Boys' Academic Achievement at the Secondary Level in Jordan between 2005 and 2009

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BOYS’ ACADEMIC ACHIEVEMENT AT THE SECONDARY LEVEL IN JORDAN BETWEEN 2005 and 2009

By

SHADIN YAHYA BELAL

Dissertation Committee

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ABSTRACT

Boy’s Academic Achievement at the Secondary Level in Jordan
Between 2005 and 2009

This study investigated factors linked to the underachievement of boys’ education in Jordan. These school factors include the availability of male teachers, availability and infrastructure of school, student-teacher ratio (STR), and the quality of teachers. Both qualitative methods and archival research were utilized to collect data in urban and rural areas in Jordan. Findings reveal the existence of an academic disparity in achievement at the secondary level in Jordan. Male students have a lower participation in Jordan’s Tawjihi exam. An analysis of Tawjihi results also reveals that girls outperformed boys in all Tawjihi stream exams except for sharia’h between 2004 and 2009. Shown to be problematic is a shortage of male teachers, specifically in the areas of math and science. In regards to infrastructure, school buildings were deemed to be in poor condition due to their lack of accommodation for the number of male students. Furthermore, unqualified teachers are hired in the areas of math and science to teach male students as a result of male teacher shortages.

An analysis of educational policy in Jordan found that policies related to education were generic and intended to provide equal access to education for both males and females. Policy analysis also revealed that the government provided technology and other school material, certified teachers, and access to both coeducational and single-gender learning environments.

These findings shed light on the present education of boys in a country trying to expand and improve their educational system. The research proposes recommendations
on how school facility conditions, teacher and education quality, and further studies conducted in the area of boys’ academic achievement can help to alleviate the gender achievement gap of boys at the secondary level.
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TABLE OF CONTENTS

APPROVAL FOR SUCCESSFUL DEFENSE .............................................................. i
ABSTRACT ........................................................................................................... ii
ACKNOWLEDGMENTS ........................................................................................ iv
TABLE OF CONTENTS ....................................................................................... v
LIST OF TABLES .................................................................................................... viii
LIST OF FIGURES ................................................................................................ ix

CHAPTERS
CHAPTER I – INTRODUCTION

Country Background ............................................................................................. 5
Statement of the Problem ...................................................................................... 8
Purpose of the Study .............................................................................................. 11
Research Questions ............................................................................................... 11
Subsidiary Questions ............................................................................................ 12
Significance of the Study ...................................................................................... 12
Delimitations and Limitations of the Study ........................................................... 13
Definition of Terms

CHAPTER II – REVIEW OF RESEARCH, THEORY, AND LITERATURE

Introduction .......................................................................................................... 17
A Brief History of Education in Jordan ................................................................. 18
A Description of the Educational System in Jordan ............................................. 19
Boys’ versus Girls’ Academic Achievement Worldwide ................................ 24
Boys’ versus Girls’ Academic Achievement in the Arab World .................... 29
Education Research on Boys’ versus Girls’ Academic Achievement in Jordan ...... 31
Factors Affecting Boys’ Academic Achievement ............................................. 32
  Lack of Male Teachers ...................................................................................... 33
  School Availability and School Infrastructure .................................................... 36
  Teacher Quality ................................................................................................ 39
  Classroom Size .................................................................................................. 43
  Government Policies .......................................................................................... 48
  Policies Found to Affect Boys’ Participation ...................................................... 50
Summary .............................................................................................................. 52

CHAPTER III – RESEARCH DESIGN AND METHODOLOGY

Introduction .......................................................................................................... 55
Research Design ..................................................................................................... 55
Research Questions ............................................................................................... 56
  Main Research Questions .................................................................................. 56
  Subsidiary Research Questions ......................................................................... 57
<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comparison of Generic and Gender Related Policies</td>
<td>49</td>
</tr>
<tr>
<td>2</td>
<td>Number and Description of the Selected Interviewees</td>
<td>58</td>
</tr>
<tr>
<td>3</td>
<td>Research Design</td>
<td>68</td>
</tr>
<tr>
<td>4</td>
<td>Students Who Participated in Tawjihi in Urban and Rural Areas</td>
<td>72</td>
</tr>
<tr>
<td>5</td>
<td>Students Who Passed Tawjihi in Urban and Rural Areas in Jordan</td>
<td>74</td>
</tr>
<tr>
<td>6</td>
<td>Students Who Participated in Tawjihi Exam in Urban and Rural Areas</td>
<td>75</td>
</tr>
<tr>
<td>7</td>
<td>Students Who Passed the Tawjihi Exam in Urban and Rural Areas</td>
<td>77</td>
</tr>
<tr>
<td>8</td>
<td>Students Who Passed the Tawjihi Literacy Stream Exam</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>Students Who Passed the Science Stream Exam</td>
<td>79</td>
</tr>
<tr>
<td>10</td>
<td>Students Who Passed the IT Stream Exam in Jordan</td>
<td>80</td>
</tr>
<tr>
<td>11</td>
<td>Students Who Passed the Nursing Stream Exam</td>
<td>81</td>
</tr>
<tr>
<td>12</td>
<td>Students Who Passed the Sharia’h Stream of the Tawjihi Exam</td>
<td>82</td>
</tr>
<tr>
<td>13</td>
<td>Students Who Passed the Vocational Stream of the Tawjihi Exam</td>
<td>83</td>
</tr>
<tr>
<td>14</td>
<td>Teachers in Urban and Rural Areas in Jordan</td>
<td>87</td>
</tr>
<tr>
<td>15</td>
<td>Type and Number of Public Schools in Urban and Rural Areas</td>
<td>89</td>
</tr>
<tr>
<td>16</td>
<td>STR for grade 12 in Urban and Rural Areas in Jordan</td>
<td>96</td>
</tr>
<tr>
<td>17</td>
<td>Comparative Statistics of MOE Budget in Jordan</td>
<td>98</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1: School factors and boys’ academic achievement .......................................................... 10
Figure 2: Types of Educational Policies ......................................................................................... 50
Figure 3: Students Attended Tawjihi in Rural and Urban Areas .................................................. 73
Figure 4: Students Passed Tawjihi in Rural and Urban Areas ...................................................... 74
Figure 5: Students Who Passed the Tawjihi Exam in Rural Areas .............................................. 76
Figure 6: STR in Urban and Rural Areas in Jordan for ................................................................. 97
Figure 7: MOE Budget in Jordanian Dinar Between 2004 and 2009 ........................................... 98
CHAPTER I

Introduction

Current evidence from a range of national and international studies indicates that boys are less likely than girls to be actively engaged in schoolwork (Bleach, K, 1998, Martino & Meyenn, 2001; Cresswell, et al., 2002; Graeme, 2002, Jha & Kelleher, 2006; University of Cambridge, 2007; UNESCO, 2007; Gosai, 2009, Belal, 2010). The phenomenon of this gender gap in education has been recognized in both developed and developing countries since the 1990s. In the United Kingdom (UK) during the 1960s and 1970s (Martino & Meyenn, 2001), boys’ underachievement was seen as a byproduct of inequalities in social class and/or race rather than gender differences (Martino & Meyenn, 2001). In the 1990s the “problem” of boys’ underachievement was construed as ‘boys being boys’ in their reaction to major changes in the educational system (Martino & Meyenn, 2001).

