, 1994). In general, low-income and minority students achieve at a lower overall academic level, have higher drop-out rates and disciplinary referrals, and are more frequently assigned to special education programs (Gewertz, 2007). As with the larger student population, these issues vary across gender, with female students faring better than male students do (Hubbard & Datnow, 2005).

The third argument highlights same-gender education as an inherent part of the religious or ethnic cultures of various communities or societies (Shah & Conchar, 2009). In view of the increasing diversity within the public school population in the United States, it is important to understand the issue of same-gender education from the perspective of cultures and communities outside of the United States. More importantly, due to Title IX restrictions on same-gender public education programs in the United States, a significant part of the literature on same-gender education comes from outside of the United States, and a significant part of the literature on same-gender education from outside the United States is from the United Kingdom, a nation experiencing its own changes in demographics. Additional research on same-gender education is from Africa, Australia and New Zealand, Asia, North America, and Western Europe.

The science in support of same-gender education.

Proponents of same-gender education reference physiological differences between males and females, to include brain development, hormone levels, and hearing as reasons male students and female students learn differently at different rates in different subject areas, and as a result, need to be taught differently (Hughes, 2007; McNeil, 2008; Mulvey, 2009; Williams, 2010). In a longitudinal study examining sexual dimorphism in brain

development between 387 male and female subjects, from ages 3 to 27 years, Lenroot et al. (2007) reported several differences in brain development between males and females. These differences include gray matter volumes generally peaking one to two years earlier for females, paralleling the average age difference in the onset of puberty for each gender, and with total cerebral volume being approximately eight to ten-percent larger in males (Lenroot et al., 2007). That said, the study specifically cautioned against drawing any conclusions regarding functional advantages or disadvantages for either gender. Nonetheless, the NASSPE cited the study on its website as evidence in support of same-gender public education, arguing differential brain development as a reason to teach by gender, supporting their call for same-gender public education (NASSPE, 2011).

Kommer (2006) referenced research that supported the position that male brains tend to be better at spatial tasks such as mathematics, graphs, and maps, while the female brain, with a more balanced use between the left and right hemispheres, is better at language arts activities. Even while presenting research that supports differences in how male students and female students learn in the classroom, King, Gurain, and Stevens (2010) and Kommer (2006) proposed for gender-neutral classroom environments within a coeducational system versus same-gender classrooms to mitigate physiological learning differences between male students and female students.

These physiological differences in male and female brain development further manifest themselves in environmental and psychological learning differences between male students and female students. Environmentally, male students tend to be more physically active in a classroom setting than female students are, and therefore more likely to require greater workspaces areas for similar tasks, thereby dominating the

physical space of the classroom (Hughes, 2007). Conversely, female students are more likely than male student to learn better in a collaborative versus competitive learning climate, and even more so in a same-gender collaborative environment. A same-gender environment even facilitated collaborative learning amongst male students.

Even accepting that the current science may support physiological differences in brain development and therefore learning differences or preferences between male students and female students, there is still not consensus that same-gender education addresses these differences, or is the only alternative to address these differences, in the classroom.

Same-gender public education for low income and minority students.

Students' educational experiences and outcomes vary by gender within and across ethnic and racial groups (Hubbard & Datnow, 2005). Hughes (2007) identified academic achievement gaps for minority students and students from low-income families. Citing multiple sources, Gewertz (2007) underscored significant gaps in achievement for African-American male students in terms of standardized test scores and high school graduation rates. African-American male students lag behind African-American female students as well as their non-African-American male peers on key educational indicators and are significantly overrepresented in numbers of disciplinary referrals and special education placements (Gewertz, 2007). While Hispanic female students perform less well than other racial and ethnic groups of female students on several critical measures of academic achievement, they still surpassed their Hispanic male student peers (Hubbard & Datnow, 2005).

In view of these indicators, and in reflection of the academic record of same-gender private and parochial schools, there have been increasing calls for same-gender public education as a means to improve the academic performance of low income and minority students (Gewertz, 2007; Hoffman, Badgett, & Parker, 2008; Hughes, 2007; McNeil, 2008; Meyer, 2008). Proponents of same-gender public education for low-income and minority students argue same-gender education not only addresses gender issues, but racial and cultural issues as well, to include the discrediting of lowered academic expectations for minority and low-income students, and has resulted in improved literacy achievement and less disciplinary referrals for male students (Datnow & Hubbard, 2005; McNeil, 2008).

To the objective of same-gender public education for low-income and minority students, one of the three tenets of the NCLB Act of 2001 is the requirement to provide greater choice to parents and students in their attainment of a public education (P.L. 107-110, 2001). To the issue of greater choice, as discussed, NCLB provides for the local use of funds for programs to provide same-gender schools and classrooms, consistent with applicable law (P.L. 107-110, §5131(a)(23), 2001). That choice has always been available in the private and parochial school systems, but not necessarily in the public school system, especially following passage of Title IX of the Educational Amendments of 1972. Nonetheless, given the additional costs of tuition, books, uniforms, and other fees involved with attending a private or parochial K-12 school, that choice was usually only available to more affluent families prior to NCLB and revised guidelines regarding Title IX and public education (Datnow et al., 2001). For some advocating for same-

gender public education in the case of low-income and minority students, the issue is as much about social justice as it is about gender and academic equity (Hughes, 2007).

In examining the literature on the benefits of same-gender education for low-income and minority students, much like the larger body of literature on same-gender education, the results are mixed. Gewertz (2007) described various efforts to establish same-gender public schools to address developmental and educational needs specific to African-American male students. While highlighting the academic plight of African-American male students, the article provided little clarity on the benefits of same-gender education for African-American male students. Further, in a two-year study of at-risk students enrolled in same-gender algebra and English classes at a four-year secondary school located in the American southwest, Hoffman, Badgett, and Parker (2008) found mixed achievement results. Students in same-gender algebra classes had achievement gains in year one but not year two, while there were no differences in English achievement (Hoffman et al., 2008). Further, students in mixed-gender classes achieved higher scores on standardized tests, and while teachers believed same-gender classes were conducive to learning, students did not (Hoffman et al., 2008).

On the other side of the argument, McNeil (2008) highlighted improved academic achievement and reduced disciplinary actions at three predominantly African-American public schools in South Carolina. Standardized test scores and student behavior improved at Kingstree Junior High School, a rural, mostly African-American community, after the school established same-gender classrooms in language arts, mathematics, science, and social studies (McNeil, 2008). Improvements in male student disciplinary referrals occurred at Killian Elementary in the City of Columbia following the

implementation of same-gender classes for fourth and fifth grade students. Beech Hill Elementary, located just outside Charleston, reported similar improvements after starting same-gender programs (McNeil, 2008).

The lack of agreement on the benefits of same-gender education for low income and minority students underlines the difficulties in implementing and assessing the value of same-gender education programs as highlighted in two pre-NCLB attempts in California in the late 1990s to utilize same-gender education on a large scale to improve the academic achievement of low income and minority students.

The Same Gender Academies Program began in California in 1997 with the establishment of 12 same-gender academies, one each for male students and female students in six school districts across the state of California. The academies, located in urban, suburban, and rural locations, included eight paired middle schools located in four districts and four paired high schools located in two districts. Each district received \$500,000 in state supplemental funding to operate these academies.

In a three-year longitudinal study, Datnow et al. (2001) examined this first large-scale experiment with same-gender public education following passage of Title IX of the Education Amendments of 1972. Through observations and interviews with educators, policymakers, and students, they studied the impact of these same-gender academies, specifically focusing on equity implications, and concluded that for most administrators, same-gender schooling was a vehicle for addressing at-risk student's needs, and not an end in itself (Datnow et al., 2001).

Like many of the initial forays into same-gender public education, these academies proved unsustainable under the established policy framework and ended in

2005 when lack of funding resulted in the last of the twelve programs closing its doors to same-gender education (Hubbard & Datnow, 2005). The program began with great expectations and achieved some early successes, however once the additional funding and resources provided by the state to the six school districts participating in the program ended, the improvement ended.

In a subsequent attempt to improve academic achievement and attainment with same-gender public education, the Same-Sex Academy (SSA), an urban middle school serving more than 1,100 low-income and minority students, began same-gender classes in 1999 as the largest experiment in same-gender public education in the United States (Herr & Arms, 2004). In a two-year ethnographic study with a grounded theory approach to data analysis, Herr and Arms (2004) concluded, using teacher, administrator, and student interviews, classroom observations, open-ended student surveys, and document analysis, that the program failed because of standardization and accountability issues, as well as the lack of examination of gender and racial beliefs ahead of program establishment. As with the earlier California Same-Gender Academies Program, absent continuing additional resources to account for a student population that was either low income, minority, English as a second language, or various combinations of, the same-gender nature of the classes alone proved ineffective in improving academic achievement for low-income and minority students.

Same-gender education across nations, cultures, and faith.

Similar to the research on same-gender education from within the United States, studies on same-gender education from other countries presented conflicting evidence and results on the benefits of same-gender education to either male students or female

students. Parallel themes between studies on same-gender education from the United States and studies on same-gender education from outside the United States on the benefits of same-gender education included:

- increasing the enrollment and performance for female students in upper-level STEM classes as examined in studies from Canada, China, Germany, Norway, Sweden, and the United Kingdom (Ding & Harskamp, 2006; Kessels & Hannover, 2008; Manger & Gjestad, 1997; Robinson, 2004; Salminen-Karlson, 2007; Shapka & Keating, 2003);
- reversing the falling academic achievement level for male students as examined in studies from Australia, New Zealand, Northern Ireland, and the United Kingdom (Clark, 2004; Gibb, Fergusson, & Horwood, 2008; Gray & Wilson, 2006; Martino, Mills, & Lingard, 2005; Mills, 2004; Tsolidis & Dobson, 2006; Warrington & Younger, 2003; Younger & Warrington, 2006);
- improving academic achievement for low-income and minority students as examined in a study from Australia (Wills, 2007); and
- addressing issues of culture or faith (Howes & Kaplan, 2004; Shah & Conchar, 2009).

The majority of the literature examined on same-gender education from outside of the United States came from the United Kingdom, but the review also examined research on same-gender education from Australia, Belgium, Canada, China, Germany, Hong Kong, Kenya, the Netherlands, New Zealand, Nigeria, Northern Ireland, Norway, South Africa, Trinidad and Tobago, Sweden, and Thailand.

North America and Western Europe.

In a study of same-gender and coeducational mathematics and science classes for 9th and 10th grade female students within two public, coeducational high schools in Ontario, Canada, Shapka and Keating (2003) examined 85 female students in same-gender classrooms (target school) and 319 female students and 382 male students in coeducational classrooms (control school). Selection of participants for the same-gender classrooms involved an ongoing longitudinal study across these two public high schools for grades 9-13. Only mathematics and science classes included same-gender students in the target school, and after 10th grade, participants returned to all coeducational classes.

Enrollment in the same-gender classes was voluntary, but required prospective participants to have achieved a minimum 70% average in seventh and eighth grade mathematics courses (Shapka & Keating, 2003). To ensure equivalent comparisons between the same-gender and coeducational groups, coeducational students participating in the study had to meet this same standard. The study also controlled for parental education, perceived parental expectations, perceived teacher effectiveness, school location, and school demographics. As a result, both schools were located in the same suburban area with enrolled students being predominantly from middle- or upper class White families and with expectations to attend college upon graduation. Utilizing both qualitative and quantitative data, Shapka and Keating (2003) reported mixed results for the study. While same-gender female classrooms in mathematics and science resulted in a significant positive effect on academic achievement, it did not have the same positive results on attitudes towards mathematics or lessen anxiety over mathematics as compared to the control group (Shapka & Keating, 2003).

In a similar quasi-experimental study from Germany, a sample of 401 students from four coeducational schools in Berlin received assignment on a random basis to a same-gender or coeducational eighth-grade physics class for the first year of physics instruction (Kessels & Hannover, 2008). To reduce teacher influence on the findings, the same teacher instructed both the same-gender physics class and the coeducational physics class. In contrast to Shapka and Keating (2003), where the self-concept of ability of female students in same-gender mathematics and science classes was unaffected by the gender composition of their class, female students in same-gender classes reported a significantly higher self-concept of their ability in physics compared to female students in coeducational physics classes (Kessels & Hannover, 2008). The study also reported that the self-concept of ability in physics reported by male students was unaffected by the gender composition of their physics class (Kessels & Hannover, 2008).

In a second study from Canada, Thompson and Ungerleider (2004) examined what, if any, effect does same-gender schooling have on achievement. The reported results were inconclusive. While they noted that same-gender education produced some benefits for some students, including female students and those from disadvantaged backgrounds, there were no overall measurable differences between same-gender and coeducational settings on a variety of variables.

Younger and Warrington (2006) and Gray and Wilson (2006), in separate studies, examined the issue from the perspective of same-gender classrooms in coeducational settings in the United Kingdom and Northern Ireland. Malacova (2007), in a study from England, used multilevel modeling to examine the effect of school category (same-gender or coeducational) on student progress from age 14 to age 16. In a separate study on

English schools, Spielhofer, Benton, and Schagen (2004) explored the impact of same-gender education on student progress and opportunities as well, using a variety of statistical techniques, to include multi-level modeling.

Younger and Warrington (2006) concluded that while same-gender education may be an important contributor to academic achievement, numerous other variables mask the overall contribution. Gray and Wilson (2006) examined the issue from the perspective of teachers in one coeducational post-primary school that introduced same-gender classrooms to improve academic performance and improve classroom behavior, particularly among male students. Results from teacher surveys suggested that same-gender classes within a coeducational school do not improve academic achievement or classroom behavior.

In examining the effect of same-gender education on students from “2002 Key Stage 3 to 2004 General Certificate of Secondary Education (GCSE),” Malacova (2007) reported advantages to same-gender education, but controlling for students’ prior attainment or school selectiveness tempered these results. Spielhofer et al. (2004), while reporting positive results for both male students and female students attending same-gender schools, identified various factors not addressed in the analysis, to include race, ethnicity, level of parental involvement, as well the background of the schools themselves, which brings into question the significance of the conclusions.

In a study from Flanders, Belgium, Brutsaert and Van Houtte (2004) examined the issue of stress levels among early adolescent female students in same-gender versus coeducational classroom environments. The study, which showed a higher level of stress within the coeducational environment, equated lower levels of stress to a more supportive

academic environment, contributing to higher academic achievement. In addition, in a study from the United Kingdom, Jackson and Bisset (2005) addressed parental choices involving same-gender versus coeducational independent schools. Their study did not attempt to validate either choice but only to document current actions. The result was that parents chose the better overall school based on test scores not gender preferences (Jackson & Bissett, 2005). They also concluded that a common belief amongst parents is that same-gender schooling provided greater benefits to female students than to male students. Finally, Manger and Guestad (1997), in a study examining mathematical achievement related to the ratio of male students to female students in 3rd grade Norwegian school classes, found no differences in achievement between majority boy or majority girl classes, and as a result, did not advocate for same-gender mathematics instruction.

Australia and New Zealand.

Tsolidis and Dobson (2006) examined the issue of same-gender education from a socio-economic standpoint in relation to acceptance into Australia's largest and most diverse university, while Wills (2007) conducted a two-year ethnographic study covering four primary school same-gender classes in Tasmania. The overall results within and between the studies were not conclusive. Tsolidis and Dobson identified socio-economic status as an indicator of acceptance into the university, but found no differences in academic achievement between students with the same socio-economic status who attended same-gender or coeducational schools. The Wills (2007) study challenged the "unquestioned" status of the coeducational primary school.

In results drawn from the Christchurch Health and Development Study, a longitudinal study of 1,265 individuals born in 1977 in Christchurch, New Zealand, same-gender schooling appeared to mitigate disadvantages to male students in academic achievement (Gibb, Ferguson, & Horwood, 2008). The study examined the outcomes of same-gender and coeducational schooling on the gender gap in academic achievement to age 25. At coeducational schools, the study identified a statistically significant gap in academic achievement that favored female students, while at same-gender schools there was an insignificant gap in academic achievement that favored male students. This result was similar for both high school and undergraduate academic achievement.

Southeast Asia.

In an examination of the connection between culture and same-gender education, Jimenez and Lockheed (1989) examined same-gender education and co-education in Thailand. The key takeaway from the study was a reported preference for same-gender education for female students, especially as they move into secondary education. While Thais may accept co-education where same-gender education is not available, families in the middle-class and above most often chose to send their daughters to same-gender Catholic schools operated by female religious orders.

The overall conclusions reached in the study, after controlling for the effect of selection and background factors, were that female students do better in same-gender education while male students have more of an advantage in coeducational education, resulting in a policy conundrum (Jimenez & Lockheed, 1989). These conclusions are in direct contrast to those reported by Shah and Conchar (2009) in a more recent examination of same-gender education against a different ethnic and religious

background, where male students received the greater benefits from same-gender education. Wong, Lam, and Ho (2002), however, reported similar results to Jimenez and Lockheed (1989).

In a study based on a longitudinal sample of more than 45,000 secondary school students in Hong Kong who participated in the standardized leaving school examination (Hong Kong Certificate of Education Examination (HKCEE)) in 1997, female students surpassed male students in all areas of study except mathematics (Wong et al., 2002). This compares to the same sample of students five years earlier where male students outperformed female students on the standardized examination (Academic Aptitude Test (AAT) taken upon completion of primary school.

It was also determined that academic achievement, after controlling for initial ability, was the result of gender and school environment (Wong et al., 2002). Female students studying in same-gender schools outperformed female students in coeducational schools, while male students studying in coeducational schools outperformed male students in same-gender schools. In the same study, it was further determined that female students in coeducational settings outperformed male students in coeducational settings. The least performing groups identified in the study were male students assigned to same-gender schools or male students assigned to the arts curriculum. What was most noteworthy in this literature though was that even after 100 years of British rule and influence, and considering the results of the study, cultural preferences for gender-based education remained.

The traditional, male-oriented Chinese culture emphasized the education of male students at the expense of female students, a custom that still exists, especially in the

more rural parts of China (Wong et al., 2002). While 100 years of British control over Hong Kong ended in 1997 when the territory reverted to China, Hong Kong remained a mixture of Eastern and Western cultures. Hong Kong followed a modern view of equal educational and employment opportunities for male students and female students and employed an educational system based on the British model. Although all new schools are coeducational, approximately ten percent of public schools remain same-gender, and prevalent within the system is the tracking of students into stereotypical male and female curricula. Although gender does not limit or prevent assignment into a specific curriculum, many consider mathematics and the physical sciences to be a male curriculum, while the arts and social sciences are still considered female curriculum.

In a study from China examining gender and academic achievement, Ding and Harskamp (2006) explored the influence of partner gender in a Computer-Supported Collaborative Learning (CSCL) environment in a physics class. The study included 50 high school students (26 female students and 24 male students) drawn from two classes, randomly paired, and placed in one of three research groups: female-female, female-male, or male-male. The results of this study, based on pre- and post-test results, were that female students in same-gender pairings performed as well as male students and outperformed female students in mixed-gender pairings. For male students, there was no significant difference between same-gender and mixed-gender pairings. While the results appear to show advantages for female students in a same-gender setting, they rest upon a very limited research foundation. The small size of the sample, the narrow scope of the program in the study (eight lessons), the fact the study was on one school in Shanghai,

China, and the inclusion of CSCL limit the applicability of the results and naturally led to a need for further research on the topic.

Africa.

Education for female students in Africa, as a whole, is marked by lower levels of access and achievement, and by higher dropout rates (Lloyd, Mensch, & Clark, 2000; Morrell, 2000). In an attempt by the United Nations (UN) to address the issue of gender inequality in education, in the early 1980s the UN Education, Science, and Cultural Organization (UNESCO), endorsed co-education as a policy instrument for leveling the playing field to improve gender equity in education in Africa (Morrell, 2000). Unfortunately, this endorsement failed to recognize the necessary, but lacking, requirement for safety and stability in an academic environment as equally important to attaining improved academic achievement.

A widespread problem across Africa is the frequent assault, murder, and rape of female students attending coeducational schools by male students, teachers, and administrators (Morrell, 2000). Coeducational schooling also brings with it an increase in male-female sexual interaction with an attendant increase in pregnancies, which often results in loss of educational opportunities for pregnant students. The problem of unplanned pregnancies and its impact on female students, just as with the problem of violence against female students, is occurring continent-wide (Lloyd, Mensch, & Clark, 2000; Morrell, 2000). It is estimated that in Kenya alone upwards of 10,000 female students a year leave school because of an unplanned pregnancy.

From this background, Morrell (2009) cites research that in countries such as Nigeria and South Africa, same-gender education for female students has resulted in

increased academic achievement in mathematics, the natural sciences, and technology, increased participation in athletics, and in decreased opportunities for violence against female students. Conversely, Lloyd, Mensch, and Clark (2000) found that the coeducational environment in Kenya provides an environment that is supportive of male students more so than for female students, as teachers take the importance of hard subjects like mathematics less seriously for female students than for male students, and male students are left to harass female students.

Trinidad and Tobago.

In a study designed to address the issue of self-selection bias found in most research on same-gender education programs, Jackson (2012) examined the assignment of students to secondary schools (grades 6-10) in the country of Trinidad and Tobago. At the end of primary school (grade 5), students take the Secondary Entrance Assessment, and based on scores on the exam coupled with the list of (four) ranked secondary school (grades 6-10) choices of the student, the Ministry of Education assigns each student to a secondary school, which could include one of the 34 same-gender secondary schools. While students with higher entrance exam scores are more likely to achieve assignment to their more preferred schools, attendance to same-gender schools is still partially beyond the control of the student, allowing a researcher to address self-selection bias and estimate the causal effect of attending a same-gender school versus a similar coeducational school.

The study of secondary school assignments in Trinidad and Tobago found that for most students, attendance at a same-gender school had no effect on achievement, with the exception being female students with strong preferences (i.e., four same-gender school

choices) for same-gender schools achieved at a higher level than if at a similarly selective co-educational secondary school (Jackson, 2012). A further investigation into the results suggests this effect is not due to the school being inherently same-gender, but more so to the student receiving admission to a strongly preferred school type (Jackson, 2012). In highlighting the complexity of the issue of same-gender education, results of this study could bolster the case for or against same-gender education, with opponents citing the fact that for most students, attendance at a same-gender school had no effect on achievement, while proponents could cite the improved outcomes for those who strongly self-select to a same-gender setting (Zubrzycki, 2012).

Culture and faith.

In examining the literature on same-gender education outside of the United States, one difference in focus was the view of same-gender education from the perspective of culture and faith. Shah and Conchar (2009) in a study that examined same-gender schooling in a multi-ethnic urban context in the United Kingdom, found significant differences in views of same-gender education across racial, ethnic, and religious lines. In response to a survey on the importance of same-gender education, 90% of Muslim respondents stated that same-gender education was very important or important. This compared to 27% of Christians, 28% of those who indicated no religion, and 53% of those who identified themselves as other on the survey.

Further, a significant majority of respondents who supported same-gender education were from minority ethnic groups following the Muslim faith (Shah & Conchar, 2009). While 70% of White respondents stated same-gender education was not important or not at all important, the minority Muslim population stated just the opposite in

responding to the same questions. For minority ethnic groups, only 13% of Pakistani, 9% of Arab, 5% of Kashmiri, 2 % of Bangladeshi, and 0% of Afghan respondents said that same-gender education was not important or not important at all, inferring a connection between ethnicity, faith, and same-gender education. In reporting themes vice conclusions, Shah and Conchar perceived a link between improved academic achievement and same-gender education, especially for male students, as well as a demand for same-gender schools, specifically for female students among Muslim groups.