In the United States, studies conducted on boys’ underachievement found that boys scored lower in language arts on standardized tests than girls (U.S. Department of Education 1999, 2000). Furthermore, statistics reveal that boys are underachieving at a higher rate than girls in both reading and writing, including the National Assessment for Educational Progress report indicating significant gender differentials in the 1998 reading and writing assessments (U.S. Department of Education 1999, 2000). Boys also enroll in fewer advanced courses and have higher dropout rates (Taylor & Lorimer, 2002).

In some developing countries such as those in Latin America and the Caribbean, boys generally have higher repetition rates in grades and lower academic achievement levels than girls, and in some countries, a higher rate of absenteeism (UNICEF 2004).
The UNESCO (2007) also, stressed the fact that boys’ underachievement is a growing problem in some developing countries and it requires policy attention.

In the Arab States, a gender gap to the disadvantage of boys is observed in graduation ratios at the lower secondary level. In three-quarters of the countries with available data, boys’ completion rates at the lower secondary education tend to be below the rates for females (UNESCO, 2011). Girls in most Arab countries as reported by UNESCO (2011) for example, tend to have higher graduation rates than boys with the exception of, Djibouti and Oman. UNESCO (2010) also reported that the increase in enrollments in secondary education for girls was higher than that of boys and this gender parity suggests that if trends continue, women soon would be the majority (UNESCO/GED, 2009). Researchers have identified school factors such as the availability of male teachers, teacher quality, pupil-teacher-ratio, and school infrastructure as affecting boys’ academic achievement (Koutros & Petruso, 2010).

Teachers play a significant role in providing students with opportunities to discover and reach their full potential, thereby ensuring that societies progress. Yet teacher shortages have long been a concern in many parts of the world. According to UNESCO (2006), it is estimated that achieving the educational millennium development goal of universal primary education by the year 2015 is dependent upon recruiting 18 million new teachers around the world. In addition, Nelson (2003) claims the diminishing availability of male teachers is a global issue. The proportion of men within teaching ranks is declining significantly. Moreover, Koutros (2010) indicated that the lack of male teachers, particularly at the elementary level, has become epidemic throughout the world.
A recent survey, conducted by the National Education Association (NEA), revealed that men accounted for less then one-fourth of all teachers (Koutros, 2010).

Countries with the greatest shortfall in teachers tend to have low secondary enrollment ratios, thus resulting in a small pool of educated adults from which to recruit teachers (UNESCO, 2006). Moreover, while combined teacher salaries in these countries represent a large part of the education budget, there are many primary school teachers with individual salaries that are low and which have been trending downward over the years (Bennell, 2004). This implies that many countries are faced with either recruiting under-qualified teachers, or allowing pupil-teacher ratios to escalate. Many low-income countries have historically chosen to recruit under-qualified teachers. These least qualified teachers tend to be assigned to remote hard-to-staff schools (UNESCO Institute for Statistics, 2006).

In addition to trained teachers, researchers have also found that classroom size has an effect on student achievement. According to Project STAR (Student-Teacher Achievement Ratio), reducing classroom size is found to improve student academic achievement (Achilles, 1980). Research conducted by Galton and Hargreaves (1996) pointed out that smaller classes contribute to such things as giving teachers the opportunity to spend more time with each student discussing tasks and giving feedback on work. Moreover, the Student Achievement Guarantee in Education (SAGE) program, which began in 1996-97 to improve the academic performance of students living in poverty, found that student performance in K-3 classrooms with an optimum student-teacher ratio of 15 to 1 had a direct correlation to higher academic achievement: higher academic achievement is associated with smaller class size.
Availability and adequacy of schools is another important factor explaining the academic achievement of both boys and girls. Many findings have shown that the success of any educational effort rests on the availability of physical facilities, especially school buildings. Writing of its importance, Olutola (1982), noted that the availability of the school building and related structures contribute to good academic performance as they enhance effective teaching-learning activities. Heyneman and Loxley (1980) found that there were inadequate and poor school facilities in developing countries. Insufficient school facilities contributed to poor student performance in comparison to student achievement in developed countries where school infrastructure is much better (Dahar, 2011). In the Arab States, research reveals the widespread problem of boys’ underachievement in the region. In Jordan during the years 1999-2005, Belal (2010) found that boys in grade 12 scored lower (43.1%-24.19%) on the yearly national exam conducted by the MOE than females (57.3%-32.2%) in all subject areas. This gender gap in education has been the subject of research in light of data, which show that girls were outperforming boys (Belal, 2010). In Jordanian schools, girls have consistently outperformed boys for five consecutive years in all subject areas (Belal, 2010). Conducting a study of boys’ underachievement is vital not only for individual students, but also for society as a whole. Researchers Montgomery (1998) and Fletcher (2001) indicate that underachieving boys will have a significant impact on society. According to their findings, boys will ultimately be unable to contribute to society at their fullest capacity, which will in turn weaken a country’s economy (Montgomery, 1998; Fletcher, 2001).
Country Background

The Hashemite Kingdom of Jordan is a relatively small country with an area of approximately 89,342 sq. km. (34,495 sq. mi.). It is similar in size to Austria or Portugal. According to the World Fact book (2009), the latest estimated population of Jordan is 6,342,943. About 92% of Jordanian people are Muslim, 6% Christian, and 2% are listed as other. The country is bordered on the north by Syria, to the east by Iraq and Saudi Arabia and to the west is the occupied territory of Palestine (see Appendix A). About 70% of Jordan's population is urban, while less than 6% is rural. Jordan is classified by the World Bank as a "lower middle income country" with a Gross Domestic Product (GDP) of $4,700 per capita. As indicators of societal well being, education and literacy rates in Jordan are relatively high, compared to other countries with similar incomes (U.S. Department of Statistics, 2009).

Based on the information provided by the Canadian International Development Agency (CIDA) (2008), hundreds of thousands of Palestinians migrated to Jordan after the 1948 and 1967 Arab –Israeli wars, resulting in a substantial increase of the Jordanian population. Palestinian immigrants were granted citizenship thereafter. During the late 1990s and early 2000s, more than 300,000 permanent returnees and 1 million transit Iraqi refugees entered Jordan before, during and after the Gulf Crisis related to the invasion of Iraq by the United States. The overwhelming number of refugees resulted in an urgent need for development to accommodate this mass migration. Accordingly, several international organizations such as United Nations High Commission for Refugees (UNHCR), the International Red Cross, the Jordan Red Crescent Society, and the international community were focused on assisting Jordan, as that nation was ill-equipped
to withstand the strain on its social, economic, health, educational, and financial institutions (CIDA, 2008).

About 31.3% of the Jordanian population is 14 or younger, while 64% are between 15 and 64 years of age. Almost one-third of all Jordanians are enrolled in educational facilities (World Factbook, 2008). General education principles in Jordan are derived from the Arabic Islamic civilization and are contained in the Jordanian Constitution and introduced to everyone in Jordan equally and without any discrimination based on sex, language, ethnicity, and religion (Al-Jabery, 2008). Ministry of Education (MOE) (2004) statistics indicate that between the years of 2003 and 2004, there were 5,526 schools in Jordan. Additionally, there were 76,946 teachers, and 1,515,315 students, of which there was almost equal representation of males (51%) and females (49%) (MOE, 2004).

The educational system in Jordan includes basic (primary and middle schools) and secondary schools for grades K-12. The basic school consists of grades 1-10. Basic schooling is free and compulsory for all Jordanian students. Toward the end of the tenth grade, students’ scores for the previous three years (8th, 9th, and 10th) are combined to determine the secondary stream (track) in which each student will continue. Students’ preferences usually are taken into account, but the final decision on placement rests with the Ministry of Education (MOE, 2004).

The secondary cycle (grades 11 and 12) is divided into two main streams: one is an academic stream (including literacy, science, health/nursing, sharia’h, and Informational Technology (IT)) that concludes with a general secondary education examination called Tawjihi. The other is an applied (vocational) stream (vocational
stream includes: hotel and business, mechanics, agriculture, and home economics), which consists of specialized vocational courses and prepares the student for skilled labor through apprenticeship programs run by the Vocational Training Corporation and the Ministry of Education. Students who participate in the vocational stream are also required to take the Tawjihi exam at the end of grade 12. Twelfth grade students must pass the Tawjihi exam in order to obtain a high school diploma and/or attend a postsecondary institution. Although the examination is mandatory for graduation purposes, twelfth grade enrollees can choose to opt-out of taking the exam. According to the MOE (2004), 70.5% of Jordanian students go to public school, 19.2% go to private schools, 8.9% go to United Nations Relief and Works Agency (UNRWA) schools, which are operated by the United Nations, and 1.4% attend other governmental institutions (MOE, 2004).

For the past three decades, Jordan has focused on human resource investments as part of an extensive reform initiative. The government spends more than 5% of its Gross Domestic Product (GDP) on education. According to the World Bank (2005), this investment is considered higher than that made by other middle-income countries, and was instrumental in improving the literacy rate from 69.2 to 91% between 1980 and 2002. Jordan also leads the Arab region in terms of female literacy rates (85.9%).

Between 2001 and 2004, Jordan eliminated the gender gap in enrollment that disproportionately disadvantaged females, particularly at higher education levels. Their Gender Parity Index (GPI) at the primary level reached 1.01, and 1.02 at the secondary level (i.e., a GPI equal to 1 indicates parity between females and males, a value less than 1 indicates disparity in favor of boys/men, and a value greater than 1 indicates disparity in favor of girls/women) (UNESCO Global Monitoring Report (GMR), 2008). The
primary gross enrollment for both girls and boys increased from around 81% in 1980 to 98% in 2001.

**Statement of the Problem**

Boys’ underachievement has been a major concern within academic circles and among government bodies in developed and developing countries due to its effect on families and societies in general. Buchmann and DiPrete (2013) indicate that such a large gender gap in educational attainment has potentially large implications for economic outcomes, as well as for other aspects of life that are enhanced by education. For example, an educated male or female will have better health and a more stable marriage and family life. The benefits of education also can be passed down from one generation to the next, because educated parents have more financial resources to invest in their children. Failing to finish high school or obtaining only a high school diploma or GED (General Equivalency Degree) certificate reduces an individual’s quality of life, as well as placing his or her children at greater risk (Buchmann & DiPrete 2013).

According to Alrai Jordanian Newspaper (2011) in an article “Why Our Boys Are Failing,” the Ministry of Education (MOE) as well as many parents and educators expressed concern about the large number of male students failing the national (Tawjihi) exam. Results of the exam ultimately determine whether or not a student gains access to university and, additionally, which courses or major program of study a student is permitted to pursue. On average, about half the students participating pass the exam. The head of the MOE urged educators and parents to investigate reasons behind the failures of boys in order to collectively develop a solution to this problem. A compelling reason for
doing this study was to see if the implementation of specific gender policies by the MOE in 2005 contributed to a shift in male students achievement on the Tawjihi exam.

In Jordan, limited studies that address boys’ academic achievement, especially at the secondary level, have been published. Abou-Hola’s (2005) research on pupils’ performance in science and attitudes towards science in Jordanian primary schools adopting different teaching methods (traditional and cooperative) found that, across all approaches to teaching, and across three age groups (11, 13, and 14 years old), girls had more positive attitudes towards science than boys, and that they outperformed boys in the end of unit test. Belal’s (2010) research findings, which focused on gender equality at secondary education in Jordan, found that girls outperformed boys between 1999 and 2005 in all subject areas. She concluded that the Jordanian government has to further plans to investigate the phenomenon of boys’ underachievement. Another study that was conducted by Khwaileh and Zaza (2011) at the undergraduate level found that female students had higher mean GPAs than their male counterparts at significant rates over a span of six years (2002 to 2007). Statistical evidence in most areas across all years in this study indicate there were significant differences in GPAs between male and female students, in which female students dominated all areas of study.

As mentioned earlier, research and studies that focused on boys’ education link their underachievement to school factors. These school factors include the availability of male teachers, availability and infrastructure of school, STR, and the quality of teachers. Given previous research, it is imperative that boys’ academic underachievement in Jordan be the subject of additional investigation. In the present the educational model (see figure
1) is used to analyze the effect of school factors on boys’ academic achievement in Jordan.

![Diagram of school factors affecting boys' academic achievement]

*Figure 1. School factors and boys’ academic achievement.*

Based on literature (Harris & Plank, 2000; Stecher 2001; Zurawsky, 2003; SAGE law, 2004; UNESCO, 2006; Hainualt, 2010) it is assumed that the pupil-teacher ratio will be associated with boys’ academic achievement. For example, the previous research shows that the lower the student-teacher ratio, the more successful the academic outcomes. There is also research (Earthman & Lemasters, 1996; McEwan, 1999; Kennedy, 2003) to link the availability and adequacy of schools with students’ performance. The well-situated school buildings with aesthetic surroundings, a playground, lavatory, etc. contribute to achieving higher educational attainment by students. In addition, there is research to show (Hammond, 2000; Goldhaber & Brewer, 1997, 2000; Brown, 2003) that the availability as well as the quality of male teachers
were found to be associated with boys’ academic performance. Students taught by certified teachers for example, were found to score higher than students taught by noncertified teachers.