In a separate look at culture and schooling within the United Kingdom, Howes and Kaplan (2004) presented a study on the use of same-gender schooling to address cultural differences inherent within an Asian community, utilizing existing research to implement the program. The article examined attempts by a secondary school to gain the trust of a minority community and to be more responsive to community values by agreeing to teach male students and female students separately in the first three years. Since academic achievement was a secondary consideration to culture in establishing the same-gender classrooms, the school did not prepare for unexpected and contradictory responses from parents. The literature exposed the dangers of teachers and school leaders stereotyping identity and religion among parents and students, even within what appears to be a homogeneous, cohesive community.

In examining the research on student performance in same-gender schools or classrooms outside of the United States, similar to the research on student performance in same-gender schools or classrooms within the United States, there is no consensus or agreement on the benefits of same-gender education to academic achievement. In the absence of definitive evidence that same-gender education, of and by itself, results in an

improved educational performance, it is critical for policy makers in the United States to understand the financial liabilities of establishing and maintaining same-gender schools and classrooms with public funds, and whether in the absence of supplemental federal or state funding, such programs are sustainable.

Financial Costs of Same-Gender Public Education

Public school financing is accomplished through local, state, and federal funding, with the federal government contributing approximately ten percent of total school revenues, and with state and local governments roughly providing half of the remaining funds each (Kaplan & Owings, 2011). With the enactment of NCLB in January 2002, federal funds, in accordance with Title V, Part A, Subpart 3, Section 5131(a)(23), became available for local use for innovative assistance programs, to include same-gender public education programs (P. L. 107-110, 2001). To that end, NCLB provides for up to \$450 million each year in federal funds to support same-gender public education (Logsdon, 2003). Following the availability of federal funding for same-gender public education and with changes in the law to facilitate the establishment of same-gender public education programs, the number of same-gender public schools and classrooms in the United States grew from 2 in 2001 to between 500 to 1000 today (Klein, 2012; NASSPE, 2011; Zubrzycki, 2012).

Even absent additional federal funding, public school administrators may see the establishment of same-gender schools and classrooms as cost neutral, with the only requirement to establish same-gender schools or classrooms being to just separate students by gender and reassign teachers (Cable & Spradlin, 2008). Perspectives on the financial costs of implementing same-gender public education programs though can

change over time, especially when confronted with the realities and responsibilities of establishing and maintaining same-gender public education programs.

Jim Rex, former South Carolina Superintendent of Education, and David Chadwell, former coordinator of same-gender programs for South Carolina Department of Education, specifically emphasized the low cost of establishing same-gender public education programs in an article on same-gender public education in South Carolina (Rex & Chadwell, 2009). Three years later, and just months removed from his position as coordinator of same-gender public education programs for South Carolina, Caldwell cited the increased expense of same-gender public education programs as a cause for the decline in the number of same-gender public schools in South Carolina from a high of 232 in 2010 to 129 in 2011 (Zubrzycki, 2012). The number of same-gender public schools in South Carolina subsequently dropped to 69 for the 2012-2013 school year.

Cable and Spradlin (2008) and Klein (2012) addressed the issue of the costs involved with the establishment of same-gender public schools, citing the statutory requirement that the recipient provide to all other students, including students of the opposite gender, an equal coeducational class or extracurricular activity in the same subject or activity. The requirement to assure that all facilities and resources are equitable for both male students and female students across same-gender and co-educational facilities may require additional schools, classrooms and educators, along with the attendant costs, especially in smaller schools or school districts (Cable & Spradlin, 2008; Klein, 2012).

In spite of the potential costs involved with the establishment of same-gender public schools, and considering the significant growth in same-gender public education

schools and classrooms following passage of NCLB in 2002, literature on the costs of establishing and maintaining same-gender public education programs, as well as the source(s) of the funding is lacking. An additional financial consideration in establishing and maintaining same-gender public education programs also not found in the literature are the costs incurred in defending a same-gender public education program against legal challenges (Cable & Spradlin, 2008; Klein, 2012; NASSPE, 2011). This leads to the question of whether same-gender public education programs would continue in the absence of supplemental federal funding, such as was the case for the California Single Gender Academies Pilot Program (Datnow & Hubbard, 2001; Hubbard & Datnow, 2005).

The California Single Gender Academies Pilot Program, the first large-scale experiment with same-gender public education following passage of Title IX, began in 1997 with 12 same-gender academies, one each for male students and female students in six school districts across the state (Datnow et al., 2001). Each district received \$500,000 in initial state supplemental funding to start and operate these academies (Datnow et al., 2001). The program opened with great expectations and achieved some early successes, however once the initial additional funding and resources provided by the state to the six school districts participating in the program ended, the programs ended (Hubbard & Datnow, 2005). Within two years, four of the six academies closed, a fifth closed after three years, and the sixth a year later, as school administrators were unable to handle the extra responsibility of managing separate same-gender schools within schools without the supplemental state funding (Datnow et al., 2001; Hubbard & Datnow, 2005). This leads directly to questions on the bases and circumstances of policy decisions to establish same-gender public education programs in the first place.

Policy and Decision-Making Process for Same-Gender Public Education

Similar to the issue of financing same-gender public education, literature specific to the policy and decision-making process used in establishing same-gender public education programs, both in the United States and internationally, is lacking. As concluded by Warrington and Younger (2003) in examining same-gender education within 31 coeducational comprehensive schools in England, policy decisions to address gender gaps in academic achievement are too often decided on an “ad hoc” basis, without any follow-on efforts to evaluate the effectiveness of the program or to determine the financial or human costs. In a similar tone, Mills (2004) presents a unique perspective on same-gender versus coeducational education programs in considering the influences of marketing and the media on public policy decisions on same-gender education.

In examining the debate that played out in one small local newspaper over an advertisement for a private all-female’ school in Queensland, Australia, Mills (2004) highlighted the partisan positions put forward by principals from both public and private schools on which institutions could best serve prospective students – public or private, same-gender or coeducational. Instead of thinking through policy decisions and referencing supporting research in support of their positions, the two competing institutions attempted to use the media to shape policy decisions (Mills, 2004).

So as rationales in the literature for establishing same-gender public education have varied among academic achievement or attainment, behavioral improvement, cultural accommodations, social justice, and a combination of some or all (Pollard, 1999), there was little to no examination of how those rationales were achieved and validated. In some cases, the rationale for establishing same-gender public education programs was

as simple as “what we are doing now is not working,” or “when faced with a crisis, you have to do more” (Gewertz, 2007). To these type assertions, Protheroe (2009) recommends policy makers understand the “why” and “how” issues of establishing a same-gender education program ahead of any change in policy, offering that the most important question that should be asked and answered is “Why a same-gender program?” Policy decisions made without a firm understanding of the “why” and “how,” to include U.S. Department of Education qualifying provisions and the need to reference scientifically based research, and without an established funding basis, are subject to both legal and sustainment challenges.

In one example of the effect legal challenges can have against same-gender public education, the NASSPE removed its listing of same-gender public schools in reaction to legal challenges to several schools (NASSPE, 2011). As stated on the website, the ACLU sent letters to these schools demanding they explain how they were assessing the same-gender programs, demanding access to all program data and information regarding professional development of teachers in the same-gender programs, and threatening legal action against the schools if did not reply promptly (NASSPE, 2011). As a result, several schools ended their same-gender education programs rather than risk expensive litigation (NASSPE, 2011).

In the one example detailed on the NASSPE website, the ACLU threatened the Adrian School District in rural Missouri with legal action after the district began offering same-gender classrooms for male students and female students (NASSPE, 2011). A letter sent to the district from the ACLU threatened legal action if the district did not abandon its same-gender educational programs (NASSPE, 2011). In response to the

letter, the Adrian School District abolished the same-gender program, even as they stated, “while the district does not necessarily agree with ACLU’s legal analysis or conclusions regarding research on this topic, it will accede to the group’s request.” As theorized by NASSPE (2011), smaller school districts do not have the funding, staff, or time to deal with challenges to same-gender public education programs put forth by organizations such as the ACLU. Similar legal challenges and difficulties in establishing same-gender public education programs are highlighted in several pre-NCLB attempts to utilize same-gender education on a large scale to improve the academic achievement of low income and minority students.

In an attempt to remedy educational problems experienced by African-American male students, in 1991 the Detroit Board of Education attempted to establish three public school academies restricted to African-American male students (Brown & Russo, 1999). When a parent sought to enroll her daughter in one of the academies and the Detroit Board of Education refused the request, the parent challenged the Detroit Board of Education in *Garrett v. Board of Education of the School District of Detroit* (1991). Although the Detroit Board of Education incurred over \$450,000 in expenses in attempting to establish the academies, because of this legal challenge, the academies never opened.

As concerns the issue of sustainment, as previously discussed, the Same Gender Academies Program began in California in 1997 with the establishment of 12 same-gender academies, one each for male students and female students in six school districts across the state of California (Datnow et al., 2001). Each district received \$500,000 in state supplemental funding to operate these academies. These academies proved

unsustainable under the established policy framework and ended in 2005 when lack of funding resulted in the last of the twelve programs closing its doors to same-gender education (Hubbard & Datnow, 2005). A program began with great expectations and with some early successes, ended unceremoniously once the additional funding and resources provided by the state to the districts participating in the program ended.

In another previously reviewed example from California, the Same-Sex Academy (SSA), an urban middle school serving more than 1,100 low-income and minority students, began same-gender classes in 1999 as the largest experiment in same-gender public education in the United States (Herr & Arms, 2004). As with the earlier California Same-Gender Academies Program, absent continuing additional resources to account for a student population that was either low income, minority, English as a second language, or various combinations of, the same-gender nature of the classes alone proved ineffective in improving academic achievement for low-income and minority students.

In one pre-NCLB success story on same-gender public education, in 1996 the New York City Board of Education established an all-female public school in East Harlem (Brown & Russo, 1999). Officially named the Young Women's Leadership School, but more commonly referred to as the East Harlem Girls School, the program opened with one seventh-grade class of 50 female students. Although faced with legal challenges from the U.S. Department of Education Office of Civil Rights, the New York branches of the ACLU and the National Organization for Women, and the New York Civil Rights Coalition over same-gender status, the program has now grown to a network of five schools in New York City serving 2036 students in grades 6 -12. The network includes an additional 11-affiliate schools in the states of Illinois, Maryland, Missouri,

New York, and Texas (Brown & Russo, 1999; Young Women's Leadership Network, 2013). One significant difference between the Young Women's Leadership School and the failed efforts in California and Michigan is that the Young Women's Leadership School was conceived, partially funded, and continues to be supported by private donations from Ann Rubenstein Tisch and her husband, Andrew Tisch, chairman of the Loews Corporation management committee (Brown & Russo, 1999).

Summary

The NCLB Act of 2001 provided for greater choice for parents and students in public education, as well as more flexibility for states and local educational agencies in the use of federal education dollars (P. L. 107-110, 2001). To the issues of greater choice and flexibility, Title V, Part A, Subpart 3, Section 5131 of NCLB provided for the local use of funds for innovative assistance programs. As described in sub-section 5131(a)(23), innovative assistance programs included "Programs to provide same-gender schools and classrooms, consistent with applicable law." For those advocating for same-gender public education, NCLB provided federal funding and changes to the law to enable that objective, and the impact was almost immediate.

Following passage of NCLB, the number of public schools in the United States offering same-gender education, either through same-gender campuses, or same-gender classrooms or programs within coeducational schools, grew from just four, all female, in 2001, to between 500 and 1000 today. This increase in the number of same-gender public schools or classrooms in the United States occurred notwithstanding conflicting research and mixed-perspectives, both in the United States and internationally, on the

outcomes of same-gender education programs to improve academic achievement or attainment for male students or female students.

Proponents of same-gender education argue that it addresses physiological and learning style differences and academic achievement gaps between male students and female students. Further, same-gender education eliminates post-pubescent sexual distractions from the interactions of male students and female students in the classroom, addresses education issues specific to low-income and minority students, and offers economically disadvantaged and minority students the same educational choices available to more affluent families. Opponents of same-gender education equate separation by gender to racial segregation in education in the United States prior to *Brown v. Board of Education of Topeka* (1954), argue it reinforces gender and racial stereotypes, and it is an attempt to roll back Title IX gains.

In view of the ongoing debate on the benefits, equity, and merits of same-gender education evidenced in the review of the literature, coupled with the significant growth in the number of same-gender public education programs in the United States following passage of NCLB, studies on policy decisions to establish same-gender public education programs are both timely and warranted. This is especially true when considering that such studies are notably lacking in the literature. Additionally, with the NCLB requirement for “scientifically based” research to guide educational practice and new policy decisions, a study to investigate if and how local school systems referenced “scientifically based” research to guide policy decisions on same-gender public education programs is particularly germane.

CHAPTER III

METHODOLOGY

Following the review of the literature, this non-experimental, mixed methods study investigated decisions by local educational agencies to establish same-gender public education programs. The study considered the conflicting evidence and mixed perspectives on the outcomes of these programs to improve student academic achievement in its design. This chapter provides the research design and procedures, study population and sample, instrumentation, data collection procedures, data analysis procedures, and ethical considerations in conducting the study.

The purpose of the study was to describe and explain the who, the what, the why, and the how behind policy decisions by local educational agencies to establish, maintain, and measure same-gender public education programs. Specifically, the purpose of this study was to determine under what bases and circumstances local educational agencies established same-gender public education programs, to include proponents, rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. The study also investigated if local school systems referenced “scientifically based” research to guide educational practice and new policy decisions on same-gender public schools.

Restatement of the Problem

The NCLB, with its emphasis on greater choice and flexibility for parents and students in K-12 public education, to include the provision for same-gender schools and classrooms (P. L. 107-110, 2001), led to a resurgence of same-gender public schools and classrooms in the United States. This resurgence occurred notwithstanding a research

base on same-gender education, both in the United States and internationally, that presents conflicting evidence and mixed-perspectives on the outcomes of same-gender education programs to improve academic achievement or attainment for male students or female students. Furthermore, with the research base on same-gender public education in the United States limited as a result of Title IX restrictions, coupled with the fact that much of the existing research has been described as weak and contradictory (Bracey, 2007), the ability of same-gender education to improve academic achievement or attainment of and by itself remains open to questioning.

Moreover, a critical NCLB requirement to guide educational practice and policy decisions is the requirement for supporting “scientifically based” research. With questions still remaining on the value of the research on same-gender education (Bracey, 2007; Friend, 2006), it is certainly arguable which research on same-gender education rises to the condition of the “scientifically based” criteria mandated by NCLB to guide educational practice and new policy decisions on same-gender public education.

As a result, policy decisions by local educational agencies to establish same-gender public education programs, no matter how well intentioned, and notwithstanding the provisions for same-gender schools and classrooms within NCLB, can be left open to questions on the justifications, rationales, resources, and metrics behind such decisions. Even more importantly, a same-gender public education program not meeting established federal guidelines can face legal challenges to the bases under which the programs were established.

A study therefore to determine the proponents, rationales, justifications, and resources behind decisions by local educational agencies to establish same-gender public

education programs is relevant, timely, and warranted. Five research questions used to guide and inform the study developed from the review of the literature.

Restatement of the Research Questions

The research questions that guided and informed this study are:

RQ₁: Who are the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States?

RQ₂: Were the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs knowledgeable on requirements for same-gender public education programs in the United States?

RQ₃: What were the reasons put forward for establishing K-12 same-gender public education programs in the United States?

RQ₄: Were the identified proponents of K-12 same-gender public education in the United States knowledgeable of “scientifically based” research on same-gender public education programs?

RQ₅: How are same-gender public education programs in the United States established and maintained?

In examining feasible research designs and procedures to address the five research questions, survey research emerged as the method to best query principals of existing same-gender public schools on their knowledge of and experiences with the same-gender education program at their school.

Research Design and Procedures

Research designs can be quantitative, qualitative, or mixed-method, where a mixed-method design allows the mixing of quantitative and qualitative methods in a

study and the use of techniques that can go beyond the strict quantitative or qualitative designs (Creswell, 2009; McMillan & Schumacher, 2006).

Quantitative research deals with numbers and can be experimental or non-experimental. Non-experimental research design describes past events and examines relationships between things without a direct manipulation of the conditions as is the case in experimental design (McMillan & Schumacher, 2006). Non-experimental quantitative research can be descriptive, comparative, correlational, *Ex post facto*, or secondary data analysis (Creswell, 2009; McMillan & Schumacher, 2006).

Qualitative research emphasizes the importance of looking at variables in the natural setting in which they exist, with data gathered through open-ended questions or observation (Creswell, 2009; McMillan & Schumacher, 2006). Qualitative research can be interactive (Case Study, Critical Studies, Ethnographic, Grounded Theory, or Phenomenological) or non-interactive (Concept Analysis, Historical Analysis), with most of the data from qualitative research being from words rather than numbers (Creswell, 2009; McMillan & Schumacher, 2006).

Mixed-method research can be explanatory, exploratory, or triangulation, as well as sequential, concurrent, and transformative (Creswell, 2009; McMillan & Schumacher, 2006). The order of the collection of the quantitative and qualitative data determines if a mixed-method study is exploratory or explanatory. Collecting the qualitative data first implies an exploratory design, while collecting the quantitative data first implies an explanatory design; with the quantitative phase providing general results that the qualitative data can then further explain (McMillan & Schumacher, 2006). An example of a mixed-method explanatory design would be the use of a questionnaire to survey a

sample population followed by qualitative interactive interviews to explore further the responses documented in the survey (McMillan & Schumacher, 2006).

Survey research provides a quantitative (or numeric) description of attitudes, trends, or opinions of a population, and can be descriptive, explanatory, or exploratory (Creswell, 2009; McMillan & Schumacher, 2006). Researchers use surveys to learn about attitudes, behaviors, beliefs, demographics, desires, ideas, opinion, values, or other types of information, and to describe the distribution, incidence, and frequency of an occurrence. Surveys can be cross-sectional, with the data collected at one point in time, or longitudinal, with data collected over an extended time. Survey research has the capability to express who, what, why, and how of an occurrence. Surveys can be distributed online, by mail, or in-person, and provide an efficient, inexpensive, and reliable method to collect large amounts of data relatively quickly.

Study Population and Sample

In survey research, the researcher can use a questionnaire or conduct an interview to collect data from a sample of the population on a selected topic to infer results for the entire population (Creswell, 2009; McMillan & Schumacher, 2006). The researcher can administer the questionnaire in-person to a captive group or allow the survey to be self-administered using an online survey tool or the U.S. Postal Service. Educational researches frequently use surveys when researching large numbers of people to obtain accurate information with a smaller sample size.

Table 2 provides the minimum required sample size for a given population based on the selected confidence interval (i.e., margin of error) and confidence level, assuming a 95% confidence level for each of the three confidence intervals displayed, and a 5%

confidence interval for each of the three confidence levels displayed. The data in Table 2 highlights how increases in the confidence level with a fixed confidence interval, or decreases in the population size or confidence interval with a fixed confidence level will all result in the required sample size approaching the population size for small populations.

Table 2

Population and Required Sample Size

Population	95% Confidence Level			5% Confidence Interval		
	Confidence Interval			Confidence Level		
	10%	5%	1%	90%	95%	99%
	Required Sample Size					
100	49	80	99	74	80	87
500	81	217	475	176	217	286
1,000	88	278	906	215	278	400
10,000	95	370	4,899	264	370	624
100,000	96	383	8,763	270	383	661
1,000,000+	97	384	9,513	271	384	665

The population for this study was the principals of the 92 identified K-12 public schools in the United States with an identified same-gender education program. For a K-12 public school to be included in the study, the establishment of the same-gender program must have occurred following enactment of NCLB, as well as having to meet one of the following three criteria:

- be a same-gender campus; or
- be a co-ed campus, but students have all (or mostly all) of their academic activities in same-gender classroom setting; or

- be a distinct same-gender “academy” within a larger co-ed school, with students in the academy having all (or mostly all) of their academic activities in same-gender classroom settings.

With 92 schools identified as meeting the criteria to be included in the study, and assuming a confidence level of 95% and a confidence interval of 5%, the required sample size would be 74, or 80 percent of the population. With typical survey response rates varying from single digits to upwards of 40 percent to 60 percent, and with a 70 percent response rate considered very good (McMillan & Schumacher, 2006), the requirement for a sample size of 74 from a population of 92 resulted in the entire population of principals of same-gender public schools being included in the survey.

Instrumentation

This non-experimental, mixed methods study employed a locally developed, descriptive, cross-sectional survey to question principals of K-12 same-gender public schools in the United States on the decision to establish a same-gender education program at their school. The design of the survey allowed for the collection of data specific to the task of addressing the five research questions. An extensive review of literature germane to same-gender education informed the development of the five research questions.

The matrix at Table 3 identifies key issues on same-gender education found in the review of the literature, both from the United States and internationally, that informed the development of the research questions. References marked with an X under a content area indicate discussion of or mention of the content (or similar) in the reference.

References marked with an X however, do not imply a position, pro or con, on the content of the article as relates to same-gender education, public or private.

Table 3

Literature Review Content Matrix

References	Content	Academic achievement and attainment for females, especially in mathematics, science, engineering and technology	Academic achievement and attainment for males, especially in reading and language arts	Avoidance of post-pubescent sexual distractions between male and female students	Reducing disciplinary issues in schools	Lower income families have the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools	NCLB requirement for use of scientifically based research	Financial costs and considerations	Policy and decision making process
Billger, S. M. (2009).		X	X			X			
Brunner, C., & Bennett, D. (1997).		X				X			
Bracey, G. (2007).		X			X	X			
Brake, D. (1999).							X		
Brown, F., & Russo, C. J. (1999).						X			X
Brutsaert, H., & Van Houite, M. (2004		X	X	X					
Cable, K., & Spradlin, T. E. (2008).		X	X			X		X	
Carr-Chellman, A. A, Marra, R. M., & Roberts, S. L. (2002).		X							
Clark, J. (2004).		X	X						
Clark, M. A, Lee, S. M., Goodman, W., and Yacco, S. (2008).			X						
Crombie, G., Arbaranel, T., & Anderson, C. (2000).		X							
Datnow, A., Hubbard, L., & Woody, E. (2001).		X	X	X	X	X		X	X
Ding, N. & Harskamp, E. (2006).		X							
Durost, R. A. (1996).		X							

Table 3 continued.