**Purpose of the Study**

In reviewing literature on boys’ educational achievement in developing countries, a general lack of research on gender gap was found throughout the Arab States, and Jordan in particular. Therefore, the purpose of this study is to understand boys’ academic achievement compared with girls at the secondary educational level in Jordan. In particular, the objective of the study is to investigate changes in male to female academic achievement between 2004 and 2009 at the secondary level in Jordan, and the school factors that influence their academic achievement. This study also seeks to bring to light that data on student achievement in Jordan is not frequently accessible and that although there is information on the underperformance of students, this study describes data on male students available through the Ministry of Education that is not otherwise made available to the public.

Two overarching research questions govern this study. They are:

1. What was the status of boys’ academic achievement between 2004 and 2009 at the secondary level in Jordan and how has this changed over time?

2. What school factors in terms of availability of male teachers, availability and adequacy of school buildings, student-teacher ratio (STR), teacher quality, as well as government policies, contributed to the academic performance of male students at the secondary level in urban and rural Jordan?
Subsidiary Questions

1.1 What is the passing rate at the secondary level of boys relative to girls in urban and rural Jordan, and how has it changed over time?

1.2 How have policies of the Jordanian government in respect to school factors such as availability of male teachers, availability and infrastructure of schools, STR, and teacher quality influenced boys’ academic achievement in urban and rural areas.

1.3 How have existing government policies in urban and rural areas, if any, affected boys’ academic achievement in secondary education?

Significance of the Study

The significance of this study is demonstrated in areas of policy, practice and knowledge. It will contribute to the body of knowledge regarding gender gaps at the secondary level in developing countries. This study will help identify institutional factors that can improve boys’ education and guide decision makers to develop strategies nationally and internationally for enhancing boys’ educational performance. This study’s significance also may be found in the fact that it remains the only research that is dedicated to analyzing boys’ schooling in Jordan. Accordingly, it may serve to extend knowledge of the gender gap in education and add to studies completed in other developing countries. Lastly, it is hoped that the results of this study will be used nationally to demonstrate best practices and advance the educational level of boys and girls at the secondary level in Jordan in order to make that country more competitive in comparison to other countries.
Delimitations and Limitations of the Study

A number of delimitations should be considered when reviewing this study. This study is delimited to one data source: the Jordan Ministry of Education, which is based on the Jordanian department of statistics and includes the period from 2004 to 2009. The study also is limited to students in grades 12, ages 17 to 18. In addition, the study is using the Tawjihi exam that is conducted by the MOE yearly for boys and girls ages 17 to 18. Limitation of the study lies in the availability of data and reliability of its analysis. Missing data and educational policy changes contribute to questions of reliability.

While the study employs Ministry of Education data as part of its quantitative sources of information, interviews also are used to provide in-depth details of those school supply-side factors that may have influenced boys’ education at the secondary level. Interviews are restricted to a selected number of participants. Their viewpoints are used to show the spectrum of discourse that exists in Jordan regarding boys’ secondary education. Some participants were enlisted through the assistance of MOE officials, while others were professional educators who are considered reliable sources of information based upon their knowledge and experience in specific disciplines.

Organization of the Dissertation

The dissertation consists of five chapters. Chapter One introduces the study and describes the nature of the problem; the purpose of the study; the significance, delimitation and limitation of the study; as well as the definition and terms of the study. Chapter two reviews literature related to boys’ academic achievement. The first section presents an overview of education in Jordan. The second section sheds light on the disparity between boys and girls’ academic achievement worldwide. The
third section focuses on boys’ academic achievement in the Arab world. The fourth section focuses on educational research on boys and girls academic achievement. The last section presents school factors that affect boys’ academic achievement at the secondary level. It is divided into four parts: availability of male teachers; availability and adequacy of school buildings; teacher quality; and student-teacher ratio. As indicated in source materials, these related facts have been cited as major influences on boys’ academic achievement.

Chapter three describes the research design and research methodology. It also describes research questions, sampling, instruments, procedure, and data collection. Chapter Four describes the findings of the study by answering the main and subsidiary research questions of the study. Chapter Five includes a discussion of the findings of the study, as well as suggestions and recommendations for future research.

**Definitions and Terms**

1. *Arab States*: A geographical area without precisely defined borders. The modern definition of the region includes Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates (UAE), and Yemen (UNESCO, 2002).

2. *Developing Countries*: Low and middle-income countries generally referred to as the 'South', in which most people have a lower standard of living, with access to fewer goods and services than most people in high-income countries. Today, there are approximately 125 developing countries, each with a population of more than 1 million persons; in 1995, the combined total population of these countries was more than 4.7 billion (UNESCO, 1998).
3. Gender gap: By definition, a gender gap is a disproportionate difference or disparity between the sexes. Conventional wisdom is that differences between boys and girls in math and science are not a matter of biology; any observable differences are influences of the social environment. When parents encourage school-age children to excel in all subject areas, the school-based gender gap disappears.

[http://www.iste.org/content/navigationmenu/publications/ll/llissues/volume_33_2006_2005_/may_no_8_/33806a.pdf 1.International Society for Technology in Education]<br>

4. Gross Enrollment Rate (GER): The total enrollment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.

5. Policy and Policymakers: Official statements of intention to act on certain problems. Policies may take a variety of forms: legislative actions, official recommendations in reports by governmental agencies or departments, or directives imposed by non-legislative governmental bodies (Stromquist, 1997).

6. Primary education (ISCED Level 1): Sometimes called elementary education, primary education refers to educational programs that are normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics, along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music. In some cases, religious instruction is also featured. These subjects serve to develop children's ability to obtain and use information they need about their homes, community, country, etc. Synonym: primary schooling (UNESCO Institute for Statistics, 2006).
7. **Rural areas:** According to the Ministry of Education (MOE) (2005), a rural area is any incorporated place with fewer than 5,000 inhabitants (MOE, 2005).

8. **Secondary education:** Jordan Ministry of Education refers to grades 11-12 as secondary education. Accordingly, the researcher used Jordanian classification to conduct his/her research (MOE, 2005).

9. **Tawjihi:** A yearly exam conducted by the MOD of Jordan at grade 12 for male and female students ages 17 to 18 to assess students in all subject areas. Tawjihi GPA is used to determine student qualifications for college enrollment and curriculum (MOE, 2005).

10. **Student–teacher ratio (STR):** STR or student-teacher ratio is the number of students who attend a school or university divided by the number of teachers in the institution. For example, a student–teacher ratio of 10:1 indicates that there are 10 students for every teacher (Wikipedia, 2013).

11. **Teacher quality/highly qualified teacher:** is defined as fully certified, possessing a bachelor’s degree, and demonstrating competence in subject knowledge and teaching (U.S. Department of Education, 2006).

12. **UNESCO** is the United Nations Educational, Scientific and Cultural Organization

13. **An urban area is characterized by higher population density and widespread features of modern invention compared to those areas that surround it.** Measuring the dimensions of an urban area helps in analyzing population density and urban sprawl, and in determining the size and makeup of urban and rural populations (Wikipedia, 2013).
CHAPTER II

REVIEW OF RESEARCH, THEORY, AND LITERATURE

Introduction

The main objective of this research is to understand the disparities between boys’ academic achievement and that of girls’ achievement at the secondary educational level in Jordan. In particular, the objective of this study is to identify changes in male to female academic achievement at the secondary level in urban and rural areas in Jordan, as well as the factors that influence these changes. In addition, this study will investigate the government’s role in terms of policy initiatives associated with school factors such as the availability of male teachers, teacher quality, student-teacher ratio (STR), and the availability and adequacy of school buildings and their effect on boys' academic achievement.

Because there is a general lack of research on boys’ education in the Arab States, particularly in Jordan, I also drew upon studies of boys’ academic achievement in other developed and developing countries in an attempt to understand the role and significance of various factors involved in improving boys' academic performance. Policies and interventions adopted in developing countries to improve boys' academic achievement also were identified and studied.

The literature review, then, is divided into four sections. The first section presents a general overview of education in Jordan. The second section explains the disparity between boys and girls’ academic achievement in developed as well as developing countries. The third section focuses on boys’ academic achievement in the Arab World. The fourth section focuses on educational research of boys versus girls’ academic
achievement in Jordan. The last section presents school factors that affect boys’ academic performance at the secondary level. It is divided into three sub-sections: availability of male teachers, teacher quality, student-teacher ratio (STR), and availability and infrastructure of schools. As mentioned in literature referenced in this study, these interrelated facts have been found to have major impact on boys’ academic achievement.

**A Brief History of Education in Jordan**

Jordan is a youthful society, with 59.4% of Jordanians between the ages of 15-64 and 37.3% less than 15 years old. Population there has doubled since 1980, and in the year 2000 the population growth rate was 3.4%, compared with 2.3% in 2006. Projections are that the population will continue to increase, reaching 11 million within the next 30 years (MOE, 2001; MOE, 2008). Compared with third world countries in general and the Arab States in particular, Jordan occupies an advanced rank in human resources development standards in terms of its natural resources and Gross National Product (GNP). The infant mortality rate was reduced from 29 for every 1,000 newborn babies in 1999, to 24 for every 1,000 in 2006. Life expectancy rates went up for both males and females, with a combined increase from 69 % in 1999 to 71.7% in 2006. Meanwhile, the fertility rate declined from 3.8 % in 1999 to 3.7% in 2006 for women aged 15-49. This rate declined by 3.5% in urban areas and 4.2% in rural areas (MOE, 2008).

According to the MOE (2008), the Jordanian constitution and law guarantee equal rights for Jordanians in job and educational opportunities. The state is responsible for securing these for all citizens within its available resources. Basic education is compulsory and free in public schools. The Jordanian government has laws to protect
organized labor and safeguard laborers’ rights. Citizens are treated equally under the law, and there is no discrimination made among them in terms of rights and duties, regardless of their race, religion and language. The national government attempts to ensure that Jordanians live in peace, with guarantees of personal freedom.

The MOE (2008) indicates that Jordan has endorsed acts related to human rights by eliminating many forms of discrimination between males and females in 1992. Jordan designs its programs so that individuals with special needs can be integrated with other groups in society. The MOE (2008) also reports that the Ministry of Social Development, the Ministry of Education, and other stakeholders work together to open schools and design special programs to integrate people with special needs into the local community. A national strategy for the handicapped that includes various programs and activities was adopted in 2007 to upgrade services provided for special needs individuals.

The MOE (2001) indicates that Jordan’s educational system is focused upon preparing Jordanian citizens for future challenges and aspirations. Accordingly, the Jordanian state provides free compulsory education from grades 1-10. The most significant indicators of educational development in Jordan in the year 2000 reveal the following: (a) the student enrollment rate was 1.01% (b) students in grades 1 to 12 was 29.3%, 51% males and 49% females (c) illiteracy rate has dropped to 11.6% (MOE, 2001).

A Description of the Educational System in Jordan

According to Al-Tall (1989), when Jordan was under the rule of the Ottoman Empire (1301-1922), its education system was run by the director of education in Syria,
and received little attention. Prior to the declaration of Transjordan as an independent state, only 19 schools were established for boys and girls (with an enrollment of approximately 980 male and 59 female students) with a combined total faculty 27 men and women teachers.

Norman (1989) reported that the education system underwent a rapid increase in school attendance in Transjordan during the 1920s. After the establishment of the Emirate of Transjordan in 1921, there were nearly 25 religious schools, which provided Qur’anic and basic Arab language studies (Robins, 2004). According to the MOE (1955), education beyond the elementary level was available only to a limited number of boys from elite groups within the population.

When the Ministry of Education assumed responsibility for all aspects of education in 1948, it expanded the number of schools and opened more colleges and universities. Presently, there are over 3,500 government schools, 1,700 private schools, 48 community colleges, and 26 universities (Ministry of Higher Education, 2006). The Jordanian government provides schools in all urban as well as rural and isolated areas, making access to education available to all citizens, rich and poor.

One-third of all Jordanians are enrolled in educational facilities provided by the Jordanian government to all its citizens. Education is also free and compulsory for all children ages 6 through 15, grades 1-10. The number of students attending elementary and secondary school in 1997-98 was 1,346,178, with 951,831 of them attending schools run by the Ministry of Education, and 229,487 in private schools. The number attending schools run by the UNRWA was 143,893, while 20,967 attended other government-run schools. During the years 2003 and 2004, the number of schools in Jordan reached 5,526;
the number of teachers was 76,946; and the number of students rose to 151,315, of which about one-half were females (Abu-Samak, 2006). In 2006, the student population reached 1.4 million. There are 122,000 students enrolled in secondary schools, of whom 84,000 are enrolled in public schools (Ministry of Higher Education, 2006). The structure of Jordan’s educational system consists of the following three stages:

1. Pre-school: a non-compulsory stage run by the private sector only. Children ages 3 and up can be admitted to kindergarten at their parents’ discretion, because pre-school enrollment is not mandatory. The Ministry of Education has established a number of kindergartens, particularly in remote and needy areas, with a mission of providing children well-balanced educational growth.

2. Basic Education: a compulsory stage of 10 years that includes grades 1-10. A unified curriculum is used throughout the country, and students are assessed yearly. Based upon students’ academic achievement, students in the 8th through 10th grades are assigned to one of the various streams in the next stage.

3. Secondary Education: a two-year stage that ends with sitting for the general examination called Tawjihi. The Tawjihi exam grade is used to determine a student’s college and university eligibility and placement. The Ministry of Education issues transcripts and certificates to those students who pass the exam in order to move them to one of two main streams:

- Academic sub-stream, which includes scientific, literacy, health/nursing, sharia’h, and informational technology (IT) specialties.
- Vocational sub-stream, which includes mechanics, agricultural, hotel and business, and home economics specialization.
This cycle provides specialized cultural, scientific, and vocational experiences, which meet the existing and anticipated needs of the Jordanian society. It is also intended to provide individuals with the skills they need to serve and perform well in society. Towards the end of the 2-year cycle, a national examination is held, and successful students are provided a general secondary education certificate. Students who wish to continue their education are allowed to enter a college or university to pursue their undergraduate studies.