Fennema, E., Carpenter, T. P., Jacobs, V. R., Franke, M. L., & Levi, L. W. (1998).	X							
Friend, J. (2006).	X	X						
Friend, J. (2007).	X	X		X	X			
Gewertz, C. (2007).		X		X	X			X
Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2008).		X						
Gilson, J. E. (1999).	X							
Gray, C., & Wilson, J. (2006).		X		X				
Herr, K., & Arms, E. (2004).			X		X		X	X
Hoffman, B., Badgett, B., and Parker, R. (2008).	X	X						
Hubbard, L., and Datnow, A. (2005).					X			
Hughes, T. A. (2007).	X	X	X	X	X			
Jackson, C. K., (2012).	X							
Jackson, C., & Bisset, B. (2005).	X							
Jimenez, E. & Lockheed, M. E. (1989).	X	X						
Karp, K. & Shakeshaft, C. (1997, February).	X							
Karpiak, C., Buchanan, J., Hosey, M., & Smith, A. (2007).	X	X						
Kasic, A. (2008, October).	X	X	X					
Keddie, A., & Mills, M. (2009).		X						
Kessels, U., & Hannover, B. (2008)	X							
King, K., Gurain, M., & Stevens, K. (2010).	X	X		X				
Klein, S. S. (1987).	X	X						
Klein, S. (2012)							X	X
Kommer, D. (2006).	X	X	X					
Lenroot, R., Gogtay, N., Greenstein, D., Well, E., Wallace, G., Clasen, L., et al. (2007).	X	X						
LePore P., & Warren, J. (1997).	X							

Table 3 continued

Linn, M. C., & Hyde, J. S. (1989, November).	X							
Lloyd, C., Mensch, B., & Clark, W. (2000).	X	X						
Logsdon, E. (2003).	X	X	X	X	X			
Malacova, E. (2007).	X	X						
Mael, F. (1998).	X	X	X	X				
Manger, T., & Gjestad, R. (1997).	X							
Martino, W., Mills, M., & Lingard, B. (2005).		X						
McNeil, M. (2008).					X			
Mead, J. F. (2003).						X		
Meyer, P. (2008).	X	X	X	X	X			
Mills, M. (2004).		X						X
Morrell, Robert (2000).	X		X	X				
Mulvey, J. (2009).		X						
NASSPE (2001).	X	X	X	X	X	X	X	X
NCLB (2001).						X		
Okopny, C. (2008).		X		X				
Pahlke, E., Hyde, J. S., & Allison, C. M. (2014).	X	X	X	X	X			
Perry, W. C. (1996).	X			X				
Pollard, D. (1999).	X	X	X	X	X		X	X
Protheroe, N. (2009).	X					X		X
Rex, J., & Chadwell, D. (2009).	X	X		X		X	X	
Robinson, W. (2004).	X	X						
Sadker, D. (1999).	X	X	X	X				
Sadker, M., Sadker, D., & Klein, S. (1991).	X	X						
Salminen-Karlson, M. (2007).	X							
Shapka, J. D., & Keating, D. P. (2003).	X							

Table 3 continued.

Smithers, A., & Robinson, P. (2006).	X	X	X	X				
Spielhofer, T., Benton, T., & Schagen, S. (2004).	X	X						
Sullivan, A., Joshi, H., & Leonard, D. (2010).	X	X						
Swain, S., & Harvey, D. (2002).	X							
Thompson, T., & Ungerleider, C. (2004).	X	X						
Tsolidis, G., & Dobson, I. R. (2006).		X						
Vanze, J. (2010).	X	X			X			
Warrington, M. & Younger, M. (2003).	X	X		X				X
Weaver-Hightower, M. (2003).	X	X	X	X	X			
Weiss, S. (2007).	X	X						
Williams, J. A. (2010).	X	X			X	X		
Wills, R. C. (2007).		X		X	X			
Wong, K., Lam, Y., & Ho, L. (2002).	X	X						
Younger, M. , & Warrington M. (2006).	X	X						
Zubrzycki, J. (2012).	X	X			X	X	X	X

The review of the literature facilitated the identification of 92 K-12 same-gender public schools in the United States. The principals of these 92 schools received the descriptive survey on same-gender public education. Appendix B provides a list of the identified 92 same-gender public schools in the United States, and it includes 48 all-female schools, 38 all-male schools, and 6 schools which have a co-educational campus, but students have all (or mostly all) of their academic activities in same-gender classroom settings. In examining individual school websites, these 92 same-gender public schools are primarily charter or magnet schools, are mostly located in medium to large urban

areas, and serve mainly minority student populations. Furthermore, of the 92 same-gender public schools, female principals head 54 schools and male principals head 38 schools.

The survey included eight statements on the same-gender public education program at their school. Each statement employed a series of Likert-type response options to obtain information on the decision to establish a same-gender education program at their school, with 5 to 8 possible responses per statement, for 46 total responses. Questions on the survey included:

- proponent(s) behind decisions to establish and maintain same-gender public education program(s);
- proponents knowledge of same-gender public education programs;
- bases for policy decisions to establish same-gender public education program(s);
- adherence to NCLB requirement for use of “scientifically based” research to guide educational practice and new policy decisions;
- requirement for supplemental federal, state, local, or private funding to establish and maintain same-gender education program(s); and
- requirement for use of metrics to assess the success of same-gender education program(s) in improving student academic achievement and attainment, as well as for the continuation of the same-gender education program(s).

The survey employed Likert-type data with the response options: (1) Strongly Disagree, (2) Disagree, (3) Neither Agree nor Disagree, (4) Agree, and (5) Strongly Agree. Statements 1 and 2 of the survey required principals of same-gender public schools to indicate their level of agreement with a list of individuals, groups, or

organizations responsible for the establishment and maintenance of the same-gender education program at their school. Statement 3 of the survey required principals of same-gender public schools to indicate their level of agreement as to the level of knowledge of same-gender public education put forward by the individuals, groups, or organizations behind the establishment of the same-gender education program at their school.

Statement 4 of the survey required principals of same-gender public schools to indicate their level of agreement with a list of reasons for the establishment of the same-gender education program at the school as put forward by the individuals, groups, or organizations behind the program. Statement 5 of the survey required principals of same-gender public schools to assess the level of “scientifically based” research referenced to establish the same-gender education program at their school. Statement 6 of the survey required principals of same-gender public schools to indicate their level of agreement with a sequence of statements on the use of supplemental funding in the establishment and maintenance of the same-gender education program at their school. Statement 7 of the survey required principals of same-gender public schools to indicate their level of agreement with a sequence of statements on the use of metrics to assess or measure the success of the same-gender education program at their school. Statement 8 of the survey required principals of same-gender public schools to indicate their level of agreement with a sequence of statements on whether the continuation of same-gender public education at their school was conditional on the results of follow-on assessments. The development of the survey considered length and respondent fatigue (and subsequent response quality) in the design.

Rathod and LaBruna (2005) concluded the critical point in survey length when fatigue effects become more pronounced is around the 20-minute mark. While surveys longer than 20-minutes did not necessarily decrease response rates or increase dropout rates, they did affect data quality (Rathod & LaBruna, 2005). A review of online survey companies such as SurveyMonkey, Survey Sample International, and Versta Research found a recommended length for online and telephone surveys of 15-20 minutes. In considering these recommendations, and to help ensure response quality, the survey to principals of K-12 same-gender public schools on the decision to establish a same-gender education program at their school, as designed and tested, takes 10 minutes or less to complete.

While survey length can affect participant response quality, response quality is only as good as the quality of the survey measurement. If the survey is not measuring what it is supposed to measure (i.e., validity of the measurement) and if the measurements are not repeatable under similar conditions (i.e., reliability of the measurement) the results will be weak or biased (McMillan & Schumacher, 2006). The quality of the measurement is then a result of the validity of the measurement and the reliability of the measurement.

Validity of the instrument.

Survey research employs the use of a questionnaire or interviews to collect numerical data from a sample of the population to infer results for the entire population (Creswell, 2009; McMillan & Schumacher, 2006). Validity is the extent to which inferences can be made on the numerical scores, and if those inferences are appropriate, meaningful, and useful, for it is the inference, use, or results of the scores that is valid or

invalid, and not the instrument or test that the score resulted from (Creswell, 2009; McMillan & Schumacher, 2006). Validity is simply the proper interpretation and use of the survey data, which is dependent on how well the survey measures what the survey was designed to measure (McMillan & Schumacher, 2006). Validity then becomes a matter of degree, and not an all or nothing proposition; validity is also a situation-specific concept (McMillan & Schumacher, 2006).

The question of validity in a study links directly to the research design, purpose, population, and the environmental situation in which the measurement takes place (Creswell, 2009; McMillan & Schumacher, 2006). Traditional forms of validity that apply to this quantitative, non-experimental survey research are content validity (do the items measure the content as designed?) and external validity (are results generalizable?).

To establish the content validity of the locally developed survey and to improve questions, format, and scales, it was necessary to pilot test the survey before distributing it to the identified sample (Creswell, 2009; McMillan & Schumacher, 2006). A pilot test is completed with respondents similar to those in the sample, and can be successful with 10 individuals willing to complete it and provide suggestions to improve clarity and format (Creswell, 2009; McMillan & Schumacher, 2006). While the larger the sample size completing the pilot test survey the better, it is important to have some number of respondents complete the pilot test than to have no test at all.

Following approval of the proposed research process, principals of 10 same-gender K-12 public schools in the United States received a pilot test of the survey. Participants in the pilot test were to complete the survey and to respond to key questions about the survey, including whether the instructions were clear and easily understandable.

As part of the pilot test, participants were to record the amount of time needed to complete the survey. The results of the pilot test informed the content of the survey prior to its distribution to the principals of the 92 K-12 same-gender public schools in the United States. A copy of the pilot test survey is included at Appendix C and a copy of the final survey is included at Appendix D.

External validity refers to the ability to generalize the results of the survey sample to the identified population (McMillan & Schumacher, 2006). Population external validity and ecological external validity are two general categories of external validity to consider when designing surveys or evaluating findings (McMillan & Schumacher, 2006). Population external validity limits the results of the survey to populations with the same or similar characteristics. As the study population is principals of same-gender public schools in the United States, and as the identified size of the sample and the size of the population for this study are identical, the threat to the external validity of the study from incorrectly generalizing from the sample to the population is considered limited.

Ecological external validity refers to the conditions of the research and the extent to which generalizing the results is limited to similar conditions (McMillan & Schumacher, 2006). That is, factors such as physical surroundings, time of day or year, effects caused by the presence of an experimenter or treatment can affect the validity of the results. Included under ecological external validity is the tendency of participants to respond differently simply because they are subjects in research, something known as the Hawthorne effect (The label *Hawthorne effect* is from the fact researchers conducted the original study at the Western Electric Hawthorne Plant in Chicago). The Hawthorne effect may result from researchers providing hints to responses they would want, from

respondents who think they know what responses the researcher wants, or from responders who assume certain results from their responses (McMillan & Schumacher, 2006).

In considering the study population, the confidential nature of the survey responses, the lack of individual or institutional attribution to any response, and the anonymity of the researcher to the respondents, a threat to the external validity of the survey because of the Hawthorne effect is considered limited.

Recognizing and addressing issues of validity of the survey requires also the recognizing and the addressing of issues affecting the reliability of the survey, a separate but necessary condition for validity. Even while validity may be the most important aspect of the survey and the subsequent findings that result from the data collection, the findings cannot be valid unless they are reliable (McMillan & Schumacher, 2006).

Reliability of the instrument.

Reliability refers to the degree to which survey results are similar over different occasions of data collection (stability estimate), for different (or alternate) forms of the same survey (equivalence estimate), or to the level of internal consistency calculated from one form of the survey given once (Creswell, 2009; McMillan & Schumacher, 2006).

The most common form of reliability estimate for surveys is the stability or test-retest estimate. To complete the test-retest estimate it is necessary to have respondents complete a survey at two different points in time to determine stability in the responses (McMillan & Schumacher, 2006). For this survey, a comparison of results from the pilot test and the final survey determined a stability estimate, and by association, an estimate

of reliability. The stability estimate is quantified with a correlation coefficient (Pearson r value), where in general, reliability is good with r values > 0.70 .

A correlation coefficient is a quantitative formulation of the linear relationship between two variables, with values ranging from $+1.00$ to -1.00 (Sprinthall, 2007). A correlation is positive when high scores on one variable associate with high scores on another variable, and negative when high/low scores on one variable associate with low/high scores on another variable. Scores near the zero point indicate no consistent relationship among the measured variables. There are multiple formulas to calculate the Pearson r , all producing the same number. Microsoft EXCEL, online correlation coefficients calculators, or other statistical software is capable of accurately calculating the Pearson r .

When the purpose of a survey is to measure opinions specific to a particular circumstance, it will generally be necessary to develop a local survey (Fitzpatrick, Sanders, & Worthen, 2004). For a locally developed survey, unless the research will have a direct, immediate, and important impact on programs or individuals, it is uncommon for the researcher to establish sophisticated estimates of validity and reliability prior to conducting the study (McMillan & Schumacher, 2006). The usual approach is to develop a survey that appears reasonable (face validity), gather data in a pilot test, and revise as necessary. The pilot test can check for clarity in content and instructions, validate time for completion, and identify any problems with the survey. The pilot test can also provide a check for an adequate distribution of response scores. If all responses to an item are identical, it is difficult to determine if it is the result of an

inadequate question or that the item lacks variability. If the responses result in a spread of scores, the expectation is that the items present an adequate measure of the trait.

As this was a mixed-methods study, a qualitative method of investigation employing six open-ended interview questions to a random sample of the respondents to the survey supplemented the quantitative data to address more fully the purpose of the study and the five research questions. The design of the interview questions was to support the quantitative survey while allowing participants to respond in any way they felt important to provide for additional detail on the decision process for establishing the same-gender education program at their school.

To identify participants for the telephone interview, all 54 respondents to the survey received a letter of invitation via email to complete the telephone interview, followed by a telephone call to the school. A copy of the email invitation cover letter is at Appendix E.

Six principals initially agreed to participate in the telephone interview, but two were unavailable even after multiple attempts over several weeks to schedule the interview, leaving four principals who responded to the survey to participate in the telephone interview. The six interview questions are at Appendix F. The inclusion of multiple data sources contributed to the reliability of the study.

Data Collection Procedures

Principals of 92 K-12 same-gender public schools in the United States received the survey on the same-gender education program at their school using SurveyMonkey, a commercial, on-line survey tool. SurveyMonkey allows the user to design and submit a survey online, then automatically collects and categorizes the results as participants

submit their responses. SurveyMonkey analyzes the individual responses and provides a summary of the results. To ensure the confidential nature of the responses, access to the account requires a user ID and password. Quantitative data collection for the survey included the pilot test of the survey and the final survey.

Principals of 10 of the identified 92 K-12 same-gender public schools in the United States received an initial invitation via email to participate in a pilot test of the study, to include a cover letter explaining the purpose of the study and the need for their participation, as well as the voluntary and confidential nature of the research. The cover letter further informed recipients that an email containing a link to the survey would follow via SurveyMonkey within two business days. A copy of the cover letter is included at Appendix G. To ensure as high a response rate as possible, email and telephone requests to complete the survey pilot-test followed at the two week and five week marks.

Following the pilot test, principals of the identified 92 K-12 same-gender public schools in the United States received an initial invitation via email to participate in the study, to include a cover letter explaining the purpose of the study and the need for their participation, as well as the voluntary and confidential nature of the research. The cover letter further informed recipients that an email containing a link to the survey would follow via SurveyMonkey within two business days. A copy of the cover letter is included at Appendix H. To ensure as high a response rate as possible, email and telephone requests to complete the survey followed at the one week, two week, six week, eight week, ten week, sixteen week, and twenty-four week marks.

To enhance the response rate, non-respondents to the on-line survey received a hard copy of the survey via the U.S. Postal Service at the 4-week and 20-week marks, prefaced with a telephone call. The survey package included a cover letter, the survey, a self-addressed, postage paid return envelope, and a pencil. A copy of the cover letter is included at Appendix I. To ensure the confidential nature of the returned responses, the survey did not include any requirement for respondents to provide identifying information. Returned responses remained in secure storage in a private residence when not in use.

Qualitative data collection included telephone interviews with principals of same-gender K-12 public schools in the United States who responded to the on-line or mailed surveys. Data collection for the telephone interviews occurred through note taking and by digital recording. Permission to digitally record the interview required verbal consent from the participant prior to beginning the interview.

Data Analysis Procedures

To provide a clear picture of the data, the data analysis used descriptive statistical methods. Descriptive statistics involve techniques for describing what could be large amounts of data in abbreviated formats (Sprinthall, 2007). When analyzing data from a representative sample of the population, descriptive statistics characterizing the sample can then generalize or infer characteristics of the sample to the population. Important descriptive statistics are the mean, median, mode, standard deviation, and variance (Sprinthall, 2007).

The mean, median, and mode are measures of central tendency, and they provide information on the average or typical score of a large number of scores (Sprinthall, 2007).

The standard deviation and variance are descriptive statistics as well as measures of variability. The standard deviation and variance both measure how much scores in a distribution vary from the mean (Sprinthall, 2007).

Following collection of completed survey responses, it was necessary to code the Likert-type data responses. Responses were coded with a value of 1 for a response of strongly disagree, a value of 2 for a response of disagree, a value of 3 for a response of neither agree nor disagree, a value of 4 for a response of agree, and a value of 5 for a response of strongly agree. After tabulating frequency counts and percentages across each of the 46 response items in the survey, calculation of the means, medians, modes, standard deviations, and variances of each of the 46 response items followed to determine the overall opinion of participants as pertained to policy decisions establishing same-gender public schools.

Response bias.

Response bias may result if a percentage of the survey sample does not return a completed questionnaire, and it refers to the possibility that inclusion of these questionnaires would alter the survey results (Creswell, 2009; McMillan & Schumacher, 2006). The potential for response bias is inversely proportional to sample size and response rate. For surveys with a sample size of at least 200 and a response rate of no less than 70 percent, response bias should not be a factor in the results. For surveys that do not meet this minimum threshold, especially if the results are for use in making important decisions, or if the nature of the survey might result in a particular segment of the sample not to respond, the recommended check is to examine non-respondents. Methods to examine non-respondents to determine response bias include:

- interviewing non-respondents and comparing their responses against returned questionnaires;
- comparing the demographic characteristics of respondents and non-respondents and if different, discussing and interpreting the differences in the results of the study; and
- comparing average responses for surveys returned at the beginning of the survey against average response for surveys returned at the end of the survey period, known as wave analysis (Creswell, 2009; McMillan & Schumacher, 2006).

In considering the study population, the confidential nature of the survey responses, the lack of individual or institutional attribution to any response, and the anonymity of the researcher to the respondents, the threat of response bias from a particular segment of the sample that did not respond is considered limited. In addition, the fact that the purpose of the study is descriptive and explanatory, and not connected to any important decision-making process, limits concern over response bias.

Nonetheless, as a check for response bias, a comparison of average responses for surveys returned at the beginning of the survey against average responses for surveys returned at the end of the survey period, otherwise known as wave analysis, was completed (Creswell, 2009; McMillan & Schumacher, 2006).

Ethical Considerations

Prior to requesting principals to participate in this research study, the Old Dominion University Darden College of Education Human Subjects Review Committee reviewed the study for ethical considerations and found it to be EXEMPT under Category 6.2 from Institutional Review Board review. Participants were aware of and understood

the voluntary and confidential nature of the research and that information obtained from participants remained strictly confidential, that no information that could uniquely identify a participant or school to a response would be included in the study, and that destruction of all data collected during the study would occur following completion of the study. Access to responses to the questionnaires and data instruments was limited to the researcher. There were no benefits to participating in the study.

Summary

This chapter has provided an overview of the methodology used to conduct this study regarding same-gender public education. Specifically, this chapter provided a synopsis of the methodology, to include the research design, population and sample, instrumentation, data collection procedures, data analysis procedures, and ethical considerations. The chapter also addressed potential threats to the study because of issues with validity, reliability, and response bias. Chapter IV details the analysis of the collected data, with the summary, conclusions and recommendations presented in Chapter V.

CHAPTER IV

ANALYSIS OF THE DATA

The purpose of this study was to determine the who, the what, the why, and the how behind local public policy decisions to establish, maintain, and measure same-gender public education programs. Specifically, the purpose of this study was to determine under what bases and circumstances local educational agencies established same-gender public education programs, to include proponents, rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. The study also investigated if local educational agencies referenced “scientifically based” research to guide educational practice and new policy decisions on same-gender public education programs.

To complete the necessary data collection, principals of 92 K-12 same-gender public schools in the United States received a descriptive survey on the same-gender education program at their school. The survey included eight statements, with each statement employing a series of Likert-type response options to obtain information on the decision to establish a same-gender education program at their school. With five to eight possible responses per statement, the survey required 46 total responses.

Prior to the distribution of the survey to the entire study population, principals of 10 of the identified 92 K-12 same-gender public schools in the United States received a pilot test of the survey. The pilot test survey included eight statements on the same-gender public education program at their school. Each statement employed a series of Likert-type response options to obtain information on the decision to establish a same-

gender education program at their school, with four to six possible responses per statement, for 38 total responses.

Participants in the pilot test were to complete the survey and then respond to three key questions about the survey, including whether the instructions were clear, concise, and understandable, whether the survey statements (and response options) were clear, concise, logical, and understandable, and the length of time needed to complete survey questions 1– 8. Of the 10 principals that received the survey pilot test, 5 returned a completed questionnaire, 4 did not provide any response, and 1 opted out of the survey entirely. Tables 4 through 6 display the responses to the three questions on the format of the survey.

Table 4 provides respondents' inputs on the quality of the instructions for completing and responding to the survey. Each of the five respondents strongly agreed (3 of 5) or agreed (2 of 5) the instructions for completing the survey were clear, concise, and understandable. As a result, there were no changes made to the instructions for the final survey.

Table 4

Instructions for Completing the Survey

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Clear	0	0	0	2	3
Concise	0	0	0	2	3
Understandable	0	0	0	2	3

Table 5 provides respondents' inputs on the clarity, conciseness, logic, and ease of understanding in the design and language of the eight survey statements. Due to the length of each statement, for ease of review they are broken out below, with a place marker in the body of the table. For the actual pilot test, each statement was included in its entirety in the survey body. These included:

1. The following were proponents for establishing the same-gender education program(s) at your school:
2. The following are proponents for maintaining the same-gender education program(s) at your school:
3. The following are knowledgeable on the same-gender education program(s) at your school, to include federal regulations on nondiscrimination on the basis of sex in education programs receiving federal financial assistance:
4. The following reasons were put forward to establish the same-gender education program(s) at your school:
5. Scientifically based research was referenced to support the reasons put forward to establish the same-gender education program(s) at your school:
6. Supplementary federal, state, local, or private funding supports the same-gender education program(s) at your school:
7. Metrics are used to assess the same-gender education program(s) at your school on:
8. The continuation of the same-gender education program(s) at your school is conditional on assessment results on:

With the exception of one respondent (disagree) on Statement 6 and one respondent (neither agree nor disagree) on Statement 7, respondents strongly agreed or agreed the statements were clear, concise, logical, and understandable. As no clarifying comments accompanied the “disagree” and “neither agree nor disagree” responses for Statement 6 and Statement 7 respectively, no changes occurred to the design and language of the statements.

From respondents’ comments on Statement 1, it was necessary to add State Legislatures and Departments of Education as categories under Statements 1–3. From respondents’ comments on Statement 6, it was necessary to include private funding as a category for both the establishment and the maintenance of same-gender public schools under Statement 6.

Table 5

Review of the Survey Statements

Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	0	0	0	2	3
2	0	0	0	2	3
3	0	0	0	4	1
4	0	0	0	2	3
5	0	0	0	2	3
6	0	1	0	3	1
7	0	0	1	3	1
8	0	0	0	3	2

Table 6 provides respondents' inputs to the length of time needed to complete survey Statements 1–8. Four of the five respondents indicated the survey took between 6–10 minutes to complete, while the fifth respondent indicated the survey took 1–5 minutes to complete. As the objective of the pilot test was to keep the survey length under 15 minutes, there were no changes to the length of the survey because of respondents' inputs on the pilot survey.

Table 6

Time to Complete the Survey

Category	1 - 5 Minutes	6 - 10 Minutes	11 - 15 Minutes	15 - 20 Minutes	> 20 minutes
Time to Complete the Survey	1	4	0	0	0

Responses to the survey pilot test informed the development of the final survey. No changes occurred to the language in the survey from respondents' inputs on questions of clarity, conciseness, logic, and understanding of the language in the survey. From respondents' comments on Statement 1, it was necessary to add State Legislatures and Departments of Education as categories under Statements 1–3. From respondents' comments on Statement 6, it was necessary to include private funding as a category for both the establishment and the maintenance of same-gender public schools under Statement 6.