Towards the end of 1990s, the Ministry of Education recognized the importance of meeting the needs of all students. Several schools and centers were established in the Kingdom such as the Pioneer Centers to serve distinguished students and enhance their basic academic skills. The Ministry of Education also provides several non-formal education programs such as a literacy program, continuing education classes for dropouts, and adult education programs. These programs generally are scheduled as evening classes to allow students to continue their education and earn their college degrees. The Ministry of Education also runs or supervises different types of schools which include:

a. The Ministry of Social Affairs, which provides services to students with special needs.

b. The Directorate of Education and Culture at the Armed Forces, which oversees nineteen schools with a combined enrollment of 10,217 students scattered in different parts of the country.

c. UNRWA, which runs 199 schools, enrolled 14,135 Palestinian refugee students between 1999 and 2000.
d. Noor Al-Hussein Foundation, which cares for gifted students from the Jubilee School, is a co-educational secondary school where gifted students in the ninth through twelfth grades are provided special programs. The number of students who enrolled in this institution for the year 2000-2001 reached 393.

e. The Jordanian Hashemite Fund, which runs several kindergartens and care centers for handicapped individuals.

f. Higher Education: Higher education in Jordan was first established in 1951. Al-Hussein College in Amman originally was established for the purpose of training teachers. The duration of study was two years leading to the award of the General Secondary Certificate. In 1965, the college was renamed the “Teacher Institutes,” and in 1981 it was restructured as community colleges. Higher education in Jordan continued to expand with the establishment of Jordan University in 1962, the first university in the country. Additional universities were established, including Yermouk University, Mu’tah University, Jordanian Science and Technology University, Al-Elbait University, Al-Hashemiyyah University, Al-Balqa’ Applied University, Amman University College for Technical Engineering, College of Al-Da’wah and Religion Principles, and Al-Hussein Ben Talal University.

In 1989, the Private Universities Law was passed, permitting the establishment of private universities. The first private university was established in 1990, followed by several others. Ultimately, twelve were founded. These private universities include: Amman Private University, Philadelphia University, Al-Isra’ University, University of Applied Science, Petra University, Al-Zaytoonah University, Irbid Private University, Jerash
Boys’ versus Girls’ Academic Achievement Worldwide

In a study conducted by Gibb, et al., (2008) that examined a cohort of 1,265 individuals studied from birth to age 25, researchers found there was a small yet pervasive tendency for females to score better than males on standardized tests. Research also indicated that these differences could not be explained by differences in cognitive ability, because males and females had similar IQ scores. Instead, research showed that behavioral causes likely produced this disparity. Males were more likely than females to exhibit inattentive, restless and distractible behavior, as well as aggressive, antisocial and oppositional behavior. These results suggest that one approach to reducing gender differences in educational achievement lies in improving classroom behavior (Gibb, al et. 2008).

On the 2009 US National Assessment of Education Progress (NAEP) results for grade 12, female students scored 12 points higher on average in reading than male students in 2009, which was not significantly different from the gaps seen in either 2005 (13 points score gap) or 1992 (10 points score gap). On the other hand, the 2005 and 2009 NAEP results in mathematics showed that male students in grade 12 scored 3 points higher on average than female students (Institute of Education Sciences U.S. Department of Education NCES, 2011).

Since the early 1990s, boys’ underachievement has received requisite attention in England where, similar to other Organization for Economic Co-operation and Development (OECD) countries, a consistently large gender gap has remained unchanged.
for more than two decades (Healey 2005). For example, girls in England were found to be ahead of boys at all levels of education, starting in the early years, with the highest difference in Key Stage 2 English and Key Stage 4 results: Key Stage 2 is the legal term for the four years of schooling in maintained schools in England and Wales normally known as Year 3, Year 4, Year 5 and Year 6, when pupils are ages 7-11. Girls also had consistently out-performed boys on the General Certificate of Secondary Education in Britain (GCSEs) since they were first introduced in 1988. Healey (2005) asserts that girls’ literacy results in England had been relatively stable over the past 25 years. Today, girls achieve higher average marks in a majority of year 12 subjects, while boys’ results have deteriorated to the point where 35% of 14-year-old boys fail to reach basic literacy benchmarks. Similarly, in Canada, “Boys’ literacy achievement in years 3 and 5 now lags behind that of girls by 4.5 percentage points. Year 12 retention rates are 11% higher for girls, driving a 6% higher rate of university entry” (Healey, 2005).

Gorard, et al., (1999) indicated that the survey of the Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ) and the Trends in International Mathematics and Science Study (TIMSS) being conducted in different groups of countries, revealed some important trends. First, girls tend to perform better than boys in countries where they have equal access to the school system, irrespective of income level. In countries where girls are disadvantaged in terms of access, gender differences in achievement generally are small or insignificant, an indication that girls do not usually underperform even when their participation has been restricted. Second, compared to boys, girls usually are more confident and perform better in reading. Gender differences usually are not as high in mathematics, subject matter in which girls may feel
less confident of performing well compared to boys. The general response to these findings, as Gorard, et al., (1999) stated, was one of “moral panic” at the evidence of boys’ underachievement.

Also, a new phenomenon has emerged in a number of countries, many of them in the Commonwealth, in which gender disparities in education are turning in favor of girls and against boys, both in terms of participation and performance. This is particularly evident in countries that have achieved universal access and have high participation rates for both girls and boys, at least at the primary stage of schooling (including a number of Commonwealth countries in the Caribbean, Europe, East Asia and the Pacific, and some in sub-Saharan Africa and South Asia) (Jha & Kelleher, 2006).

Moreover Jacobs (2002) explains that most studies in the United States (US) show that, on average, girls do better in school than boys. Girls get higher grades and complete high school at a higher rate than boys. Standardized achievement tests also show that females are better at spelling and perform better on tests of literacy, writing, and general knowledge (National Center for Education Statistics, 2003).

Based on the 2002 Caribbean Secondary Education Certificate (CSEC) examinations offered by the Caribbean Examinations Council (CXC), results show that boys’ and girls’ achievements in Jamaica are evenly distributed at the General Proficiency level in 11 science subjects, with each gender having an achievement gap advantage in five subjects and one subject showing no evident advantage either way. These trends are similar to those in Australia, where girls perform better in languages and the humanities, while boys do better in science and mathematics. In the humanities (General Proficiency) girls clearly show better performance in all subjects, with the
exception of French. With English language and literature included in this category, there is clear concern about boys’ diminished literacy and lack of rudimentary skills needed for further education and learning. Jamaica is experiencing both lack of participation and underperformance by boys at the secondary level of schooling (Bailey & Bernard, 2003).

Cresswell et al., (2002) also pointed out that boys at the secondary level are more likely than girls to leave school before completing year 12. Also, their average scores on end-of-school assessments are lower than girls. He also added that, upon graduation, the percentage of boys who go on to higher education is smaller than that of girls, although a larger proportion of boys do participate in vocational education and training programs.