Following completion of the pilot test and revisions to the survey, principals of the 92 identified K-12 same-gender public schools in the United States received the final survey through SurveyMonkey, a commercial, online survey tool. To ensure as high a response rate as possible, email and telephone requests to complete and return the survey

followed at the 1-week, 2-week, 6-week, 8-week, 10-week, 16-week, and 24-week marks. To enhance the response rate further, non-respondents to the on-line survey received a hard copy of the survey via the U.S. Postal Service at the 4-week and 20-week marks.

In total, 54 principals across 18 states, or 59 percent of the population of principals from the identified 92 K-12 same-gender public schools in the United States, responded to the survey. Thirty-eight of the completed responses were through the online survey and 16 of the completed responses were through the mailed survey. Respondents included principals of 34 all-female schools, 15 all-male schools, and 5 schools which have a co-educational campus, but where students have all (or mostly all) of their academic activities in same-gender classroom settings. Further, of the 54 principals responding to the survey, 43 were female and 11 were male. In addition, eight principals, three female and five male, formally opted out of the survey, four through the on-line survey, and four through the mailed survey. The remaining 30 principals, 8 female and 22 male, did not provide any response to the survey despite as many as nine follow-up attempts over a six-month period, either via the online survey tool or through the U. S. Postal Service, to include supporting telephone follow-ups, to solicit a positive response.

The received number of 54 responses did not reach the necessary threshold of 74 responses for a 95% confidence level and a 5% confidence interval. With 54 responses, and maintaining a 95% confidence level, the result is a confidence interval of 8.62%. Conversely, with 54 responses, and maintaining a 5% confidence interval, the result would be a confidence level of less than 80%. Following closure of the survey period, it was necessary to review the collected data to examine potential threats to results of the study from issues of reliability and response bias.

Reliability

The most common form of reliability estimate for surveys is the stability or test-retest estimate. To complete the test-retest estimate it is necessary to have respondents complete a survey at two different points in time to determine stability in the responses (McMillan & Schumacher, 2006). For the study survey, a comparison was made of the results from the responses of the five respondents who completed the pilot test and the final survey. Due to the addition of multiple categories across several statements from revisions to the survey following the pilot test, the comparison examined the 38 common categories between the pilot test and the final survey. The stability estimate for reliability is quantified with a correlation coefficient (Pearson r value), where in general, reliability is good with r values > 0.70 (McMillan & Schumacher, 2006). Test-retest analysis indicated that the survey had high levels of reliability, or response consistency, as indicated in Table 7.

Table 7

Reliability Pearson r

Statement	Items	Pearson r
All	1-38	.877770
1	1-4	.968246
2	5-8	.577350
3	9-12	.864242
4	13-17	.916324
5	18-22	.876606
6	23-28	.685994

Table 7 continued.

7	29-33	.952448
8	34-38	.787450

Response Bias

Response bias may result if a percentage of the survey sample does not return a completed survey, and it refers to the possibility that inclusion of these questionnaires would alter the survey results (Creswell, 2009; McMillan & Schumacher, 2006). The potential for response bias is inversely proportional to sample size and response rate. For surveys with a sample size of at least 200 and a response rate of 70 percent or greater, response bias should not be a factor in the results. For surveys that do not meet this minimum threshold, especially if the results are for use in making important decisions or if the nature of the survey might result in a particular segment of the sample not to respond, the recommended check is to examine non-respondents. Methods to check non-respondents and determine response bias include:

- interviewing non-respondents and comparing their responses against returned questionnaires;
- comparing the demographic characteristics of respondents and non-respondents and if different, discussing and interpreting the differences in the results of the study; and
- comparing responses for surveys returned at the beginning of the survey period against surveys returned at the end of the survey period, otherwise known as wave analysis (Creswell, 2009; McMillan & Schumacher, 2006).

In considering the study population, the confidential nature of the survey responses, the lack of individual or institutional attribution to any response, and the anonymity of the researcher to the respondents, the threat of response bias from any segment of the sample that did not respond is considered limited. In addition, the fact that the purpose of the study is descriptive and explanatory, and not connected to any important decision-making process, further limits concern for response bias.

Nonetheless, as a check for response bias using wave analysis, average responses for five surveys returned at the beginning of the survey period were compared against average responses for five surveys returned at the end of the survey period, using the correlation coefficient (Pearson r value) to calculate response consistency. In general, reliability is good with r values > 0.70 (McMillan & Schumacher, 2006). As shown in Table 8, wave analysis indicated that the survey had a reasonable level of response consistency between early and late respondents, indicating a low threat of response bias to the results of the study.

Table 8

Response Bias Pearson r

Statement	Items	Pearson r
All	1-46	.67347

Quantitative Results

Determination of results from respondents' inputs to the survey began with the calculation of frequency counts and percentages for each of the 46 response items across Statements 1-8 of the descriptive survey. Following calculation of frequency counts and

percentages, the next step was to apply the responses to the specific research questions they addressed.

Research Question 1.

Research Question 1 considered the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States. Statements 1 and 2 of the survey addressed this research question for the establishment (Statement 1) and maintenance (Statement 2) of same-gender public education programs.

Respondents' inputs are summarized in Table 9 and Table 10, and indicated responsibility for the establishment, and maintenance of same-gender public education programs rests predominantly at the local level, where a majority of respondents strongly agreed or agreed that the School Board, Superintendent, Principal, and PT(S)A were all proponents for the establishment and maintenance of the same-gender school.

When considering the involvement of the principal in the establishment of the same-gender education program, as shown in Table 9, 45 of 54 respondents, or 83.4 percent of respondents, strongly agreed (34/63.0%) or agreed (11/20.4%) that the principal was a key proponent for the establishment of the same-gender public education program at the school. Conversely, only three respondents, or 5.6% of respondents, disagreed (1/1.9%) or strongly disagreed (2/3.7%) that the principal was a proponent of same-gender education at the school.

Table 9

Proponents for Establishing Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Frequency/Percent					
State Legislature	14/25.9	5/9.3	24/44.4	6/11.1	5/9.3
State DoE	16/29.6	2/3.7	20/37.0	11/20.4	5/9.3
School Board	4/7.4	2/3.7	11/20.4	13/24.1	24/44.4
Superintendent	3/5.6	1/1.9	16/29.6	11/20.4	23/42.6
Principal	2/3.7	1/1.9	6/11.1	11/20.4	34/63.0
PT(S)A	2/3.7	1/1.9	19/35.2	9/16.7	23/42.6

When considering the involvement of the principal in the maintenance of the same-gender education program, as shown in Table 10, 47 of 54 respondents, or 87.1% of respondents, strongly agreed (42/77.8%) or agreed (5/9.3%) that the principal was a proponent for maintaining the same-gender public education program at the school. Conversely, only one respondent, or 1.9% of respondents, disagreed (0/0%) or strongly disagreed (1/1.9%) the principal was a proponent for maintaining the same-gender public education program at the school.

Table 10

Proponents for Maintaining Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Frequency/Percent					
State Legislature	9/16.7	3/5.6	28/51.9	8/14.8	6/11.1
State DoE	10/18.5	2/3.7	26/48.2	7/13.0	9/16.7
School Board	6/11.1	0/0.0	11/20.4	12/22.2	25/46.3
Superintendent	1/1.9	1/1.9	17/31.5	11/20.4	24/44.4
Principal	1/1.9	0/0.0	6/11.1	5/9.3	42/77.8
PT(S)A	2/3.7	0/0.0	11/20.4	8/84.8	33/61.1

Research Question 2.

Research Question 2 considered the level of knowledge of the individuals, groups, or organizations responsible for establishing same-gender public education programs on the requirements for same-gender public education in the United States. Statement 3 of the survey addressed this research question.

Respondents' inputs summarized in Table 11 indicated knowledge of the requirements for the establishment of same-gender public education programs rests predominantly at the local level, where a majority of respondents strongly agreed or agreed that the School Board, Superintendent, Principal, and PT(S)A were all knowledgeable on same-gender education. When considering the knowledge level of the principal on the requirements for same-gender public education in the United States, 45 of 54 respondents, or 83.3 percent of respondents, strongly agreed (33/61.1%) or agreed (12/22.2%) that the principal was knowledgeable on the requirements for same-gender public education in the United States. Conversely, zero respondents disagreed or strongly

disagreed the principal was knowledgeable on the requirements for same-gender public education in the United States

Table 11

Knowledge of Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Frequency/Percent					
State Legislature	1/1.9	2/3.7	31/57.4	12/22.2	8/14.8
State DoE	1/1.9	1/1.9	24/44.4	19/35.2	9/16.7
School Board	1/1.9	2/3.7	17/31.5	20/37.0	14/25.9
Superintendent	0/0.0	0/0.0	19/35.2	17/31.5	18/33.3
Principal	0/0.0	0/0.0	9/16.7	12/22.2	33/61.1
PT(S)A	0/0.0	2/3.7	25/46.3	16/29.6	11/20.4

Table 12 and Table 13 provide respondents' inputs on the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Due to the length of each category statement, for ease of review, they are broken out below, with the letter marker used in the body of the table. For the actual survey, each statement was included in its entirety in the survey body. The following categories apply for Table 12 and Table 13:

- A. Achievement for female students in STEM classes.
- B. Achievement for male students in reading and language arts.
- C. Incidence of post-pubescent sexual distractions between male students and female students.
- D. Incidence of disciplinary issues.

E. Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

Research Question 3.

Research Question 3 considered the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Statement 4 of the survey addressed this question.

Respondents' inputs summarized in Table 12 indicated the reason most put forward for establishing same-gender public education programs was to provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools (Category E). When considering the reasons for the establishment of a same-gender public education program, 50 of 54 respondents, or 92.6% of respondents, strongly agreed (38/70.4%) or agreed (12/22.2%) that Category E was a reason for the establishment of the same-gender education programs. Conversely, only three of 54 respondents, or 5.6% of respondents, disagreed (1/1.9%) or strongly disagreed (2/3.7%) that Category E was a reason for the establishment of the same-gender education programs. A majority of respondents (40 of 54 or 74.1%) also strongly agreed or agreed that additional reasons for the establishment of the same-gender public education program were:

- Category C: Incidence of post-pubescent sexual distractions between male students and female students; and
- Category D: Incidence of disciplinary issues.

Total responses of strongly agree or agree for Category A, “Achievement for female students in STEM classes,” and Category B, “Achievement for male students in reading and language arts,” as reasons for establishing same-gender public education programs, paralleled the respective number of female and male programs responding to the survey.

Table 12

Reasons for Establishing Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	Frequency/Percent				
A	9/16.7	2/3.7	5/9.3	9/16.9	29/53.7
B	22/40.7	1/1.9	9/16.7	6/11.1	16/29.6
C	4/7.4	1/1.9	9/16.7	16/29.7	24/44.4
D	2/3.7	1/1.9	11/20.4	12/22.2	28/51.9
E	2/3.7	1/1.9	1/1.9	12/22.2	38/70.4

Research Question 4.

Research Question 4 considered the requirement for the use of “scientifically based” research in the establishment and conduct of same-gender public education. Statement 5 of the survey addressed this research question.

Respondents’ inputs summarized in Table 13 indicated the use of scientifically based research in the establishment of the same-gender program. The category most identified with the use of scientifically based research was to provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools (Category E). When considering the use of scientifically based research in same-gender education, 48 of 54

respondents, or 88.9% of respondents, strongly agreed (30/55.6%) or agreed (18/33.3%) on the use of scientifically based research in the establishment of Category E same-gender education program. Further, only 2 of 54 respondents, or 3.8% of respondents, disagreed (1/1.9%) or strongly disagreed (1/1.9%) on the use of scientifically based research in the establishment of Category E same-gender education program. A majority of respondents also strongly agreed or agreed on the use of scientifically based research in the establishment of same-gender education program to:

- Reduce the incidence of post-pubescent sexual distractions between male students and female students (Category C); and
- Reduce the incidence of disciplinary issues (Category D).

Total responses of strongly agree or agree for the use of scientifically based research in the establishment of the same-gender programs for Category A, “Achievement for female students in STEM classes,” and Category B, “Achievement for male students in reading and language arts,” paralleled or slightly exceeded the respective number of female and male programs responding to the survey.

Table 13

Use of Scientifically Based Research in Establishing Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	Frequency/Percent				
A	7/13.0	1/1.9	7/13.0	16/29.6	23/42.6
B	20/37.0	1/1.9	9/16.7	9/16.7	15/27.8
C	5/9.3	1/1.9	11/20.4	13/24.1	24/44.4
D	2/3.7	1/1.9	10/18.5	20/37.0	21/38.9
E	1/1.9	1/1.9	4/7.4	18/33.3	30/55.6

Table 14 provides respondents' inputs on the use of supplementary funding in the establishment and maintenance of K-12 same-gender public education programs in the United States. Due to the length of each category statement, for ease of review, they are broken out below, with the letter marker in the body of the table. For the actual survey, each category statement was included in its entirety in the survey body. The following categories apply for Table 14:

- A. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary federal education funds.
- B. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary state education funds.
- C. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary local education funds.
- D. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary private education funds.
- E. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary federal education funds.
- F. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary state education funds.
- G. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary local education funds.
- H. Sustainment of same-gender education program(s) at my school is conditional on receipt of private education funds.

Research Question 5.

Research Question 5 considered the requirements for establishing and maintaining same-gender public education programs, to include funding, metrics, and assessments. Statements 6, 7, and 8 of the survey addressed this research question and these areas respectively.

Respondents' inputs summarized in Table 14 indicated supplementary funding, whether federal, state, local, or private, was not integral to the establishment and maintenance of same-gender public education programs. When considering the use of supplementary funding in the establishment and maintenance of same-gender public education programs across Categories A through H, a majority of respondents neither agreed nor disagreed, disagreed, or strongly disagreed on the use of supplementary funding to establish and maintain same-gender public education programs.

Table 14

Supplementary Funding for Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	Frequency/Percent				
A	19/35.2	6/11.1	14/25.9	8/14.8	7/13.0
B	19/35.2	6/11.1	16/29.6	9/16.7	4/7.4
C	18/33.3	7/13.0	15/27.8	11/20.4	3/5.6
D	17/31.5	8/14.8	16/29.6	5/9.3	8/14.8
E	18/33.3	7/13.0	14/25.9	8/14.8	7/13.0
F	18/33.3	5/9.3	12/22.2	9/16.7	10/18.5
G	16/29.6	6/11.1	13/24.1	12/22.2	7/13.0
H	13/24.1	8/14.8	15/27.8	4/7.4	14/25.9

Table 15 and Table 16 provide respondents' inputs on the use of metrics and assessments in the establishment and maintenance of K-12 same-gender public education programs in the United States. Due to the length of each category statement, for ease of review they are broken out below, with the letter marker in the body of the table. For the actual survey, each statement was included in its entirety in the survey body. The following categories apply for Table 15 and Table 16:

- A. Achievement for female students in STEM classes.
- B. Achievement for male students in reading and language arts.
- C. Incidence of post-pubescent sexual distractions between male students and female students.
- D. Incidence of disciplinary issues.
- E. Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

Respondents' inputs summarized in Table 15 supported the use of metrics to assess same-gender public education programs. Total responses of strongly agree or agree for the use of metrics to assess same-gender public education programs for Category A, "Achievement for female students in STEM classes," and Category B, "Achievement for male students in reading and language arts," paralleled the respective number of female and male programs responding to the survey. A majority of respondents also strongly agreed or agreed on the use of metrics in the assessment of same-gender public education programs under categories D, "Incidence of disciplinary issues," and Category E, "Lower income families provided the same choices in K-12

schooling that students from backgrounds that are more affluent obtain through private and parochial schools.” A majority of respondents disagreed or strongly disagreed on the use of metrics in the assessment of same-gender public education programs under Category C, “Incidence of post-pubescent sexual distractions between male students and female students.”

Table 15

Use of Metrics to Assess Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	Frequency/Percent				
A	10/18.5	4/7.4	5/9.3	15/27.8	20/37.0
B	25/46.3	3/5.6	6/11.1	9/16.7	11/20.4
C	16/29.6	13/24.1	11/20.4	9/16.7	5/9.3
D	6/11.1	4/7.4	8/14.8	20/37.0	16/29.6
E	5/9.3	3/5.6	15/27.8	12/22.1	19/35.2

Respondents’ inputs in Table 16 indicated a negative response to a requirement for the use of assessments in the continuation of same-gender public education programs. Total responses of strongly agree or agree for the use of metrics to assess same-gender public education programs for Category A, “Achievement for female students in STEM classes,” and Category B, “Achievement for male students in reading and language arts,” were approximately 25 and 20 percent below the respective number of female and male programs responding to the survey. Also, a majority of respondents neither agreed nor disagreed, disagreed, or strongly disagreed on the use of metrics in the assessment of same-gender public education programs under Category C, “Incidence of post-pubescent sexual distractions between male students and female students,” and Category D,

“Incidence of disciplinary issues.” Only Category E, “Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools,” resulted in a majority of respondents agreeing or strongly agreeing on the use of metrics in the assessment of same-gender public education programs.

Table 16

Use of Assessments for Same-Gender Public Education Programs

Category	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Frequency/Percent					
A	14/25.9	4/7.4	6/11.1	13/24.1	17/31.5
B	27/50.0	3/5.6	8/14.8	6/11.1	10/18.5
C	17/31.5	8/14.8	16/29.6	7/13.0	6/11.1
D	12/22.2	6/11.1	14/25.9	10/18.5	12/22.2
E	13/24.1	4/7.4	8/14.8	10/18.5	19/35.2

Quantitative Data Analysis.

To provide a clearer picture of the quantitative results, Likert-type responses to the 46 response items across Statements 1-8 of the descriptive survey received a numerical value. Values assigned were a 1 for “strongly disagree,” a value of 2 for “disagree,” a value of 3 “neither agree nor disagree,” a value of 4 for “agree,” and a value of 5 for “strongly agree.” This allowed for the calculation of means, medians, modes, and standard deviations to determine the overall opinion of participants on policy decisions establishing same-gender public schools.

Research Question 1.

Research Question 1 considered the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States. Statements 1 and 2 of the survey addressed this research question for the establishment (Statement 1) and maintenance (Statement 2) of same-gender public education programs.

The statistical analysis of respondents' inputs summarized in Table 17 and Table 18 confirmed responsibility for the establishment and maintenance of same-gender public education programs rests squarely with the principal of the same-gender school, where the mean, median, and mode scores for the principal equaled or exceeded the same scores for each of the five other categories. There was also the least amount of variability in the mean scores for the principal, as correlated with the lowest standard deviation score.

Table 17

Statistical Analysis: Proponents for Establishing Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
State Legislature	2.7	3.0	3.0	1.24
State DoE	2.8	3.0	3.0	1.33
School Board	3.9	4.0	5.0	1.22
Superintendent	3.9	4.0	5.0	1.15
Principal	4.4	5.0	5.0	1.01
PT(S)A	3.9	4.0	5.0	1.10

Table 18

Statistical Analysis: Proponents for Maintaining Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
State Legislature	2.9	3.0	3.0	1.16
State DoE	3.1	3.0	3.0	1.27
School Board	3.9	4.0	5.0	1.30
Superintendent	3.9	4.0	5.0	1.01
Principal	4.6	5.0	5.0	0.83
PT(S)A	4.3	5.0	5.0	1.04

Research Question 2.

Research Question 2 considered the level of knowledge of the individuals, groups, or organizations responsible for establishing same-gender public education programs on the requirements for same-gender public education in the United States. Statement 3 of the survey addressed this research question.

The statistical analysis of respondents' inputs summarized in Table 19 confirmed knowledge of the requirements for the establishment of same-gender public education programs rests primarily with the principal of the same-gender school, where the mean, median, and mode scores for the principal equaled or exceeded the same scores for each of the five other categories. There was also the least amount of variability in the mean score for the principal as correlated with the lowest standard deviation score.

Table 19

Statistical Analysis: Knowledge of Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
State Legislature	3.4	3.0	3.0	0.86
State Doe	3.1	4.0	3.0	0.85
School Board	3.9	4.0	4.0	0.94
Superintendent	3.9	4.0	3.0	0.84
Principal	4.6	5.0	5.0	0.77
PT(S)A	4.3	3.5	3.0	0.85

Table 20 and Table 21 provide respondents' inputs on the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Due to the length of each statement, for ease of review they are broken out below with a letter marker in the body of the table. For the actual survey, each statement was included in its entirety in the survey body. The following categories apply for Table 20 and Table 21:

- A. Rectify underachievement for female students in STEM classes.
- B. Rectify underachievement for male students in reading and language arts.
- C. Avoid post-pubescent sexual distractions between male students and female students.
- D. Reduce disciplinary issues.
- E. Provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

Research Question 3.

Research Question 3 considered the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Statement 4 of the survey addressed this question.

The statistical analysis of respondents' inputs summarized in Table 20 confirmed the reason put forward the most for establishing same-gender public education programs was to provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools. The mean, median, and mode scores for this category (Category E) equaled or exceeded the same scores for each of the four other categories. There was also the least amount of variability in the mean score for this category as correlated with the lowest standard deviation.

Table 20

Statistical Analysis: Reasons for Establishing Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
A	3.9	5.0	5.0	1.52
B	2.9	3.0	1.0	1.73
C	3.9	4.0	5.0	1.17
D	4.2	5.0	5.0	1.06
E	4.5	5.0	5.0	0.93

Research Question 4.

Research Question 4 considered the requirement for the use of “scientifically based” research in the establishment and conduct of same-gender public education.

Statement 5 of the survey addressed this research question.

The statistical analysis of respondents' inputs summarized in Table 21 confirmed the use of scientifically based research in the establishment of the same-gender public education programs to include:

- Rectify underachievement for female students in STEM classes;
- Avoid post-pubescent sexual distractions between male students and female students;
- Reduce disciplinary issues; and
- Provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

The median and mode scores for these categories were either 4.0 or 5.0, with the mean ranging from 3.9 to 4.4. The requirement to provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools, Category E, had the highest mean, median, and mode scores. There was also the least amount of variability in the mean score for Category E as correlated with the lowest standard deviation. Conversely, the mean, median, mode, and standard deviation scores for Category B, "Rectify underachievement for male students in reading and language arts," if examined in isolation, would incorrectly indicate a lack of scientifically based research in the establishment of same-gender public schools for this purpose.

Table 21

Statistical Analysis: Use of Scientifically Based Research in Establishing Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
A	3.9	4.0	5.0	1.35
B	2.9	3.0	1.0	1.68
C	3.9	4.0	5.0	1.26
D	4.1	4.0	5.0	1.00
E	4.4	5.0	5.0	0.86

Table 22 provides respondents' inputs on the use of supplementary funding in the establishment and maintenance of K-12 same-gender public education programs in the United States. Due to the length of each statement, for ease of review each is broken out below with a letter marker in the body of the table. For the actual survey, each category statement was included in its entirety in the survey body. The following categories apply for Table 22:

- A. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary federal education funds.
- B. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary state education funds.
- C. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary local education funds.
- D. Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary private education funds.

E. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary Federal education funds.

F. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary State education funds.

G. Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary local education funds.

H. Sustainment of same-gender education program(s) at my school is conditional on receipt of private education funds.

Research Question 5.

Research Question 5 considered the requirements for establishing and maintaining same-gender public education programs, to include funding, metrics, and assessments. Statements 6, 7, and 8 of the survey addressed this research question and these areas respectively.

The statistical analysis of respondents' inputs summarized in Table 22 confirmed the use of supplementary funding, whether federal, state, local, or private, was not integral to establishment and maintenance of same-gender public education programs. The mean, median, and modes scores across all eight categories were at 3.0 or below.

While the use of supplementary private funding in the maintenance of same-gender public education programs had the highest mean and mode scores, it also had the second highest variability in the mean score, as correlated with the second highest standard deviation.

Table 22

Statistical Analysis: Supplementary Funding for Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
A	2.6	3.0	1.0	1.43
B	2.5	3.0	1.0	1.33
C	2.5	3.0	1.0	1.30
D	2.6	3.0	1.0	1.41
E	2.6	3.0	1.0	1.42
F	2.8	3.0	1.0	1.53
G	2.8	3.0	1.0	1.42
H	2.9	3.0	3.0	1.50

Table 23 and Table 24 provide respondents' inputs on the use of metrics and assessments in the establishment and maintenance of K-12 same-gender public education programs in the United States. Due to the length of each statement, for ease of review each is broken out below with a letter marker in the body of the table. For the actual survey, each statement was included in its entirety in the survey body. The following categories apply for Table 23 and Table 24:

- A. Achievement for female students in STEM classes.
- B. Achievement for male students in reading and language arts.
- C. Incidence of post-pubescent sexual distractions between male students and female students.
- D. Incidence of disciplinary issues.

E. Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

The statistical analysis of respondents' inputs summarized in Table 23 includes:

- Category A: Achievement for female students in STEM classes;
- Category D: Incidence of disciplinary issues; and
- Category E: Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools.

These inputs confirmed the use of metrics in the assessment of same-gender public education programs with mean, median, and mode scores of 3.6 or greater, while scores for Category C, "Incidence of post-pubescent sexual distractions between male students and female students," confirmed the lack of metrics in assessing this category with mean, median, and modes scores at 2.5 or lower. Conversely, the mean, median, mode, and standard deviation scores for Category B, "Rectify underachievement for male students in reading and language arts," if examined in isolation, would incorrectly indicate a lack of metrics in the assessment of same-gender public schools for this purpose.

Table 23

Statistical Analysis: Use of Metrics to Assess Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
A	3.6	4.0	5.0	1.51
B	2.6	2.0	1.0	1.67
C	2.5	2.0	1.0	1.33
D	3.7	4.0	4.0	1.29
E	3.7	4.0	5.0	1.27

The statistical analysis of respondents' inputs in Table 24 confirmed a mostly negative response to a requirement for the use of assessments in the continuation of same-gender public education programs. While scores for categories -

- Achievement for female students in STEM classes; and
- Lower income families provided the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools

confirmed some use of assessments, with mean, median, and mode scores at 3.3 or better, the variability from the mean was at 1.61 and 1.60 for each category respectively.

In examining categories -

- Achievement for male students in reading and language arts;
- Incidence of post-pubescent sexual distractions between male students and female students; and
- Incidence of disciplinary issues;

mean, median, and mode scores were at 3.0 or lower for eight of nine scores.

Table 24

Statistical Analysis: Use of Assessments for Same-Gender Public Education Programs

Category	M	Mdn	Mo	SD
A	3.3	4.0	5.0	1.61
B	2.4	1.5	1.0	1.62
C	2.6	3.0	1.0	1.35
D	3.1	3.0	3.0	1.45
E	3.3	4.0	5.0	1.60

Qualitative Results

As this was a mixed-methods study, a qualitative method of investigation employing telephone interviews to a random sample of four respondents to the survey supplemented the quantitative data to address more fully the purpose of the study and the five research questions. The design of the interview questions was to support the quantitative survey while allowing participants to respond in any way they felt important to provide for additional detail on the decision process for establishing the same-gender education program at their school. To ensure the anonymity of respondents, no information is included in the qualitative results that could uniquely identify a particular school or respondent to any responses.

Research Question 1.

Research Question 1 considered the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States. Telephone interview Question 1 addressed this research question.

- School 1: Proponents behind the establishment of School 1 as a same-gender public school included a school psychologist, several teachers, and community members, and included future school parents as well as others that had an interest in same-gender public education. Proponents for the continuation of the same-gender education program at the school include current staff and faculty, led by the principal, as well as the parents and students.
- School 2: Proponents behind the establishment of School 2 as a same-gender public school included the founding director and the founding school board, with concurrence from the state and local educational agencies, as well as the authorizing organization.
- School 3: The establishment of School 3 as a same-gender public school was led by a single individual, who as both a teacher and the parent, saw a need for a school to serve female students, and took the opportunity to charter a school and become its founding principal to provide gender equity to female students. The system has subsequently grown to serve historically underserved male student populations as well.
- School 4: Proponents behind the establishment of School 4 were parents from the local educational district interested in alternatives in public education for their children, with support from the local educational agency and school officials.

Research Question 2.

Research question 2 considered the level of knowledge of the individuals, groups, or organizations responsible for establishing same-gender public education programs on

the requirements for same-gender public education in the United States. Telephone interview Question 2 addressed this research question.

- School 1: School 1 opened with staff and faculty having little knowledge of or training specific to same-gender education, to include no direct experience with teaching same-gender classes. Knowledge of same-gender education by staff and faculty has grown substantially since the founding of the school through “on-the-job” training.
- School 2: School 2 opened with the founding director and founding school board knowledgeable on best practices and requirements for same-gender education to the extent that state and local educational agencies, along with the authorizing agency, placed their trust in them to establish and maintain the program.
- School 3: The school founder, while starting with no background with same-gender education, used the opportunity to establish a same-gender public school to become knowledgeable on best practices and requirements for same-gender education in order to support the school proposal.
- School 4: The knowledge level on same-gender education of proponents behind the establishment of the program met the threshold level necessary to convince state and local educational agencies of the need for a same-gender public education program.

Research Question 3.

Research question 3 considered the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Telephone interview Question 3 addressed this research question.

- School 1: Reasons cited for the establishment of School 1 as a same-gender public school included improved academic performance for both male students and female students. The rationale for improved academic performance was an intuitive belief that both male students and female students feel freer to participate in academics without the distractions of the opposite sex.
- School 2: The primary reason for the establishment of School 2 as a same-gender public school was the belief that reduced distractions from the opposite sex would result in improved academic performance, especially for female students.
- School 3: The reason stated for the establishment of School 3 as a same-gender public school was to provide an environment for female students to reach their full potential across the entire range of the curriculum free from distractions from the opposite sex. The establishment of School 3 as a same-gender education program was also to address an education system that valued male students over female students.
- School 4: The reason behind the establishment of the school was agreement amongst a large group of parents in reviewing literature on same-gender education that there are inherent differences in the learning styles between male students and female students that only same-gender education can meet.

Research Question 4.

Research question 4 considered the requirement for the use of “scientifically based” research in the establishment and conduct of same-gender public education.

Telephone interview Question 4 addressed this research question.

- School 1: Since its founding, the staff and faculty of School 1 are more aware of the literature and research behind the reasons for same-gender education, but did not specify any particular research.
- School 2: School 2 offered that they are facing challenges to the same-gender program at the school from the local educational agency and authorizing organization because of concerns with meeting qualifying standards because of a lack of understanding of requirements for same-gender public education programs.
- School 3: School 3 is confident that they are using best practices for same-gender education through local research of studies on same-gender education. The research addresses educational needs for both male students and female students.
- School 4: School 4 has invested in extensive training for both staff and faculty in same-gender education to understand better the benefits, risks, and possible unintended consequences of same-gender public education, while recognizing there are innumerable reasons why students at the school may outperform contemporaries other than just the nature of same-gender education.

Research Question 5.

Research questions 5 and 6 considered the requirements for establishing and maintaining same-gender public education programs, to include funding, metrics, and assessments. Telephone interview Question 5 addressed this research question.

- School 1: School 1 receives no additional funding from the government or private donors to support the same-gender program. With the exception of a yearly survey to determine the impressions of parents and students on the outcomes of the same-gender program, no formal metrics are in place and the school does not conduct any official assessments of the program.
- School 2: School 2 receives no additional funding from the government specific to the same-gender program, but it does receive approximately \$40,000 dollars annually in private funding. School 2 has just this year developed formal metrics to complete an annual assessment at the end of the school year on the performance of their students as compared to a co-educational environment. Nonetheless, staff and faculty intuitively believe in the benefits of the same-gender program, and parents and students are more than satisfied with the outcomes.
- School 3: School 3 receives no additional funding specific to the same-gender nature of the school. School 3 uses standard school metrics and assessments to compare their school performance against the performance of similar schools, both same-gender and coeducational, locally, statewide, and nationally.
- School 4: School 4 receives no additional government funding to support the same-gender education program, but it does receive private donations to support

school infrastructure. In the way of metrics and assessments, School 4 understands there is more to same-gender education than just separating students in different schools or classrooms. School 4 is working on developing metrics and assessments, both quantitative and qualitative, to measure the success of the same-gender program, but the process is challenging due to trying to separate any benefits from the same-gender program from other factors such as parental interest and support, socio-economic factors, voluntary nature of attendance at the school. The key metric of the success of the program at this time is the number of potential students turned away each year due to the physical limitations of the school building.

Summary

The results of the study, both quantitatively and qualitatively, indicate proponents for the establishment and maintenance of same-gender public education programs include local education officials, school faculty and staff, and parents. The results also indicate that local education officials, school faculty and staff, and parents are knowledgeable on the requirements for the establishment and maintenance of same-gender public education programs.

The results further indicate a majority of the respondents support multiple reasons for the establishment of same-gender public education programs, and these respondents are of the opinion the use of scientifically based research supports the establishment of same-gender public schools. Respondents did not however support statements on the use of public and private funding in the establishment and maintenance of the same-gender public education programs.

When considering the use of federal, state, local, or private funding in the establishment and maintenance of same-gender public education programs, a majority of respondents to the survey reported no use of supplementary federal, state, local, or private funds in the establishment and maintenance of the same-gender public education programs. Responses from participants in the telephone interview mirrored this position.

On the use of metrics to assess same-gender public education programs, respondents provided mixed responses. Slight majorities concurred with the use of metrics in the assessment of same-gender public education programs on the issues of underachievement for female students in STEM, improving discipline, and on providing lower income students greater choice in education. Conversely, slight majorities did not concur on the use of metrics in the assessment of same-gender public education programs on issues of underachievement for male students in reading and language arts and avoidance of post pubescent sexual distractions between male students and female students.

Finally, on the use of assessments in the continuation of the same-gender public education program, respondent inputs indicated a neutral to negative response for this requirement. A majority of respondents strongly agreed or agreed on the use of assessments on the issues of underachievement for female students in STEM classes and on providing lower income students greater choice in education. Conversely, a majority of respondents did not agree that on the use of assessments on the issues of underachievement for male students in reading and language arts, avoidance of post pubescent sexual distractions between male students and female students, and on improving discipline.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A descriptive, cross-sectional survey to the principals of 92 K-12 same-gender public schools in the United States informed this study on same-gender public education. The survey included eight statements on the same-gender public education program at their school. Each statement employed a series of Likert-type response options to obtain information on the decision to establish a same-gender education program at their school, with five to eight possible responses per statement, for 46 total responses. As this was a mixed-methods study, a qualitative method of investigation employing telephone interviews to a random sample of four respondents to the survey supplemented the quantitative data to address more fully the purpose of the study and the five research questions. This chapter summarizes the study and the findings of the study, presents conclusions, and provides recommendations for future research on same-gender public education in the United States.

Summary of the Study

The NCLB, with its emphasis on greater choice and flexibility for parents and students in K-12 public education, to include the provision for same-gender schools and classrooms (P. L. 107-110, 2001), led to a resurgence of same-gender public schools and classrooms in the United States. This resurgence occurred despite a research base on same-gender education, both in the United States and internationally, that presents conflicting evidence and mixed-perspectives on the outcomes of same-gender education programs to improve academic achievement or attainment for male students or female students. As a result, public policy decisions by state and local educational agencies to

establish same-gender public education programs, no matter how well intentioned, and irrespective of the provisions for same-gender schools and classrooms within NCLB, can be left open to questions on the rationales, justifications, and resources behind such decisions.

The purpose of the study then was to describe and explain the who, the what, the why, and the how behind policy decisions by local educational agencies to establish, maintain, and measure same-gender public education programs. Specifically, the purpose of this study was to determine under what bases and circumstances local educational agencies established same-gender public education programs, to include proponents, rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. The study also investigated if local school systems referenced “scientifically based” research to guide educational practice and new policy decisions on same-gender public schools.

The study began with an extensive review of the literature, both from the United States and internationally, on same-gender education. The review of the literature informed the development of the research questions and facilitated the identification of same-gender public schools in the United States. The research questions that guided this study are:

RQ₁: Who are the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States?

RQ₂: Were the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs knowledgeable on requirements for same-gender public education programs in the United States?

RQ₃: What were the reasons put forward for establishing K-12 same-gender public education programs in the United States?

RQ₄: Were the identified proponents of K-12 same-gender public education in the United States knowledgeable of “scientifically based” research on same-gender public education programs?

RQ₅: How are same-gender public education programs in the United States established and maintained?

Following the review of the literature, this non-experimental, mixed methods study investigated decisions by local educational agencies to establish same-gender public education programs. The population for this study was the principals of 92 K-12 public schools in the United States with an identified same-gender education program. For a K-12 public school to be included in the study, the establishment of the same-gender program must have occurred following enactment of NCLB, as well as having to meet one of the following three criteria:

- be a same-gender campus; or
- be a co-ed campus, but students have all (or mostly all) of their academic activities in same-gender classroom setting; or
- be a distinct same-gender “academy” within a larger co-ed school, with students in the academy having all (or mostly all) of their academic activities in same-gender classroom settings.

The principals of these schools received the survey on same-gender public education. The survey included questions on -

- proponent(s) behind decisions to establish and maintain same-gender public education program(s);
- proponents knowledge of same-gender public education programs;
- bases for policy decisions to establish same-gender public education program(s);
- adherence to NCLB requirement for use of “scientifically based” research to guide educational practice and new policy decisions;
- requirement for supplemental federal, state, local, or private funding to establish and maintain same-gender education program(s); and
- requirement for use of metrics to assess the success of same-gender education program(s) in improving student academic achievement and attainment, as well as for the continuation of the same-gender education program(s).

As this was a mixed-methods study, a qualitative method of investigation employing telephone interviews to a random sample of four respondents to the survey supplemented the quantitative data to address more fully the purpose of the study and the five research questions.

Summary of the Findings

Research Question 1.

Research Question 1 considered the individuals, groups, or organizations responsible for establishing K-12 same-gender public education programs in the United States. Statements 1 and 2 of the survey addressed this research question for the establishment and maintenance of same-gender public education programs.

Respondents’ inputs from the survey and telephone interviews indicated responsibility for the establishment and maintenance of same-gender public education

programs rests predominantly at the local level, and primarily with the principal of the same-gender school. When considering the involvement of the principal in the establishment and maintenance of the same-gender education program, a majority of respondents strongly agreed or agreed that the principal was the proponent for the establishment and maintenance of the same-gender public education program at the school. A majority of respondents also strongly agreed or agreed that the school board, the school superintendent, and the school PT(S)A were also proponents for the establishment and maintenance of the same-gender public education program at the school, although to lesser extents than the principal.

Research Question 2.

Research Question 2 considered the level of knowledge of the individuals, groups, or organizations responsible for establishing same-gender public education programs on the requirements for same-gender public education in the United States. Statement 3 of the survey addressed this research question.

Respondents' inputs from the survey and telephone interviews indicated knowledge of the requirements for the establishment of same-gender public education programs rests predominantly at the local level, and primarily with the principal of the same-gender school. When considering the knowledge level of the principal on the requirements for same-gender public education in the United States, a majority of respondents strongly agreed or agreed that the principal was knowledgeable on the requirements for same-gender public education in the United States. A majority of respondents also strongly agreed or agreed that the school board, the school superintendent, and the school PT(S)A were also knowledgeable on the requirements for

same-gender public education in the United States, although to lesser extents than was the principal.

Research Question 3.

Research Question 3 considered the reasons put forward for the establishment of the K-12 same-gender public education programs in the United States. Statement 4 of the survey addressed this question.

Respondents' inputs from the survey indicated the reason most put forward for the establishment of the same-gender education program was to provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools. A majority of respondents also strongly agreed or agreed that avoiding post-pubescent sexual distractions between male students and female students, and reducing disciplinary issues were also reasons for the establishment of the same-gender education program. Responses of strongly agree or agree for achievement for female students in STEM classes and achievement for male students in reading and language arts as reasons for establishing same-gender public education programs paralleled the respective number of female and male programs responding to the survey.

Respondents' inputs from the telephone interviews centered on reduced distractions in the classroom, especially to the benefit of female students, with the absence of interactions between male students and female students, as the key reason for establishing a same-gender education program.

Research Question 4.

Research Question 4 considered the requirement for the use of “scientifically based” research in the establishment and conduct of same-gender public education.

Statement 5 of the survey addressed this research question.

Respondents’ inputs from the survey and telephone interviews generally agreed on the use of scientifically based research in the establishment and maintenance of the same-gender program. When considering the possible reasons for the establishment of a same-gender public education program, a majority of respondents strongly agreed or agreed on the use of scientifically based research in the establishment of the same-gender public education program on the issues of -

- Avoidance of post-pubescent sexual distractions between male students and female students;
- Improving discipline; and
- Providing lower income students greater choice in education.

Total responses of strongly agree or agree for the use of scientifically based research in the establishment of the same-gender programs for achievement for female students in STEM classes and achievement for male students in reading and language arts, paralleled or slightly exceeded the respective number of female and male programs responding to the survey.

Research Question 5.

Research Question 5 considered the requirements for establishing and maintaining same-gender public education programs, to include funding, metrics, and assessments.

Statements 6, 7, and 8 of the survey addressed this research question and these areas respectively.

Respondents' inputs from the survey and telephone interviews indicated supplementary funding, whether federal, state, local, or private, was not integral to the establishment and maintenance of same-gender public education programs. When considering the use of federal, state, local, or private funding in the establishment and maintenance of same-gender public education programs, a majority of survey respondents neither agreed nor disagreed, disagreed, or strongly disagreed that supplementary funding from any source was required in the establishment and maintenance of same-gender public education programs. Respondents in the telephone interviews were in full agreement on the lack of any supplementary funding to support the same-gender education programs.

On the question of the use of metrics to assess same-gender public education programs, respondent inputs to the survey supported the use of metrics to assess same-gender public education programs, while responses to the telephone interviews were less definitive. On the question of the use of assessments in the continuation of the same-gender public education program, respondents' inputs from both the survey and telephone interviews indicated a negative response for this requirement.

Limitations of the Findings

As the study was limited to K-12 public schools in the United States with an identified same-gender education program, findings of the study are limited to schools that meet the boundaries for inclusion in the study. For a school to be included in the

study, the establishment of the same-gender program must have occurred following enactment of NCLB, as well as having to meet one of the following three criteria

- be a same-gender campus; or
- be a co-ed campus, but students have all (or mostly all) of their academic activities in same-gender classroom setting; or
- be a distinct same-gender “academy” within a larger co-ed school, with students in the academy having all (or mostly all) of their academic activities in same-gender classroom settings.

As such, it is not possible to generalize the findings of the study to K-12 public schools in the United States that offer some level of same-gender classes within a larger coeducational curriculum.

The findings of the study are further limited as the received number of 54 responses did not reach the necessary threshold of 74 responses to achieve the desired 95% confidence level and 5% confidence interval (i.e., margin of error) to generalize the results of the survey sample to the study population. With 54 responses, and maintaining a 95% confidence level, the result is a confidence interval of 8.62%. Conversely, with 54 responses, and maintaining a 5% confidence interval, the result would be a confidence level of less than 80%. One identified factor that can limit the results from a study with an insufficient survey sample size is the problem of response bias.

Response bias.

Response bias may result if a percentage of the survey sample does not return a completed survey, and it refers to the possibility that inclusion of these questionnaires would alter the survey results (Creswell, 2009; McMillan & Schumacher, 2006). The

potential for response bias is inversely proportional to sample size and response rate. For surveys with a sample size of at least 200 and a response rate of 70 percent or greater, response bias should not be a factor in the results. For surveys that do not meet this minimum threshold, especially if the results are for use in making important decisions or if the nature of the survey might result in a particular segment of the sample not to respond, the recommended check is to examine non-respondents. Methods to check non-respondents and determine response bias include:

- interviewing non-respondents and comparing their responses against returned questionnaires;
- comparing the demographic characteristics of respondents and non-respondents and if different, discussing and interpreting the differences in the results of the study; and
- comparing responses for surveys returned at the beginning of the survey period against surveys returned at the end of the survey period, otherwise known as wave analysis (Creswell, 2009; McMillan & Schumacher, 2006).

As a check for response bias using wave analysis, average responses for five surveys returned at the beginning of the survey period were compared against average responses for five surveys returned at the end of the survey period using the correlation coefficient (Pearson r value) to calculate response consistency. In general, reliability is good with r values > 0.70 (McMillan & Schumacher, 2006). While wave analysis indicated that the survey had a reasonable level of response consistency between early and late respondents with a Pearson r value of .67347, the small (less than 200) sample size, and low (less than 70 percent) response rate, both leave response bias as a threat to

the results of the study. While the parameters of the study bound the study population and thereby the study sample size resulting in the small (less than 200) sample size, there is no similar, readily identifiable reason for the low response rate.

Response rate.

Lacking a readily identifiable reason for the low response rate to the survey on same-gender public education, it was decided to consider issues such as survey length, survey period length, school demographics, gender of survey participants and non-participants, and attribution concerns as possible reasons for the low response rate. As the development of the survey considered length and respondent fatigue (and subsequent response quality) in the design, and as the survey pilot test verified time to complete the survey at 10 minutes or less, survey length is not a reason considered for the low response rate.

Following the initial distribution of the survey, nine follow-on attempts over a six-month period to solicit non-respondent principals of same-gender public schools to provide a positive response to the survey, either via the online survey tool or through the U. S. Postal Service, to include supporting telephone follow-ups, were completed. For that reason, the length of the survey period, i.e., a limited opportunity to complete the survey, is not a reason considered for the low response rate.

The 92 same-gender public schools in the survey are primarily charter or magnet schools located mostly in medium to large urban areas and serving mainly minority student populations. Due to the homogeneous nature of the same-gender public schools included in the survey, school demographics is not a reason considered for the low response rate.

Fifty-eight of the 92 same-gender public schools included in the study are part of a larger network of charter or magnet schools, where the network can be within a single local educational agency or range across multiple local educational agencies. With multiple instances where principals from one or more schools within a network responded to the survey while other principals from one or more schools within the same network did not respond to the survey, being a network school is not a reason considered for the low response rate.

In examining the 38 schools that did not provide a response to the survey, an overall 41 percent negative response rate, 30 did not provide any response, and eight responded by formally opting out of the survey. Of these 38 schools, female principals headed 11 schools and male principals headed 27 schools. In comparison to the 54 same-gender public schools included in the survey headed by female principals and the 38 same-gender public schools included in the surveyed headed by male principals, the overall negative response rate is 20 percent (11 of 54) for female principals and 71 percent (27 of 38) for male principals. As a result, the negative response rate of male principals is a reason considered for the low response rate.