Research also indicates that boys experience less success than girls throughout their primary and secondary education (Masters & Forster, 1997; Rowe, 2000; Slade, 2002).

Evidence from researchers also indicates there is a widening gap between the academic performances of girls and boys in Australia, as well as in English-speaking countries worldwide (McGaw, 1996; West, 1999; Rowe, 2000b). In 2005, Younger and Warrington, along with a group of University of Cambridge faculty, found that boys who show academic underachievement in English schools have been highly profiled since the early 1990s. They also indicated that, based on national data, there is legitimate concern over the achievement levels of some boys throughout their schooling. These data reveal that more boys than girls fail to achieve level 4 on national English tests and more boys fail to achieve the 5A-C benchmark grades in General Certificate of Secondary Education (GCSE) examinations taken at 16 in most England schools (Younger et al., 2005).

The 2000 Program for International Student Assessment (PISA) of 15-year-olds in reading and literacy, including students from 32 countries, found that females
outperformed males in every country on the combined reading literacy scale (Outcomes of Learning: Results from the 2000 PISA, 2001). Using the PISA 2007 data, the State of Learning in Canada: No Time for Complacency report found that in the years 2000, 2003 and 2006, girls scored on average 32 points higher than boys in reading, and that boys have more difficulty in language and learning in general. Also, more males identified themselves as “nonreaders,” and were more likely to be secondary school dropouts (66%). In 2002, 11% more female students than males met the expected level in writing. As Raymond (2008) explained, in every nation, girls performed significantly better than boys on reading and writing tests. In Finland, for example, girls scored 51 points higher in reading than boys, as well as 32 points higher in Canada. In the USA, where students averaged 53 points less than in Finland, boys still scored 28 points lower than girls (Raymond, 2008).

The 2009 PISA reports on performance of 15-year-olds in mathematics and scientific literacy in 65 countries (including the 34 OECD countries) reported that male students outscored their female peers in mathematics literacy in 35 of those countries, and were on average in the OECD (Organization for Economic Co-operation and Development) countries. On the other hand, female students outscored their male peers in five countries. In PISA science, female students outscored their male peers in science literacy in 21 countries, while male students outscored their female peers in 11 countries (Institute of Education Science (IES), 2013).

But the PISA 2009 report on literacy of students in the upper grades reveals that in most participating countries, girls still outperformed boys in reading, with the gender gap widened by more than one-fifth between PISA 2000 and PISA 2009. Also, test
results showed that girls outperform boys in reading in every PISA country. In OECD countries for example, the average gender gap is 39 score points, or over half a proficiency level. On average in OECD countries, only one in eight girls, but one in four boys fail to reach Level 2. In some countries, the great majority of underperformers are boys. In science as well, the PISA report of 2009 showed that girls outperform boys in 21 of 65 participating countries, while boys outperform girls in 11 countries, and in 33 countries there is no significant difference in performance between genders. On average in OECD countries, boys and girls perform about the same in science (PISA, 2009).

Boys’ versus Girls’ Academic Achievement in the Arab World

Recent data for the Arab world shows that in the past decade, girls outperformed boys in almost every academic area, and that net primary school enrollments for boys and girls compared favorably with world averages (UNICEF, 2006). In the vast majority of Arab countries, girls have a lower retention rate than boys (UNICEF, 2006).

According to the Trends in International Mathematics and Science Study (TIMSS) (2003), girls outperformed boys in some Arab countries. However, boys had higher math and science achievement in Lebanon, Tunisia, Morocco, Egypt, Syria, Palestine, and Saudi Arabia. In science achievements for eighth graders, results indicated that Arab girls outperformed boys. As for performance by nation, girls had significantly higher average achievement than boys in Bahrain, Jordan, Palestine, and Saudi Arabia. In contrast, boys obtained a higher average achievement in Morocco and Egypt, whereas no significant difference was noted in Lebanon and Syria (TIMSS 2003 Regional Report Executive Summary). The 2009 PISA report of the United Arab Emirates, one of the Gulf Cooperation Council (GCC) countries, reported a statistically significant gender
difference in scientific literacy favoring girls. This gender gap was the largest observed in scientific literacy among all PISA 2009 participants, including students in Jordan and Malta (Australian Council for Educational Research (ACER) 2011).

The 2009 PISA reading data also showed that girls surpassed boys in Qatar with a 66 scale-point difference. In several other Arab countries, there was either near-parity in performance (e.g., Algeria and Morocco) or a larger gap that favors boys (e.g., Lebanon, Syria, and Tunisia) (Karoly, 2010). Based on Abu Hola’s (2005) study of girls and boys academic attitudes in science at the elementary level, girls had more positive views of science than boys, and outperformed boys at the end of a unit test (Abu Hola, 2005).

Based on Shafiq’s 2011 study, girls’ academic achievement relative to boys was highlighted in seven predominantly Muslim countries: Azerbaijan, Indonesia, Jordan, the Kyrgyz Republic, Turkey, Tunisia, and Qatar. Girls did best in Azerbaijan, where they overachieved in reading, while no instances of girls underachieving in math and science were reported. Then, there is the case of Jordan, where there is no evidence of girls either overachieving or underachieving. Girls in Qatar and Turkey underachieve in mathematics, but do as well as boys in science, and overachieve in reading. In countries such as Indonesia, the Kyrgyz Republic, and Tunisia, girls underachieve in mathematics and science, and overachieve in reading (Shafiq, 2011).

On the other hand, few studies or other relevant literature were found on male academic achievement in Jordan. One recent study on gender equality at the secondary level conducted in 2010 by Fatimah Belal revealed an academic achievement gap between male and female students in the years of 2002-2005. In addition, the researcher found that female students in both urban and rural areas outperformed males in all subject
areas, including science and advanced math (Belal, 2010). Yet, little research has been
done on boys’ underachievement and the factors that affect their academic performance
in the Middle East, particularly in Jordan.

**Education Research on Boys’ versus Girls’ Academic
Achievement in Jordan**

Unfortunately, few studies tackled the issue of comparing male to female
achievement, especially at the secondary level in Jordan. Abu-Hola’s (2005) research on
girls and boys achievement in science using different teaching methods (traditional and
cooperative) in elementary schools in Jordan found that, across all approaches to
teaching, and across three age groups (11, 13, and 14 years old), girls outperformed
(66.88 – 66.75) boys (mean = 66.10 – 66.16) in end of unit testing. The researcher also
found that compared with boys, girls had more positive attitudes towards science. Also,
Belal (2010) conducted research on gender equality at the secondary education level in
Jordan with similar results that showed girls outperformed (57% -32%) boys (43%-24%)
between 1999 and 2005 in all subject areas. The researcher also indicated that the
phenomenon of boys’ underachievement requires additional investigation by the
Jordanian government, as well as the implementation of gender-specific policies that
target male students to improve their academic performance. Another study conducted by
Khwaileh and Zaza (2011) at the undergraduate level in Jordan found that female
students had higher mean GPAs (2.8085-2.8413) than male students (2.5605-2.5681) at
significant rates over the span of six years (2002 to 2007). Statistical evidence from most
areas across all years in this study indicate significant differences in GPAs between male
and female students that favored female students in all areas of study (Khwaileh & Zaza, 2011).