Challenges by the ACLU to same-gender public education programs have resulted in the end of same-gender public education programs in multiple localities (NASSPE, 2011; Zubrzycki, 2012). As the ACLU continues to contest USDOE regulations supporting same-gender public education as exceeding Title IX regulations (Zubrzycki, 2012), concerns of school administrators to legal challenges to existing same-gender public education programs are understandable. Notwithstanding assurances to the confidential nature of participant responses to the study as provided in Appendices E, G,

H, and I, attribution of participant responses and the potential for legal challenges to same-gender public education programs is a reason considered for the low response rate.

Conclusions

The No Child Left Behind (NCLB) Act of 2001, with its emphasis on greater choice and flexibility for parents and students in public education, to include the provision for same-gender public schools and classrooms, led to resurgence in same-gender public education in the United States. Notwithstanding the fact the study identified areas of retrenchment over the last several years in the number of public schools in the United States offering same-gender educational programs (Rex & Caldwell, 2009; Zubrzycki, 2012), same-gender education will continue as an option in K-12 public education excepting changes to The No Child Left Behind Act of 2001 (P. L. 107-110).

The continuation of same-gender public education though will have to be despite rather than because of any overt federal or state support for same-gender public education. The lack of federal or state support to same-gender public education programs is evidenced in the absence of federal or state databases, information sites, or support programs specific to same-gender public education, such as the former South Carolina Office of Single-Gender Initiatives (Klein, 2012; Rex & Chadwell, 2009). Continuation of same-gender public education will also have to overcome challenges from opponents who argue:

- separation by gender in public education is equivalent to separation by race;
- same-gender public education is a rollback of Title IX gains for females; and

- current research does not support same-gender education as a means, of and by itself, to improve academic achievement or attainment for male students or female students (Bracey, 2007; Friend, 2006; Friend, 2007).

At a minimum, same-gender education programs that do not comply with federal regulatory and statutory guideline on same-gender public education, specifically the five qualifying provisions, can be subject to legal challenges to the continuation of the program (NASSPE, 2011; Zubrzycki, 2012).

In accordance with 34 CFR 106 and changes to Title IX, for classes and activities, federal regulations allow non-vocational elementary, middle, or secondary schools to provide non-vocational same-gender classes or extracurricular activities if they meet five qualifying provisions:

1. They substantially relate to the achievement of an important objective such as improving the academic achievement of students, providing diverse educational opportunities, or meeting the particular, identified needs of students.
2. Local Educational Agencies implement the objective in an evenhanded manner, which may require the provision of an equal same-gender class or activity for the opposite gender.
3. Student enrollment in the same-gender class or activity is voluntary.
4. The recipient provides to all other students, including students of the opposite gender, an equal coeducational class or extracurricular activity in the same subject or activity.

5. The recipient conducts a review every two years to maintain that the basis of the program is not generalizations regarding the abilities, talents, or preferences of either gender.

The review should also determine whether same-gender classes are still necessary to remedy the previous inequity. (34 CFR 106. 34(b))

As noted, failure to address the qualifying provisions sufficiently during the establishment or maintenance of the same-gender public education program can result in legal challenges and legal risks to the continuation of the program (NASSPE, 2011; Zubrzycki, 2012). With the results of the study indicating responsibility for, knowledge of, and interest in same-gender public education rests predominantly with local educational agencies and the same-gender public schools, and lacking other support, it then becomes the responsibility of local educational agencies and same-gender public schools to ensure same-gender public education programs meet necessary federal qualifying provisions.

Meeting necessary federal guidelines though may not be enough in itself to insulate same-gender public education from questions on and challenges to the rationales, justifications, resources, and metrics behind decisions to establish and maintain same-gender public education programs. The conflicting evidence and mixed-perspectives on the outcomes of same-gender education programs, to include the lack of standardized data on achievement for students in same-gender public education programs versus co-educational programs and the lack of federal or state support all present an uncertain future for existing or potential same-gender public education programs in the United States.

Recommendations

State educational agencies.

In recognition of the provisions within the No Child Left Behind Act of 2001 for same-gender public education programs, as well as changes to 34 CFR 106 and Title IX to facilitate implementation of same-gender public schools, each state educational agency establish and maintain information sites on the provisions of same-gender public education as authorized by NCLB 2001. The establishment of information sites on same-gender public education should be irrespective of the absence or presence of same-gender public education programs in the state.

Information on same-gender public education could include information on federal and state policies on same-gender public education, list local educational agencies with established same-gender public education programs, and provide a listing, by local educational agency, of same-gender public education programs in the state. The state educational agency could also establish standards and templates for how local educational websites provide information on same-gender education programs.

Local educational agencies.

Local educational agencies establish information sites on the provisions of same-gender public education as authorized by NCLB 2001. As with state educational agencies, the establishment of an information site on same-gender public education should be irrespective of the absence or presence of same-gender public education programs within the local educational agency. The information site should clearly identify schools within the local educational agency with same-gender education programs. The list of same-gender public education programs should identify the type of

same-gender program at each school by gender, grade, and class. The list should also indicate whether the program is at a same-gender school or a coeducational school that offers targeted same-gender classes. The local educational agency should also establish standards and templates for individual school websites to provide similar and complimentary information on same-gender education programs.

Future Studies

1. A recommendation for a study on same-gender public education is to examine changes in standardized test scores for students in same-gender public education programs versus traditional co-educational programs.

2. A recommendation for a second study on same-gender public education in the United States is an examination of the growth, decline, and future status of same-gender public education in South Carolina. From a peak of 232 same-gender public education programs in the 2009-2010 school year, the program decreased to 129 same-gender public education programs for the 2011-2012 school year, and to just 69 same-gender public education programs for the 2012-2013 school year (Rex & Caldwell, 2009; Zubrzycki, 2012) . For a state that once demonstrated a deliberate focus on implementing same-gender public education, to include an Office of Single-Gender Initiatives, a study on the retrenchment in the number of same-gender public education programs in South Carolina over a relatively short time period should serve as a cautionary tale for existing and planned same-gender public education programs. As such, a study on the growth, decline, and future status of same-gender public education in South Carolina is relevant, timely, and warranted.

3. A recommendation for a third study on same-gender public education is to reexamine the same-gender public schools listed in Appendix B within one to two years to identify any changes to the same-gender nature of the school. The study should incorporate a similar mixed-method design but with survey and interview questions reworked to verify reliability of original responses. Options include changing the order of the response alternatives, reword the statements and responses without changing the meaning, or use a differently styled survey template. As one example, edit the study survey from 8 statements with 46 total responses to 46 individual statements.

The study should expand to include additional descriptive information such as school population, school type (charter, magnet, traditional), and faculty and student demographic information in the study. The study could also expand data collection beyond just the school principal, to include the head of the state educational agency, school superintendent, targeted faculty (by curriculum), and the leadership of the PT(S)A. The study should also focus increased attention on the 38 schools that did not participate in the first study.

In view of the somewhat tenuous nature of same-gender public education programs as evidenced by the 70 percent decrease in the number of same-gender public education programs in South Carolina since the 2009-2010 school year, a follow-on study to re-examine existing same-gender public schools after one to two years is relevant, timely, and warranted.

4. A recommendation for a fourth study on same-gender public education would be to identify any correlations between same-gender public education funding levels and sources of funding, and the success or failure of same-gender public education programs.

In spite of the potential costs involved with the establishment of same-gender public schools and classrooms, and considering the significant growth in same-gender public education schools and classrooms following passage of NCLB 2001, literature on the costs of establishing and maintaining same-gender public education programs, as well as the source(s) of the funding is lacking. An additional financial consideration in establishing and maintaining same-gender public education programs also not found in the literature are specific costs incurred in defending a same-gender public education program against legal challenges (Cable & Spradlin, 2008; Klein, 2012; NASSPE, 2011).

Absent detailed studies on the costs of establishing and maintaining same-gender public education programs, school administrators may see the establishment of same-gender schools and classrooms as cost neutral, with the only requirement to establish same-gender schools or classrooms being to just separate students by gender and reassign teachers (Cable & Spradlin, 2008). This appears to have been the case with the establishment of many of the same-gender public schools and classrooms in South Carolina following enactment of NCLB 2001, with a resultant retrenchment in the number of public schools in South Carolina offering same-gender education programs from a high of 232 in 2009-2010 to 69 in 2012-2013 (Rex & Chadwell, 2009; Zubrzycki, 2012).

In 2009, Jim Rex, former South Carolina Superintendent of Education, and David Chadwell, former coordinator of same-gender programs for South Carolina Department of Education, specifically emphasized the low cost of establishing same-gender public education programs in an article on same-gender public education in South Carolina (Rex & Chadwell, 2009). Three years later, and just months removed from his position

as coordinator of same-gender public education programs for South Carolina, Chadwell cited the increased expense of same-gender public education programs as a cause for the decline in the number of same-gender public schools in South Carolina from a high of 232 in 2010 to 129 in 2011 (Zubrzycki, 2012). The number of same-gender public schools in South Carolina subsequently dropped to 69 for the 2012-2013 school year.

Cable and Spradlin (2008) and Klein (2012) further addressed the issue of the costs involved with the establishment of same-gender public schools, citing the statutory requirement that the recipient provide to all other students, including students of the opposite gender, an equal coeducational class or extracurricular activity in the same subject or activity. The requirement to assure that all facilities and resources are equitable for both male students and female students across same-gender and co-educational facilities may require additional schools, classrooms and educators, along with the attendant costs, especially in smaller schools or school districts (Cable & Spradlin, 2008; Klein, 2012). In view of the above, a study to determine the potential costs and financial liabilities of establishing and maintaining K-12 same-gender public education programs is relevant, timely, and warranted.

REFERENCES

- American Council for Co-Educational Schooling (2014). Retrieved from <https://thesanfordschool.asu.edu/acces/>.
- Ashcraft, C. (2004). 'It's just semantics?': Investigating a school district's decision to respect or value diversity. *International Journal of Qualitative Studies in Education*, 17(5), 685-706.
- Billger, S. M. (2009). On reconstructing school segregation: The efficacy and equity of single-sex schooling. *Economics of Education Review*, 28, 393-402.
- Bracey, G. (2007). The success of single-sex education is still unproven. *The Education Digest*, 22-26.
- Brake, D. (1999). A legal framework for single-sex education. *Women's Educational Equity Act Digest*, October.
- Brown, F., & Russo, C. J. (1999). Single-sex schools, the law, and school reform. *Education and Urban Society*, 31(2), 144-157. doi: 10.1177/0013124599031002002
- Brown v. Board of Educ., 347 U.S. 483 (1954).
- Brunner, C., & Bennett, D. (1997). Technology and gender: Differences in masculine and feminine views. *NASSP Bulletin 1997 –Technology and Learning*, 81, 46-51.
- Brutsaert, H., & Van Houtte, M. (2004). Gender context of schooling and levels of stress among early adolescent pupils. *Education and Urban Society*, 37(1), 58-73.
- Burnett, E., Jr. (2007). Applying a holistic decision-making model to priorities in school reform. *Catalyst for Change*, 35(1), 31-42.

- Cable, K. E., & Spradlin, T. E. (2008). Education policy brief: Single-sex education in the 21st century. *Center for Evaluation & Education Policy*, 6(9), 1-11.
- Carr-Chellman, A. A., Marra, R. M., & Roberts, S. L. (2002). Round girls in square computers: Feminist perspective on the aesthetics of computer hardware. *Tech Trends*, 46(6), 3-63.
- Civil Rights Data Collection (2014). Retrieved from <http://ocrdata.ed.gov/>.
- Clark, I. (2004). Co-education and gender: The end of the experiment? *Education Policy Analysis Archive*, 12(41), 1-20.
- Clark, M. A., Lee, S. M., Goodman, W., & Yacco, S. (2008). Examining male underachievement in public education: Action research at a district level. *NASSP Bulletin* 2008, 92, 111-132. doi: 10.1177/0192636508321155
- Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed-methods approaches*. Thousand Oaks, CA: Sage.
- Crombie, G., Arbaranel, T., & Anderson, C. (2000). Bridging the gender gap in high-technology education. *NASSP Bulletin* 2000, 84, 64-73.
- Datnow, A., Hubbard, L., & Woody, E. (2001). Is single-gender schooling viable in the public sector? Lessons from California's pilot program-final report. New York: Ford Foundation.
- Ding, N. & Harskamp, E. (2006). How partner gender influences female students' problem solving in physics education. *Journal of Science Education and Technology*, 15(5), 331-343. doi: 10.1007/s10956-006-9021-7
- Durost, R. A. (1996). Single sex math classes: What and for whom? One's school's experiences. *NASSP Bulletin 1996 – Science Education*, 80, 27-31.

- Equal Opportunity Act of 1974, 20 U.S.C. § 1701 et seq. (1974).
- Fennema, E., Carpenter, T. P., Jacobs, V. R., Franke, M. L., & Levi, L. W. (1998). New perspectives on gender differences in mathematics: A reprise. *Educational Researcher*, June-July, 19-21. doi: 10.3102/0013189x027005019
- Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R. (2004). *Program evaluation: Alternative Approaches and Practical Guidelines*. Boston, MA: Pearson Education.
- Friend, J. (2006). Research on same-gender groupings in eighth grade science classrooms. *Research in Middle Level Education Online*, 30(4), 1-15.
- Friend, J. (2007). Single-gender public education and federal policy: Implications of gender-based school reforms in Philadelphia. *American Educational History Journal*, 34(1), 55-67.
- Garrett v. Board of Education of the School District of Detroit., 775 F. Supp. 1004 (1991).
- Gewertz, C. (2007). Black boys' educational plight spurs single-gender schools. *Education Week*, 26(42), 1-13.
- Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2008). Effects of single-sex coeducational schooling on the gender gap in educational achievement. *Australian Journal of Education*, 52(3), 310-317.
- Gilson, J. E. (1999). Single-gender education versus coeducation for girls: A study of mathematics achievement and attitudes toward mathematics of middle-school students. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada, April 1999.

- Gray, C., & Wilson, J. (2006). Teacher's experiences of a single-sex initiative in a co-education school. *Educational Studies*, 32(3), 285-298.
- Herr, K., & Arms, E. (2004). Accountability and same-sex schooling: A collision of reform agendas. *American Educational Research Journal*, 4(3), 527-555. doi: 10.3102/00028312041003527
- Hoffman, B. H., Badgett, B. A., and Parker, R. P. (2008). The effect of single-sex instruction in a large, urban, at-risk high school. *The Journal of Educational Research*, 102(1), 15-35.
- Howes, A., & Kaplan, I. (2004). A school responding to its cultural setting. *Improving Schools*, 7(1), 35-48.
- Hubbard, L., and Datnow, A. (2005). Do single-sex schools improve the education of low-income and minority students? An investigation of California's public single-gender academies. *Anthropology and Education Quarterly*, 36(2), 115-131.
- Hughes, T. A. (2007). The advantages of single-sex education. *National Forum of Educational Administration and Supervision Journal*, 23(2), 5-14.
- International Boys' Schools Coalition (2014). Retrieved May 11, 2014, from <http://www.theibsc.org/>.
- Jackson, C. K., (2012). Single-sex schools, student achievement, and course selection: Evidence from rule-based student assignments in Trinidad and Tobago. *Journal of Public Economics*, 96, 173-187.
- Jackson, C., & Bisset, M. (2005). Gender and school choice: factors influencing parents when choosing single-sex or co-educational independent schools for their children. *Cambridge Journal of Education*, June, 35(2), 195-211.

- Jimenez, E. & Lockheed, M. E. (1989). Enhancing girl's learning through single-sex education: Evidence and a policy conundrum. *Educational and Policy Analysis*, 11(117), doi: 10.3102/01623737011002117
- Kaplan, L. S., & Owings, W. A., (2011). *American education: Building a common foundation* Belmont, CA: Wadsworth, Cengage Learning, pp. 87-104, 312.
- Karp, K. & Shakeshaft, C. (1997, February). Restructuring schools to be math friendly to females. *NASSP Bulletin 1997-Math Education*, 81, 84-93.
- Karpiak, C., Buchanan, J., Hosey, M., & Smith, A. (2007). University students from single-sex and coeducational high schools: differences in majors and attitudes at a Catholic University. *Psychology of Women Quarterly*, 31, 282-289.
- Kasic, A. (2008, October). *Title IX and single-sex education* (Position Paper No. 613). Washington, DC: Independent Women's Forum.
- Keddie, A., & Mills, M. (2009). Disrupting masculinized spaces: teachers working for gender justice. *Research Papers in Education*, 24(1), 29-43.
- Kessels, U. & Hannover, B. (2008). When being a girl matters less: accessibility of gender-related self-knowledge in single-sex and coeducational classes and its impact on students' physics-related self-concept of ability. *British Journal of Educational Psychological*, 78, 273-289.
- King, K., Gurain, M., & Stevens, K. (2010). Gender-friendly. *Educational Leadership*, 68(3), 38-42.
- Klein, S. S., & Ortman, P. E. (1994). Continuing the journey toward gender equity. *Educational Researcher*, 23(13), 13-21. doi: 10.3102/0013189X023008013

- Klein, S. S. (2012). State of public school sex segregation in the United States 2007-2010. *Feminist Majority Foundation*. Retrieved March 9, 2012, from <http://www.feminist.org/>.
- Klein, S. S. (1987). The role of public policy in the education of girls and women. *Educational Evaluation and Policy Analysis*, 9(3), 219-230. doi: 10.3102/01623737009003219
- Kommer, D. (2006). Boys and girls together. A case for creating gender-friendly middle school classrooms. *The Clearing House*, 79(6), July/August, 247-251.
- Lenroot, R., Gogtay, N., Greenstein, D., Well, E., Wallace, G., Clasen, L., et al. (2007). Sexual dimorphism of brain developmental trajectories during childhood and adolescence. *NeuroImage*, (36), 1065-1073.
- LePore P. C., & Warren, J. R. (1997). A comparison of single-sex and coeducational Catholic secondary schooling: evidence from the National Educational Longitudinal Study of 1988. *American Educational Research Journal*, 34(3), 485-511.
- Linn, M. C., & Hyde, J. S. (1989, November). Gender, mathematics, and science. *Educational Researcher*, 18(8), 17-19, 22-27.
- Lloyd, C., Mensch, B., & Clark, W. (2000). The effects of primary school quality on school dropout among Kenyan girls and boys. *Comparative Education Review*, 44(2), 113-147.
- Logsdon, E. (2003). "No Child Left Behind" and the promotion of single-sex public education in primary and secondary schools: shattering the glass ceilings perpetuated by coeducation. *Journal of Law and Education*, 32(2), 291-296.

- Malacova, E. (2007). Effect of single-sex education on progress in GCSE. *Oxford Review of Education*, 33(2), 233-259.
- Mael, F. (1998). Single-sex and coeducational schooling: Relationships to socioemotional and academic development. *Review of Educational Research*, 68(2), 101-129.
- Magnet Schools of America. (2014). Retrieved from www.magnet.edu.
- Manger, T., & Gjestad, R. (1997). Gender differences in mathematical achievement related to the ratio of girls to boys in school classes. *International Review of Education*, 43(2/3), 193-201.
- Martino, W., Mills, M., & Lingard, B. (2005). Interrogating single-sex classes as a strategy for addressing boys' educational and social needs. *Oxford Review of Education*, 31(2), 237-254.
- McMillan, J., & Schumacher, S. (2006). *Research in education: evidence-based inquiry*. Boston, MA: Pearson Education.
- McNeil, M. (2008). Single-sex schooling gets new showcase. *Education Week*, 27(36), 20-22.
- Mead, J. F. (2003). Same-gender "innovations": Can publicly funded single-gender school choice options be constitutionally justified? *Educational Administration Quarterly*, 39(2), 164-186. doi: 10.1177/0013161X03251151
- Meyer, P. (2008). Learning separately: The case for same-sex schools. *Education Next*, 8(1), 13-21.
- Mills, M. (2004). The media, marketing, and single sex schooling. *Journal of Education Policy*, 19(3), 343-360. doi: 10.1080/0268093042000207656

- Morrell, R. (2000). Considering the case for single-sex schools for girls in South Africa. *McGill Journal of Education*, 35(3), 221-244.
- Moses, M. S. & Gair, M. (2004). Toward a critical deliberative strategy for addressing ideology in education policy processes. *Educational Studies: Journal of the American Educational Studies Association*, 36(3), p. 217-244, Dec.
- Mulvey, J. (2009). The feminization of schools. *The School Administrator*, 66, 34-36.
- National Association for Choice in Education. (2014). Retrieved from <http://www.4schoolchoice.org>.
- National Association for Same Sex Public Education. (2011). Retrieved from <http://www.singlesexschools.org/schools-schools.htm>.
- National Association for Public School Charters. (2014). Retrieved from <http://www.publiccharters.org/>.
- National Association of Charter School Authorizers. (2014). Retrieved from <http://www.qualitycharters.org/>.
- National Center for Education Statistics. (2014). Retrieved from <http://nces.ed.gov/surveys/pss/privateschoolsearch>.
- National Coalition of Girls' Schools. (2014). Retrieved from <http://www.ncgs.org>.
- National Commission on Excellence in Education. (1983). *A Nation at Risk: The Imperative for Educational Reform*. Washington, DC: U.S. Government Printing Office: 1982-401-326.
- National Defense Education Act of 1958. *Public Law (P.L.) 85-86*. September 2, 1958.
- No Child Left Behind Act of 2001. *Public Law (P. L.) 107-110 (2001)*. January 8, 2002.

- Okopny, C. (2008). Why Jimmy isn't failing: The myth of the boy crisis. *Feminist Teacher*, 18(3), 216-228.
- Pahlke, E., Hyde, J. S., & Allison, C. M. (2014). The effects of single-sex compared with coeducational schooling on students' performance and attitudes: a meta-analysis. *Psychological Bulletin*. doi: 10.1037/a0035740
- Pasch, M., & Greene, B. I. (1984). A case study in curriculum decision making and federal education policy. *Educational Leadership*, 43-47. October 1984.
- Perry, W. C. (1996). Gender-based education: Why it works at the middle school level. *NASSP Bulletin 1996 – Science Education*, 80, 32-35. doi: 10.1177/019263659608057707
- Philadelphia School for Girls (2013). Retrieved from <http://webgui.phila.k12.pa.us/schools/g/girlshigh>.
- Pinzler, I. (2004). Separate but equal education in the context of gender. *New York Law Review*, Vol 49, 785-807.
- Pollard, D. (1999). Separated by sex: The contexts of single-sex classes. *American Association of Women Educational Foundation*, 75-84.
- Protheroe, N. (2009). Single-sex classrooms. *Principal*, May/June, 32-35.
- Rathod, S. & LaBruna, A (2005). Questionnaire length and fatigue. Does size really matter? Presented at ESOMAR Worldwide Panel Research Conference 2005.
- Rex, J., & Chadwell, D. (2009). Single-gender classrooms. *School Administrator*, 66(8), 28-33.
- Robertson, W. (2009). Broadening the debate: Comments on Michael J. Feuer's "Moderating the Debate." *Educational Theory*, 59(5), 503-510.

- Robinson, W. (2004). Single-sex teaching and achievement in science. *International Journal of Science Education*, 26(6), 659-675. doi: 10.1080/0950069032000072737
- Sadker, D. (1999). Gender equity: Still knocking at the classroom door. *Educational Leadership*, April, 22-26.
- Sadker, M., Sadker, D., & Klein, S. (1991). Chapter 7: The issue of gender in elementary and secondary education. *Review of Research in Education*, 17, 269-334. doi: 10.3102/0091732X017001269
- Salminen-Karlson, M. (2007). Girls' groups and boys' groups at a municipal technology centre. *International journal of Science Education*, 29(8), 1019-1033. doi: 10.1080/09500690600930998
- Shah, S., & Conchar, C. (2009). Why single-sex schools? Discourses of culture/faith and achievement. *Cambridge Journal of Education*, 39(2), 191-204.
- Shapka, J. D., & Keating, D. P. (2003). Effects of a girls-only curriculum during adolescence: Performance, persistence, and engagement in mathematics and science. *American Educational Research Journal*, 40(4), 929-960.
- Smithers, A., & Robinson, P. (2006). The paradox of single-sex and co-educational schooling. Retrieved from University of Buckingham, Centre for Education and Employment Research website: <http://www.buckingham.ac.uk/education/research/ceer/pdfs/hmcsscd.pdf>
- Spielhofer, T., Benton, T., & Schagen, S. (2004). A study of the effects of school size and single-sex education in English schools. *Research Papers in Education*, 19(2), 133-159.


- Sprinthall, R. (2007). *Basic statistical analysis*. Boston, MA: Pearson Education.
- Sullivan, A., Joshi, H., & Leonard, D. (2010). Single-sex schooling and academic attainment at school and through the lifecourse. *American Educational Research Journal*, 47(1), 6-36. doi: 10.3102/0002831209350106
- Swain, S., & Harvey, D. (2002). Single-sex computer classes: an effective alternative. *Tech Trends*, 46(6), 17-20.
- Title I of the Elementary and Secondary Education Act of 1965, 20 U.S.C. § 70 (1965).
- Title IX of the Educational Amendments of 1972, 20 U.S.C. § 1681, 1682 et seq. (1972).
- Thompson, T., & Ungerleider, C. (2004). Single sex schooling final report. Canadian Centre for Knowledge Mobilisation.
- Tsolidis, G., & Dobson, I. R. (2006). Single-sex schooling: Is it simply a 'class act'? *Gender and Education*, 18(2), 213-228.
- United States Department of Education. (1975). 34 Code of Federal Regulations (CFR) 106.34(b). Nondiscrimination on the basis of sex in education programs or activities receiving federal financial assistance – Access to classes or schools.
- U.S. Department of Education. (1991). America 2000: An Educational Strategy.
- United States Department of Education. (2004). Nondiscrimination on the basis of sex in education programs or activities receiving federal financial assistance; Proposed rules. *Federal Register*, 69(46).
- United States Department of Education. (2005). Single-sex versus coeducational schooling: A systematic review.

- United States Department of Education. (2006). Nondiscrimination on the basis of sex in education programs or activities receiving federal financial assistance; Final rule. Federal Register, 71 (206).
- U.S. Department of Education. (2008). Early Implementation of public single-sex schools: Perceptions and characteristics.
- United States v. Virginia et al. (94-1941)., 518 U.S. 515 (1996).
- Vanze, J. (2010). The constitutionality of single-sex public education in Pennsylvania elementary and secondary schools. *Journal of Constitutional Law*, 12, 1479-1507.
- Vorheimer v. School District of Philadelphia., 400 F.Supp. 326 (1975).
- Vorheimer v. School District of Philadelphia., 532 F.2d 880 (1976).
- Vorheimer v. School District of Philadelphia., 430 U. S. 703 (1977).
- Warrington, M. & Younger, M. (2003). We decided to give it a twirl: single-sex teaching in English comprehensive schools. *Gender and Education*, Vol 15, No. (4), 339-350.
- Weaver-Hightower, M. (2003). The “boy turn” in research on gender and education. *Review of Educational Research*, 73(4), 471-498. doi: 10.3102/00346543073004471
- Weiss, S. (2007). Research on educating boys and girls separately versus together is abundant but far from conclusive. *The Progress of Education Reform 2007: Same-Sex Schooling*, 7(3), January 2007.
- Western High School (2013). Retrieved June 8, 2013 from <http://www.baltimorecityschools.org/407>.

- Williams, J. A. (2010). Learning differences: Sex-role stereotyping in single-sex public education. *Harvard Journal of Law & Gender*, 33, 556-579.
- Wills, R. C. (2007). A new and different space in primary school: single-gendered classes in coeducational schools. *Educational Studies*, 33(2), 129-143.
- Wong, K., Lam, Y., & Ho, L. (2002). The effects of schooling on gender differences. *British Educational Research Journal*, 28(6), 827-843.
- Young Women's Leadership Network (2013). Retrieved from <http://www.ywln.org>.
- Younger, M. & Warrington, M. (2006). Would Harry and Hermione have done better in same-sex classes? A review of same-sex teaching in coeducational secondary schools in the United Kingdom. *American Educational Research Journal*, 43(4), 579-620.
- Zubrzycki, J. (2012). Study finds single-sex schools benefit some-but not all. *Education Week*, 31(17), 1, 12-13.

APPENDIX A

State Educational Agencies

Alabama Alabama Department of Education Gordon Persons Office Building 50 North Ripley Street P.O. Box 302101 Montgomery, AL 36104-3833 Phone: (334) 242-9700 Fax: (334) 242-9708 Email: dmurray@alsde.edu Website: http://www.alsde.edu/html/home.asp	Alaska Alaska Department of Education and Early Development Suite 200 801 West 10th Street P.O. Box 110500 Juneau, AK 99811-0500 Phone: (907) 465-2800 Fax: (907) 465-4156 TTY: (907) 465-2815 Email: dorothy.knuth@alaska.gov or eed.webmaster@alaska.gov Website: http://www.eed.state.ak.us/
Arizona Arizona Department of Education 1535 West Jefferson Street Phoenix, AZ 85007 Phone: (602) 542-4361 Toll-Free: (800) 352-4558 Fax: (602) 542-5440 Email: ADEINBOX@azed.gov Website: http://www.ade.az.gov/	Arkansas Arkansas Department of Education Room 304A Four State Capitol Mall Little Rock, AR 72201-1071 Phone: (501) 682-4475 Fax: (501) 682-1079 Email: Tom.Kimbrell@arkansas.gov Website: http://ArkansasEd.org/
California California Department of Education 1430 N Street Sacramento, CA 95814-5901 Phone: (916) 319-0800 Fax: (916) 319-0100 Email: superintendent@cde.ca.gov Website: http://www.cde.ca.gov/	Colorado Colorado Department of Education 201 East Colfax Avenue Denver, CO 80203-1704 Phone: (303) 866-6600 Fax: (303) 830-0793 Email: howerter_c@cde.state.co.us Website: http://www.cde.state.co.us/
Connecticut Connecticut Department of Education State Office Building 165 Capitol Avenue Hartford, CT 06106-1630 Phone: (860) 713-6543 Toll-Free: (800) 465-4014 Fax: (860) 713-7001 Email: AM.Lenkiewicz@ct.gov or mark.mcquillan@ct.gov Website: http://www.sde.ct.gov/	Delaware Delaware Department of Education Suite Two 401 Federal Street Dover, DE 19901-3639 Phone: (302) 735-4000 Fax: (302) 739-4654 Email: dmoore@doe.k12.de.us Website: http://www.doe.state.de.us/
District of Columbia  Office of the State Superintendent of Education (District of Columbia) State Board of Education Suite 350N 441 Fourth Street NW Washington, DC 20001 Phone: (202) 727-6436 Fax: (202) 727-2019 Email: osse@dc.gov or chad.colby@dc.gov Website: http://osse.dc.gov/	Florida Florida Department of Education 325 West Gaines Street Tallahassee, FL 32399-0400 Phone: (850) 245-0505 Fax: (850) 245-9667 Email: commissioner@fldoe.org Website: http://www.fldoe.org/

<p>Georgia 🗺️</p> <p>Georgia Department of Education 2066 Twin Towers East 205 Jesse Hill Jr. Drive, SE Atlanta, GA 30334-5001 Phone: (404) 656-2800 Toll-Free: (800) 311-3627 Toll-Free Restrictions: GA residents only Fax: (404) 651-8737 Email: brturner@doe.k12.ga.us or kathycox@doe.k12.ga.us Website: http://www.gadoe.org</p>	<p>Hawaii</p> <p>Hawaii Department of Education Systems Accountability Office Room 411 1390 Miller Street Honolulu, HI 96813 Phone: (808) 586-3283 Fax: (808) 586-3440 Email: cara_tanimura@notes.k12.hi.us Website: http://doe.k12.hi.us/</p>
<p>Idaho</p> <p>Idaho State Board of Education Len B. Jordan Office Building 650 West State Street P.O. Box 83720 Boise, ID 83720-0027 Phone: (208) 332-6800 Toll-Free: (800) 432-4601 Toll-Free Restrictions: ID residents only Fax: (208) 334-2228 TTY: (800) 377-3529 Email: mrmcgrath@sde.idaho.gov or bkmattson@sde.idaho.gov Website: http://www.sde.idaho.gov/</p>	<p>Illinois</p> <p>Illinois State Board of Education 100 North First Street Springfield, IL 62777 Phone: (217) 782-4321 Toll-Free: (866) 262-6663 Toll-Free Restrictions: IL residents only Fax: (217) 524-4928 TTY: (217) 782-1900 Email: cgroves@isbe.net or statesup@isbe.net Website: http://www.isbe.net/</p>
<p>Indiana</p> <p>Indiana Department of Education South Tower, Suite 600 115 W. Washington Street Statehouse Room 229 Indianapolis, IN 46204-2795 Phone: (317) 232-6610 Fax: (317) 232-6610 Email: superintendent@doe.in.gov Website: http://www.doe.in.gov</p>	<p>Iowa</p> <p>Iowa Department of Education Grimes State Office Building 400 East 14th Street Des Moines, IA 50319-0146 Phone: (515) 281-3436 Fax: (515) 242-5988 Email: kathy.petosa@iowa.gov Website: http://educateiowa.gov</p>
<p>Kansas</p> <p>Kansas Department of Education 120 South East 10th Avenue Topeka, KS 66612-1182 Phone: (785) 296-3202 Fax: (785) 296-7933 TTY: (785) 296-6338 Email: ddebacker@ksde.org or price@ksde.org Website: http://www.ksde.org/</p>	<p>Kentucky</p> <p>Kentucky Department of Education Capital Plaza Tower First Floor 500 Mero Street Frankfort, KY 40601 Phone: (502) 564-3141 Fax: (502) 564-5680 Email: webmaster@education.ky.gov Website: http://www.education.ky.gov</p>
<p>Louisiana</p> <p>Louisiana Department of Education 1201 North Third P.O. Box 94064 Baton Rouge, LA 70804-9064 Phone: (225) 219-5172 Toll-Free: (877) 453-2721 Fax: (225) 342-0781 Email: customerservice@la.gov Website: http://www.louisianaschools.net</p>	<p>Maine</p> <p>Maine Department of Education Burton M. Cross State Office Building 111 Sewall Street 23 State House Station Augusta, ME 04333-0023 Phone: (207) 624-6600 Fax: (207) 624-6601 TTY: (207) 624-6800 Email: tammy.morrill@maine.gov or susan.gendron@maine.gov Website: http://www.maine.gov/portal/education/</p>
<p>Maryland</p> <p>Maryland State Department of Education 200 West Baltimore Street</p>	<p>Massachusetts</p> <p>Massachusetts Department of Elementary and Secondary Education</p>

<p>Baltimore, MD 21201 Phone: (410) 767-0100 Fax: (410) 333-6033 Email: llovery@msde.state.md.us Website: http://www.marylandpublicschools.org/MSDE</p>	<p>75 Pleasant Street Malden, MA 02148-4906 Phone: (781) 338-3102 Fax: (781) 338-3770 TTY: (800) 439-2370 Email: www@doe.mass.edu or media@doe.mass.edu Website: http://www.doe.mass.edu/</p>
<p>Michigan Michigan Department of Education P.O. Box 30008 608 West Allegan Street Lansing, MI 48909 Phone: (517) 373-3324 Fax: (517) 335-4565 Email: carefootk@michigan.gov Website: http://www.michigan.gov/mde/</p>	<p>Minnesota Minnesota Department of Education 1500 Highway 36 West Roseville, MN 55113-4266 Phone: (651) 582-8200 Fax: (651) 582-8724 TTY: (651) 582-8201 Email: mde.commissioner@state.mn.us Website: http://education.state.mn.us/mde/index.html</p>
<p>Mississippi Mississippi Department of Education Central School Building 359 North West Street P.O. Box 771 Jackson, MS 39205 Phone: (601) 359-3513 Fax: (601) 359-3242 Email: cblanton@mde.k12.ms.us Website: http://www.mde.k12.ms.us/</p>	<p>Missouri Missouri Department of Elementary and Secondary Education 205 Jefferson Street P.O. Box 480 Jefferson City, MO 65102-0480 Phone: (573) 751-4212 Fax: (573) 751-8613 TTY: (800) 735-2966 Email: pubinfo@dese.mo.gov Website: http://dese.mo.gov/</p>
<p>Montana Montana Office of Public Instruction P.O. Box 202501 Helena, MT 59620-2501 Phone: (406) 444-2082 Toll-Free: (888) 231-9393 Toll-Free Restrictions: area code 406 only Fax: (406) 444-3924 Email: cbergeron@mt.gov Website: http://www.opi.mt.gov/</p>	<p>Nebraska Nebraska Department of Education 301 Centennial Mall South P.O. Box 94987 Lincoln, NE 68509 Phone: (402) 471-2295 Fax: 402-471-4433 Email: denise.fisher@nebraska.gov Website: http://www.education.ne.gov</p>
<p>Nevada Nevada Department of Education 700 East Fifth Street Carson City, NV 89701 Phone: (775) 687-9217 Fax: (775) 687-9202 Email: darnold@doe.nv.gov Website: http://www.doe.nv.gov/</p>	<p>New Hampshire New Hampshire Department of Education Hugh J. Gallen State Office Park 101 Pleasant Street Concord, NH 03301 Phone: (603) 271-3494 Toll-Free: (800) 339-9900 Fax: (603) 271-1953 TTY: Relay NH 711 Email: pbutler@ed.state.nh.us or ltemple@ed.state.nh.us Website: http://www.ed.state.nh.us</p>
<p>New Jersey New Jersey Department of Education P.O. Box 500 100 Riverview Plaza Trenton, NJ 08625-0500 Phone: (609) 292-4450 Toll-Free: 1-877-900-6960 Fax: (609) 777-4099 Email: vocinfo@doe.state.nj.us</p>	<p>New Mexico New Mexico Public Education Department 300 Don Gaspar Santa Fe, NM 87501-2786 Phone: (505) 827-5800 Fax: (505) 827-6520 Email: Bev.Friedman@state.nm.us or lori.bachman@state.nm.us Website: http://www.ped.state.nm.us/</p>

<p>Website: http://www.state.nj.us.education</p> <p>New York New York State Education Department Education Building Room 111 89 Washington Avenue Albany, NY 12234 Phone: (518) 474-3852 Fax: (518) 473-4909 Email: rmills@mail.nysed.gov Website: http://www.nysed.gov/</p>	<p>North Carolina North Carolina Department of Public Instruction 301 North Wilmington Street Raleigh, NC 27601 Phone: (919) 807-3300 Fax: (919) 807-3445 Email: information@dpi.state.nc.us or mwertis@dpi.state.nc.us Website: http://www.ncpublicschools.org/</p>
<p>North Dakota North Dakota Department of Public Instruction Department 201 600 East Boulevard Avenue Bismarck, ND 58505-0440 Phone: (701) 328-2260 Fax: (701) 328-2461 Email: lnorbeck@nd.gov or kbaesler@nd.gov Website: http://www.dpi.state.nd.us</p>	<p>Ohio Ohio Department of Education 25 South Front Street Columbus, OH 43215-4183 Phone: (614) 995-1545 Toll-Free: (877) 644-6338 Fax: (614) 728-9300 TTY: (888) 886-0181 Email: michael.sawyers@ode.state.oh.us Website: http://www.ode.state.oh.us/</p>
<p>Oklahoma Oklahoma State Department of Education 2500 North Lincoln Boulevard Oklahoma City, OK 73105-4599 Phone: (405) 521-3301 Fax: (405) 521-6205 Email: Janet.Barresi@sde.ok.gov or Liz.Young@sde.ok.gov Website: http://sde.state.ok.us/</p>	<p>Oregon Oregon Department of Education 255 Capitol Street, NE Salem, OR 97310-0203 Phone: (503) 947-5600 Fax: (503) 378-5156 TTY: (503) 378-2892 Email: gene.evans@state.or.us Website: http://www.ode.state.or.us/</p>
<p>Pennsylvania Pennsylvania Department of Education 333 Market Street Harrisburg, PA 17126-0333 Phone: (717) 787-5820 Fax: (717) 787-7222 TTY: (717) 783-8445 Email: 00admin@state.pa.us or 00sec@state.pa.us Website: http://www.pde.state.pa.us/</p>	<p>Rhode Island Rhode Island Department of Elementary and Secondary Education 255 Westminster Street Providence, RI 02903-3400 Phone: (401) 222-4600 Fax: (401) 222-6178 TTY: (800) 745-5555 Email: angela.teixeira@ride.ri.gov or irene.monteiro@ride.ri.gov Website: http://www.ride.ri.gov/</p>
<p>South Carolina South Carolina Department of Education 1006 Rutledge Building 1429 Senate Street Columbia, SC 29201 Phone: (803) 734-8815 Fax: (803) 734-3389 Email: cclark@ed.sc.gov or jfoster@ed.sc.gov Website: http://ed.sc.gov/</p>	<p>South Dakota South Dakota Department of Education 700 Governors Drive Pierre, SD 57501-2291 Phone: (605) 773-5669 Fax: (605) 773-6139 TTY: (605) 773-6302 Email: betty.leidholt@state.sd.us or mary.stadick@state.sd.us Website: http://doe.sd.gov/</p>
<p>Tennessee Tennessee State Department of Education Andrew Johnson Tower, Sixth Floor 710 James Robertson Parkway Nashville, TN 37243-0375 Phone: 615-741-5158 Fax: (615) 532-4791 Email: Education.Comments@tn.gov Website: http://www.state.tn.us/education/</p>	<p>Texas Texas Education Agency William B. Travis Building 1701 North Congress Avenue Austin, TX 78701-1494 Phone: (512) 463-9734 Fax: (512) 463-9838 TTY: (512) 475-3540 Email: teainfo@tea.state.tx.us or</p>

	commissioner@tea.state.tx.us Website: http://www.tea.state.tx.us/
Utah Utah State Office of Education 250 East 500 South P.O. Box 144200 Salt Lake City, UT 84114-4200 Phone: (801) 538-7500 Fax: (801) 538-7521 Email: mark.peterson@schools.utah.gov Website: http://www.schools.utah.gov/	Vermont Vermont Department of Education 120 State Street Montpelier, VT 05620-2501 Phone: (802) 828-5101 Fax: (802) 828-3140 TTY: (802) 828-2755 Email: doe-Edinfo@state.vt.us or maureen.start@state.vt.us Website: http://www.education.vermont.gov/
Virginia Virginia Department of Education P.O. Box 2120 James Monroe Building 101 North 14th Street Richmond, VA 23218-2120 Phone: (804) 225-2420 Email: Patricia.Wright@doe.virginia.gov Website: http://www.doe.virginia.gov/	Washington Office of Superintendent of Public Instruction (Washington) Old Capitol Building 600 South Washington P.O. Box 47200 Olympia, WA 98504-7200 Phone: (360) 725-6000 Fax: (360) 753-6712 TTY: (360) 664-3631 Email: karen.conway@k12.wa.us Website: http://www.k12.wa.us/
West Virginia West Virginia Department of Education Building 6, Room 358 1900 Kanawha Boulevard East Charleston, WV 25305-0330 Phone: (304) 558-2681 Fax: (304) 558-0048 Email: dvermill@access.k12.wv.us Website: http://wvde.state.wv.us/	Wisconsin Wisconsin Department of Public Instruction 125 South Webster Street P.O. Box 7841 Madison, WI 53707-7841 Phone: (608) 266-3390 Toll-Free: (800) 441-4563 Fax: (608) 267-1052 TTY: (608) 267-2427 Email: dpistatesuperintendent@dpi.wi.gov Website: http://dpi.wi.gov/
Wyoming Wyoming Department of Education Hathaway Building Second Floor 2300 Capitol Avenue Cheyenne, WY 82002-0050 Phone: (307) 777-7690 Fax: (307) 777-6234 TTY: (307) 777-8546 Email: supt@educ.state.wy.us Website: http://www.k12.wy.us	

APPENDIX B

List of Identified Same-Gender Public Schools

School	Grades	Gender	City	State	Web	Phone
Girls Leadership Academy of Arizona	9-12	F	Phoenix	AZ	http://www.glaaz.org/	(602) 288 4518
New Village Charter High School	9-12	F	Los Angeles	CA	http://newvillagegirlsacademy.org/	(213) 385 4015
James Irwin Charter Middle School	6-8	M/F	Colorado Springs	CO	http://www.jamesirwin.org/	(719) 302 9000
Prestige Academy Charter School	6-8	M	Wilmington	DE	http://www.prestigeacademycs.org/	(302) 762 3240
Young Women's Preparatory Academy	6-12	F	Miami	FL	http://www.ywpaf.org/	(305) 575 1200
Young Men's Preparatory Academy	6-12	M	Miami	FL	http://ympacademy.org/	(305) 571 1111
Richard Allen Leadership Academy Charter			Miami Gardens	FL		(305) 623 3174
Ferrell Middle Magnet School - Girls Preparatory Academy	6-8	F	Tampa	FL	http://ferrell.mysdhc.org/	(813) 276 5608
Boys Preparatory Academy Franklin Middle Magnet School	6-8	M	Tampa	FL	http://franklin.mysdhc.org/	(813) 744 8108
Coretta Scott King Young Women's Leadership Academy Middle School	6-8	F	Atlanta	GA	http://www.atlanta.k12.ga.us/Domains/2754	(404) 802 4962
Coretta Scott King Young Women's Leadership Academy High School	9-12	F	Atlanta	GA	http://www.atlanta.k12.ga.us/Domains/4152	(404) 802 4900
BEST Academy High School	9-12	M	Atlanta	GA	http://www.atlanta.k12.ga.us/Domains/4106	(404) 802 4950
BEST Academy Middle School	6-8	M	Atlanta	GA	http://www.atlanta.k12.ga.us/Domains/2724	(404) 802 4944
Ivy Preparatory Academy Gwinnett	K-12	F	Norcross	GA	http://ipa.ivyprepacademy.org/schools/gwinnett/	(770) 342 0089
Ivy Preparatory Academy Kirkwood	K-12	F	Atlanta	GA	http://ipa.ivyprepacademy.org/schools/kirkwood-for-girls-2/	(404) 622 2727
Ivy Preparatory Academy Kirkwood	K-12	M	Atlanta	GA	http://ipa.ivyprepacademy.org/schools/young-mens-leadership-academy-2/	(404) 622 2727
Urban Prep Charter Academy for Young Men - Bronzeville	9-12	M	Chicago	IL	http://www.urbanprep.org/schools/bronzeville-campus	(773) 624 3444
Urban Prep Charter Academy for Young Men - Englewood	9-12	M	Chicago	IL	http://www.urbanprep.org/schools/englewood-campus	(773) 535 9724
Urban Prep Charter Academy for Young Men - West	9-12	M	Chicago	IL	http://www.urbanprep.org/schools/west-campus	(773) 534 8860
The Young Women's Leadership Charter School of Chicago	7-12	F	Chicago	IL	http://www.ywlc.org/	(312) 949 9400
Frankie W McCullough Academy for Girls	K-6	F	Gary	IN	http://www.garycsc.k12.in.us/schools/frankie-w-mccullough-academy-for-girls/	(219) 944 7301
Dr. Bernard Watson Academy for Boys	K-6	M	Gary	IN	http://www.garycsc.k12.in.us/schools/dr-bernard-c-watson-academy-for-boys/	(219) 886 6569
Frederick Olmsted Academy South	6-8	F	Louisville	KY	http://www.jefferson.k12.ky.us/schools/middle/olmstedsouth.html	(502) 485 8270
Frederick Olmsted Academy North	6-8	M	Louisville	KY	http://www.jefferson.k12.ky.us/schools/Middle/OlmstedNorth.html	(502) 485 8331
Miller-McCoy Academy for Mathematics and Business	K-12	M	New Orleans	LA	http://www.millemccoy.org/	(504) 373 6215
Bluford Drew Jemison STEM Academy	6-12	M	Baltimore	MD	http://www.baltimorecityschools.org/cms/lib/MD01001351/Centricity/domain/8783/schoolprofiles/364-BlufordDrewJemisonSTEMAcademyWest-Profile.pdf	(443) 642 2110
Baltimore Leadership School for Young Women	6-12	F	Baltimore	MD	http://blsw.org/	(443) 642 2048
Detroit International Academy for Young Women	K-12	F	Detroit	MI	http://detroitk12.org/schools/dia/	(313) 873 3050
Frederick Douglas Academy for Young Men	6-12	M	Detroit	MI	http://detroitk12.org/schools/douglass/	(313) 555 1212
Minneapolis Academy	6-8	M/F	Minneapolis	MN	http://www.mplsacademy.org/	(612) 455 1340
Middle College of Bennett	9-12	F	Greensboro	NC	http://mcbennett.gcsnc.com/pages/Middle_College_at_Bennett	(336) 517 1832
Middle College at NC A&T State University	9-12	M	Greensboro	NC	http://mccat.gcsnc.com/pages/Middle_College_at_NC_A_T	(336) 691 0941
Albany Leadership Charter High School for Girls	9-12	F	Albany	NY	http://www.albanyleadershiphigh.org/	(518) 694 5300
Brighter Choice Charter School for Boys	K-4	M	Albany	NY	http://www.brighterchoice.org/boys/	(518) 694 8200
Brighter Choice Charter School for Girls	K-4	F	Albany	NY	http://www.brighterchoice.org/girls/	(518) 694 8100
Brighter Choice Charter Middle School for Boys	6-8	M	Albany	NY	http://brighterchoicems.org/boys/	(518) 703 6100
Brighter Choice Charter Middle School for Girls	6-8	F	Albany	NY	http://brighterchoicems.org/girls/	(518) 694 5550
Green Tech High Charter School	9-12	M	Albany	NY	http://www.greentechhigh.org/	(518) 694 3400
Girls Prep Lower East Side Elementary School Charter	K-4	F	New York	NY	http://www.publicprep.org/page.cfm?p=569	(212) 388 0241
Girls Prep Lower East Side Middle School Charter	5-8	F	New York	NY	http://www.publicprep.org/page.cfm?p=515	(212) 358 8216
Girls Prep Bronx Elementary School Charter	K-5	F	Bronx	NY	http://www.publicprep.org/page.cfm?p=827	(718) 292 2113
Girls Prep Bronx Middle School Charter	6	F	New York	NY	http://www.publicprep.org/page.cfm?p=861	(212) 346 6000
Boys Prep Bronx Elementary Charter	K-1	M	New York	NY	http://www.publicprep.org/page.cfm?p=862	(212) 346 6000
Bronx Global Learning Institute for Girls	K-5	F	Bronx	NY	http://www.bgllschool.org/ OR?? http://www.bgllschool.org/es%20news.html	(718) 993 1740
Bronx Global Learning Institute for Girls	6-8	F	Bronx	NY	http://www.bgllschool.org/ms%20news.html	(718) 993 1740
Excellence Boys Charter School - Elementary Academy	K-5	M	Brooklyn	NY	http://excellenceboys.uncommonschoools.org/excellence-boys/our-school/elementary-academy	(718) 638 1830
Excellence Boys Charter School - Middle Academy	K-5	M	Brooklyn	NY	http://excellenceboys.uncommonschoools.org/excellence-boys/our-school/middle-academy	(718) 638 1830
The Young Women's Leadership School of East Harlem	6-12	F	New York	NY	http://schools.nyc.gov/schoolportals/04/m610/default.htm	(212) 289 7593
The Young Women's Leadership School of Queens	6-12	F	Queens	NY	http://schools.nyc.gov/SchoolPortals/28/Q896/default.htm	(718) 725 0402
The Young Women's Leadership School of the Bronx	6-12	F	Bronx	NY	http://www.tywisbronx.org/	(718) 731 2590
The Young Women's Leadership School of Brooklyn	6-12	F	Brooklyn	NY	http://schools.nyc.gov/SchoolPortals/14/K614/default.htm	(718) 387 5641
The Young Women's Leadership School of Astoria	6-12	F	New York	NY	http://tywisofastoria.wix.com/tywisofastoria	(718) 267 2839
Eagle Academy for Young Men Middle School	6-8	M	Bronx	NY	http://www.eaglebronx.org/middleschool	(718) 466 8013
Eagle Academy for Young Men High School	9-12	M	Bronx	NY	http://www.eaglebronx.org/highschool	(718) 466 8014
Eagle Academy for Young Men Brooklyn High School	9-12	M	Brooklyn	NY	http://schools.nyc.gov/SchoolPortals/23/K644/default.htm	(718) 495 0863
Eagle Academy for Young Men of Harlem	6-8	M	New York	NY	http://www.eagleharlem.org/	
Eagle Academy for Young Men of Newark			Newark	NY	http://eaglenewark.org/	(973) 733 7165
Eagle Academy for Young Men of Queens	6-12	M	Queens	NY	http://schools.nyc.gov/SchoolPortals/29/Q327/default.htm	(718) 480 2600
Urban Assembly Institute of Math And Science For Young Women	9-12	F	Brooklyn	NY	http://www.uainstitute.com/	(718) 260 2300
Urban Assembly Institute of Math And Science For Young Women	6-8	F	Brooklyn	NY	http://www.uainstitute.com/	(718) 260 2300
Urban Assembly School for Criminal Justice	9-12	F	Brooklyn	NY	http://www.uascriminaljustice.org/	(718) 438 3893
Urban Assembly School for Criminal Justice, Middle School	6-8	F	Brooklyn	NY	http://www.uascriminaljustice.org/	(718) 438 3893
The Urban Assembly School of Business For Young Women	9-12	F	New York	NY	http://www.uasbw.org/	(212) 668 0169
Young Women's College Prep Charter School of Rochester	7-12	F	Rochester	NY	http://www.youngwomenscollegeprep.org/	(585) 254 0320
Ella P. Stewart Academy for Girls	K-5	F	Toledo	OH	http://www.tps.org/district-programs-sp-264058039/51-gallery-of-great-school-designs/112-ella-p-stewart-academy-for-girls	(419) 671 5350
Valley View Boy's Leadership Academy	PK-8	M	Cleveland	OH	http://www.clevelandmetroschools.org/Page/1269	(216) 251 3876
Douglas MacArthur Girls Leadership Academy	PK-8	F	Cleveland	OH	http://www.clevelandmetroschools.org/Page/1260	(216) 267 5969
Kenneth W. Clement - Boys' Leadership Academy	PK-8	M	Cleveland	OH	http://www.clevelandmetroschools.org/Page/1263	(216) 541 7543
Warner Girl's Leadership Academy	PK-8	F	Cleveland	OH	http://www.clevelandmetroschools.org/Page/1267	(216) 206 4620
Dayton Boy's Prep Academy	PK-8	M	Dayton	OH	http://www.dps.k12.oh.us/school-dbpae/	(937) 542 5340

Charity Adams Earley Academy for Girls	K-6	F	Dayton	OH	http://www.dps.k12.oh.us/school-charity-adams-earley/	(937) 542 5840
The Ginn Academy	9-12	M	Cleveland	OH	http://www.clevelandmetroschools.org/Page/1268	(216) 531 4466
Southwest Leadership Academy Charter School	K-8	M/F	Philadelphia	PA	http://slacs-phil.org/	(215) 729 1939
Boys' Latin of Philadelphia Charter School	9-12	M	Philadelphia	PA	http://www.boyslatin.org/pages/blmain	(215) 387 5149
Boys' Latin of Philadelphia Charter Middle School	6-8	M	Philadelphia	PA	http://www.boyslatin.org/pages/blmain/6673215875859989458	(215) 387 5149
Langston Charter Middle School	6-8	M/F	Greenville	SC	http://www.langstoncharter.org/	(864) 286 9700
ARMS and EXCEL Academies at Morningside Middle	6-8	M/F	North Charleston	SC	http://morningside.ccsd.schools.com/	(843) 745 2030
Spartanburg Preparatory School	K-8	M/F	Spartanburg	SC	http://www.spartanburgprep.org/	(864) 621 3882
Dent Middle School	6-8	M	Columbia	SC	http://www.richland2.org/dm/pages/default.aspx	(803) 699 2750
Chattanooga Girls Leadership Academy	6-12	F	Chattanooga	TN	http://cglonline.com/	(423) 702 7230
William A Lawson Institute for Peace and Prosperity – Texas State University	6-8	M	Houston	TX	http://walippacademy.org/	(713) 225 1551
William A Lawson Institute for Peace and Prosperity – St. James Episcopal Church	6-8	F	Houston	TX	http://walipp.org/programs/	(713) 225 1551
KIPP Polaris Academy for Boys	5-8	M	Houston	TX	http://www.kipp-houston.org/polaris	(832) 230 0567
KIPP Voyage Academy for Girls	5-8	F	Houston	TX	http://www.kipp-houston.org/voyage	(832) 230 0567
The Ann Richards School for Young Women Leaders Austin	6-12	F	Austin	TX	http://www.annrichardsschool.org/	(512) 414 3236
The Irma Lerma Rangel Young Women's Leadership School	6-12	F	Dallas	TX	http://www.dallasisd.org/rangel	(972) 749 5200
Young Women's Leadership Academy San Antonio	6-12	F	San Antonio	TX	http://www.saisd.net/schools/ywla/	(210) 438 6525
Margaret Talkington School for Young Women Leaders Lubbock	6-12	F	Lubbock	TX	http://talkington.lubbockisd.org/pages/TALKINGTON	(806) 219 2200
Young Women's College Preparatory Academy Houston	6-12	F	Houston	TX	http://www.houstonisd.org/ywcpa	(713) 942 1441
Young Women's Leadership Academy Fort Worth	6-12	F	Fort Worth	TX	http://ywla.fwisd.org/pages/YWLA	(817) 815 2400
Barack Obama Male Leadership Academy at B.F. Darrell	K-12	M	Dallas	TX	http://www.dallasisd.org/Domain/634	(972) 749 2100
Excel Academy Public Charter School	P-5	F	Washington, DC		http://excelpubliccharterschool.org/	(202) 373 0097

APPENDIX C

Survey (Pilot Test) for Principals of Same-Gender Public Schools

Directions: Read each statement (1–8) concerning same-gender education at your school and mark (x-out or darken) the oval for the most appropriate response for each item in the table following each statement.

To opt out of the survey, please check the box at the bottom of page 2.

Please return the survey (completed or opt out) in the enclosed envelope. This will confirm your receipt of the survey, ensuring I do not contact you further with this request.

Statement 1: The following were proponents for establishing the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify: _____)					

Statement 2: The following are proponents for maintaining the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify: _____)					

Statement 3: The following are knowledgeable on the same-gender education program(s) at your school, to include federal regulations on nondiscrimination on the basis of sex in education programs receiving federal financial assistance:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify: _____)					

Statement 4: The following reasons were put forward to establish the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Rectify underachievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rectify underachievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify: _____)					

Statement 5: Scientifically based research was referenced to support the following reasons put forward to establish the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Rectify underachievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rectify underachievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide lower income families equivalent choices in K-12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

schooling that students from higher income families can obtain through private and parochial schools
Other (Please Specify:)

Statement 6: Supplementary federal, state, local, or private funding supports the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary federal education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary state education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary local education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary Federal education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary State education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary local education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify:)					

Statement 7: Metrics are used to assess the same-gender education program(s) at your school on:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Achievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Achievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower income families provided equivalent choices in K-12 schooling that students from higher income families obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify:)					

Statement 8: The continuation of the same-gender education program(s) at your school is conditional on assessment results on:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Achievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Achievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower income families provided equivalent choices in K-12 schooling that students from higher income families obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (Please Specify:)					

Statement 9: How long did it take to complete survey questions 1-8?

	1 – 5 Minutes	6 – 10 Minutes	11 – 15 Minutes	16 – 20 Minutes	> 20 Minutes
Time to Complete the Survey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 10: Instructions for completing the survey were clear, concise, and understandable.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Understandable

○ ○ ○ ○ ○

Statement 11: Each of the eight survey statements (and responses) was clear, concise, logical, and understandable.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Q1: The following individuals or organizations were proponents for establishing same-gender education program(s) at my school.	○	○	○	○	○
Q2: The following individuals or organizations are proponents for maintaining same-gender education program(s) at my school.	○	○	○	○	○
Q3: The following individuals or organizations are knowledgeable on same-gender education program(s) at my school, to include federal regulations on nondiscrimination on the basis of sex in education programs receiving federal financial assistance.	○	○	○	○	○
Q4: The following reasons were put forward to establish same-gender education program(s) at my school.	○	○	○	○	○
Q5: Scientifically based research was referenced to support the reasons put forward to establish same-gender education program(s) at my school.	○	○	○	○	○
Q6: Supplementary federal, state, or local funding supports same-gender education program(s) at my school.	○	○	○	○	○
Q7: Metrics are used to assess same-gender education program(s) at my school.	○	○	○	○	○
Q8: Continuation of same-gender education program(s) at my school is conditional on assessment results.	○	○	○	○	○

☐ **I choose to opt out of the survey.**

APPENDIX D

Survey (Final) for Principals of Same-Gender Public Schools

Directions: Read each statement (1–8) concerning same-gender education at your school and mark (x-out or darken) the oval for the most appropriate response for each item in the table following each statement.

To opt out of the survey, please check the box at the bottom of page 2.

Please return the survey (completed or opt out) in the enclosed envelope. This will confirm your receipt of the survey, ensuring I do not contact you further with this request.

Statement 1: The following were proponents for establishing the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
State Legislature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
State Department of Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 2: The following are proponents for maintaining the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
State Legislature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
State Department of Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 3: The following are knowledgeable on the same-gender education program(s) at your school, to include federal regulations on nondiscrimination on the basis of sex in education programs receiving federal financial assistance:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
State Legislature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
State Department of Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Superintendent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Principal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent Teacher (Student) Association (PT(S)A)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 4: The following reasons were put forward to establish the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Rectify underachievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rectify underachievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide lower income families the same choices in K-12 schooling that students from backgrounds that are more affluent obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Continue on Reverse Side
(Flip on Long End)

Statement 5: Scientifically based research was referenced to support the following reasons put forward to establish the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Rectify underachievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rectify underachievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide lower income families equivalent choices in K-12 schooling that students from higher income families can obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 6: Supplementary federal, state, local, or private funding supports the same-gender education program(s) at your school:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary federal education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary state education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary local education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of same-gender education program(s) at my school was conditional on receipt of supplementary private education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary Federal education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary State education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of supplementary local education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainment of same-gender education program(s) at my school is conditional on receipt of private education funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 7: Metrics are used to assess the same-gender education program(s) at your school on:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Achievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Achievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower income families provided equivalent choices in K-12 schooling that students from higher income families obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement 8: The continuation of the same-gender education program(s) at your school is conditional on assessment results on:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Achievement for girls in mathematics, science, and technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Achievement for boys in reading and language arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of post-pubescent sexual distractions between male and female students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incidence of disciplinary issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower income families provided equivalent choices in K-12 schooling that students from higher income families obtain through private and parochial schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I choose to opt out of the survey.

APPENDIX E

Telephone Interview Cover Letter

(Title (Mr./Ms./Dr.)) (First Name) (MI) (Last Name)

Position (Principal, Dean, CEO)

School Name

Street Address

City, State, Zip Code

Subj: Same-Gender Public Education

Dear (Title or Position) (Last Name):

As you previously participated in my survey on same-gender public education, *Survey for Principals of Same-Gender Public Schools*, which gathered quantitative data on same-gender public schools, I am writing to request your input on the qualitative portion of the study. Questions for the survey will align with the statements on the survey you completed.

Your participation will add to the body of literature on same-gender education, as it will inform a graduate paper on same-gender public education in the United States.

Your responses will remain confidential, and no information that could uniquely identify you or your school to a response will be included in the study.

All data collected from the survey will be destroyed at the conclusion of the study.

I will follow with a call to your office to determine your ability to participate in this part of the study.

Your participation in this study would be greatly appreciated.

Very respectfully,

Richard Catoire

Doctoral Candidate

Old Dominion University

Darden College of Education

Educational Foundations and Leadership

APPENDIX F

Telephone Interview Questions

1. Discuss key proponents behind the establishment and maintenance of the same-gender education program at your school.
2. Discuss proponent's knowledge of same-gender education programs, to include the program at your school.
3. Discuss the reasons behind the establishment of the same-gender public education program at your school.
4. Discuss the use of scientifically based research to guide and support the same-gender education program at your school.
5. Discuss the requirement for and use of supplementary federal, state, local, or private funding in the establishment and sustainment of the same-gender education program at your school.
6. Discuss the use of metrics and quantitative and qualitative assessments to measure and assess the same-gender education program at your school.

APPENDIX G**On-Line Survey (Pilot Test) Cover Letter**

(Title (Mr./Ms./Dr.) (First Name) (MI) (Last Name)

Position (Principal, Dean, CEO)

School Name

Street Address

City, State, Zip Code

Subj: Same-Gender Public Education

Dear (Title or Position) (Last Name):

As the head of one of less than 100 same-gender public schools in the United States, you occupy a unique position in the administration of public education in the United States, and as such can provide a distinct perspective on same-gender public education.

This letter is to request your participation in pilot testing a survey on public policy decisions to establish same-gender public schools in the United States. While numerous studies have been conducted on the potential benefits of same-gender education, literature on policy decisions establishing same-gender public education programs is lacking. Your input on this survey will be used to address this information shortfall, while contributing to a doctoral dissertation on policy decisions on same-gender public education in the United States.

The pilot test will be conducted via an online questionnaire. A link to the questionnaire will be forwarded to your school email address within five working days. The questionnaire will include amplifying instructions on completing and evaluating the survey. The questionnaire and survey have been designed to take less than 15 minutes to complete. The design of the online questionnaire and survey will allow for completion without requiring identifying information such as name, email address, phone number, or school affiliation, ensuring your participation and responses will remain anonymous and confidential.

Should you have questions about the survey or the larger study, please contact me at your convenience at rcato001@odu.edu or (757) 635-4386.

Your participation in this pilot test is appreciated.

A signed .pdf copy of this letter is attached for your records.

Very respectfully,

Richard Catoire

Doctoral Candidate

Old Dominion University

Darden College of Education

Educational Foundations and Leadership

APPENDIX H

On-Line Survey (Final) Cover Letter

(Title (Mr./Ms./Dr.) (First Name) (MI) (Last Name)
 Position (Principal, Dean, CEO)
 School Name
 Street Address
 City, State, Zip Code

Subj: Same-Gender Public Education

Dear (Title or Position) (Last Name):

As the head of one of less than 100 same-gender public schools in the United States, you occupy a unique position in the administration of public education in the United States, and as such can provide a distinct perspective on same-gender public education.

To that end, this letter is to request your participation in an on-line survey on same-gender public schools in the United States. Your participation in this survey will add to the body of literature on same-gender education, as it will inform a graduate study on same-gender public education in the United States.

You will receive the survey through an email from rcato001@odu.edu via surveymonkey.com. The email will follow within the next two working days, and will include a link to the survey and amplifying instructions.

If you would prefer not to participate in the survey, the survey contains a separate link to allow you to remove yourself from the study and any further emails.

The survey should take between five and ten minutes to complete as verified in pilot tests with a sample of principals of same-gender public schools.

To complete the required data collection, respondents from the on-line survey will have the opportunity to participate in a supporting telephone interview.

All responses to the on-line and telephone surveys will remain confidential, with only cumulative data included in the study. No information that could uniquely identify a participant or institution to a particular response will be included in the study.

All data collected from the survey will be destroyed at the conclusion of the study.

Should you have questions about the survey or the larger study, or should you not wish to participate in the telephone interview, please contact me at your convenience at rcato001@odu.edu or (757) 635-4386.

Your participation in this study is sincerely appreciated.

Very respectfully,

Richard Catoire
 Doctoral Candidate
 Old Dominion University
 Darden College of Education
 Educational Foundations and Leadership

APPENDIX I

Mailed Survey Cover Letter

(Title (Mr./Ms./Dr.)) (First Name) (MI) (Last Name)
Position (Principal, Dean, CEO)
School Name
Street Address
City, State, Zip Code

Subj: Same-Gender Public Education

Dear (Title or Position) (Last Name):

As the head of one of less than 100 same-gender public schools in the United States, you occupy a unique position in the administration of public education in the United States, and as such can provide a distinct perspective on same-gender public education.

To that end, this letter is to request your participation in the enclosed survey on same-gender public schools in the United States. Your participation in this survey will add to the body of literature on same-gender education, as it will inform a graduate study on same-gender public education in the United States.

The survey should take between five and ten minutes to complete as verified in pilot tests with a sample of principals of same-gender public schools.

To complete the required data collection, respondents to the survey will have the opportunity to participate in a supporting telephone interview.

All responses to the survey and telephone interviews will remain confidential, with only cumulative data included in the study. No information that could uniquely identify a participant or institution to a particular response will be included in the study.

All data collected from the survey will be destroyed at the conclusion of the study.

Should you have questions about the survey or the larger study, or should you not wish to participate in the telephone interview, please contact me at your convenience at rcato001@odu.edu or (757) 635-4386.

Once you complete the survey, return it in the enclosed, self-addressed, postage paid envelope

Your participation in this study is sincerely appreciated.

If you would prefer not to participate in this survey, annotate the card as such and return in the enclosed self-addressed postage paid envelope. This will ensure I do not contact you further regarding this study.

Very respectfully,

Richard Catoire
Doctoral Candidate
Old Dominion University
Darden College of Education
Educational Foundations and Leadership

VITA

RICHARD GERARD CATOIRE

120 Education Building

Norfolk, VA 23529

EDUCATIONAL HISTORY

University of New Orleans, New Orleans, Louisiana, B.S.

Electrical Engineering, December 1981

Florida State University, Panama City, Florida, B.S.

Electrical Engineering, April, 1992

Old Dominion University, Norfolk, Virginia, B.S.

Education, December 2002

EMPLOYMENT HISTORY

1982 – 2008 United States Navy

2008 – 2014 Associate, Booz Allen Hamilton

2014 – Present Consultant, Ironclad LLC

PUBLICATIONS

Senior Service College Strategic Research Paper, “A CINC for Sub-Saharan Africa? Rethinking the Unified Command Plan,” nominated for 1999 Chairman, JCS writing award and subsequently published in “PARAMETERS, U.S. Army War College Quarterly,” Winter 2000-2001.