Furthermore, the USAID (2012) explained in their findings about Jordan that female students pursue secondary and higher education in greater numbers than males. In addition, Jordan Times (2010) pointed out that of the 1.6 million enrolled students, 3,000 females and 3,020 males dropped-out of school in 2007. Jordan Times also pointed out that economic and social issues continue to be leading factors behind school dropout. The article added that males often leave school to seek employment and provide financial support to their families, while females typically leave in order to care for family members and do household work until they marry.

Based on the United Nations Children’s Fund (UNICEF) (2007), violence appears to be a widespread problem in schools. In a report published in 2007 by (UNICEF), 50% of children were subjected to mild physical abuse (40% of females and 60% of males), 27% suffered moderate physical abuse (14% of females and 40% of males), and 57% suffered from severe physical abuse (46% of females and 67% of males) by teachers, principals, and other school staff.

A study done by UNESCO (1997) on Jordanian schools pointed out that weak school administration, under-qualified teachers, under-equipped schools, overcrowded classes and a shortage of school counselors in urban and rural areas, are primary reasons for student violence that contributes to dropout and/or failure, especially for boys.

**Factors Affecting Boys’ Academic Achievement**

This study investigates boys’ underachievement at the secondary level with the purpose of analyzing school factors that decrease boys’ academic achievement.
Researchers indicated that school factors (availability of male teachers, teacher quality, availability of schools and school infrastructure, and student-teacher ratio STR) play a crucial role in student achievement, especially for boys (Belal, 2010).

**Lack of Male Teachers**

Brown (2003) conducted a study in which teenagers in Canada had their writing skills analyzed. The study found that boys lagged well behind females when it came to writing composition skills. According to Brown (2003), this writing deficiency in male students could be attributed to the shortage of male teachers in elementary schools, where initial writing stages are introduced. He also pointed out that educational systems should continue to conduct research regarding the shortage of male teachers in elementary education, and should continue to review the findings of some of the more prominent theorists in this field.

Skelton (2001) pointed out that the British government also was faced with a similar dilemma attributed to a shortage of male teachers. According to Skelton (2001), male teachers in Britain often perceive teaching children as wasted time in a difficult and unproductive career path. These findings support an assumption that teaching elementary school is not of great value, and that men who assume this role degrade themselves in the process. In 2001 the Organization for Economic Co-operation and Development (OECD) reported that women dominated the teaching profession in primary schools internationally (Skelton, 2001). In fact, this data indicates that women comprise more than 80% of teachers in countries such as Ireland, Poland, Portugal, Slovak Republic, United Kingdom, Italy, Austria, Czech Republic, Germany, Hungary, and New Zealand (Skelton, 2001). This picture changes progressively at the secondary level. While women
teachers are still numerous at the lower secondary level, in several countries male teachers outnumber women at the upper secondary level. These include Austria, Iceland, Japan, Mexico, Norway, Korea, Denmark, Germany, Netherlands, and Switzerland. However, in (2002), an Australian federal study reflected concern over a reported decline in the number of male teachers, particularly in the primary grades where the nationwide percentage of men was only 21% (Skelton, 2001).

Skelton’s findings (2002) indicate that to increase the involvement of men in teaching, particularly in primary education, the status of the profession needs to be improved by increasing pay levels. Bennell and Akyeampong’s (2007) case study research conducted on 12 developing countries found that teachers are substantially underpaid, which is the key factor undermining teacher morale and motivation. Their study also revealed that teachers in most low-income countries earn poverty wages, and that compensation provided to the larger number of unqualified and newly qualified teachers is considerably worse. As reported by Bennell and Akyeampong (2007), conditions in each of the 12 countries examined in case studies point to the huge impact that working and living conditions have on teacher morale, motivation, and classroom performance. Researchers also found that housing and travel are two critical issues that affect teacher morale and motivation in virtually every country, especially in rural areas. Finding decent accommodations in rural areas is a major headache for most teachers. Also, in most countries low pay forces teachers to find additional sources of income. As explained in this research, secondary income activities by teachers result in divided attention and loyalty to teaching which negatively impacts the quality of schooling (Bennell & Akyeampong, 2007).
Based on findings made by Johnson (2008), the lack of men in education is seen as a universal trend. Johnson (2008) also pointed out that in 2005 several major industrialized nations in Europe reported that only 20 percent of teachers in their primary schools are men. Johnson (2008) also indicated that low salaries have a detrimental impact on recruiting male teachers because men perceive a need to be their family’s primary wage earner. Additionally, Johnson (2008) indicates that the opportunities for financial gain that may be lost by choosing a career in teaching may be greater for men, simply because better paying jobs are disproportionately available to them. Steps taken to alleviate this concern, according to Johnson, may include increasing opportunities for promotion and salary increases, and promoting teaching as a career that maximizes opportunities for social advancement (Johnson, 2008). On the other hand, Johnson (2008) explained that rapid economic growth and industrialization flooded the market with new capital and a multitude of highly paid industrial jobs. Despite the adoption of more restrictive hiring and certifying methods for teachers described by Johnson (2008), teacher wages remained low, relative to manufacturing, managerial, and other professional occupations. Also, the researcher indicated that the costs of choosing teaching as a career are too high for many men who eventually leave the classroom in favor of well-paid industrial jobs. Additionally, Johnson (2008) points out that the male flight from teaching hit its peak around the turn of the 20th century precisely when the demand for teachers was at a tipping point. Similarly, Smith (2012) indicates that low pay is an ongoing issue for male primary teachers who are concerned about earning less than their male friends who work outside of teaching. As Smith (2012) indicates, this likely is the principal reason men do not go into teaching.
School Availability and School Infrastructure

Researchers indicate that the availability and the condition of school buildings affect students’ academic achievement (Heyneman & Loxley, 1980; Olutola, 1982; Bowers & Burkett, 1989; London, 1993; Earthman & Lemasters, 1996; McEwan, 1999; Kennedy, 2003). Heyneman and Loxley (1980) focus on the prevalence of inadequate or dilapidated school facilities in developing countries. Students at these facilities perform poorly in comparison to performance standards in industrialized countries. Jamison et al., (1981) also indicated that physical facilities, availability of materials, and levels of teacher education collectively create a classroom quality that appears as the predictor of student achievement. In addition, Olutola (1982) pointed out that the availability of the school building and other plans, contribute to good academic performance as they enhance effective teaching-learning activities. Olutola (1982) further stated that well-situated school buildings with aesthetic surroundings, a playground, lavatory, etc. usually contribute to achieving higher educational attainment by students. Dove (1982) also explained that basic instructional inputs like textbooks, libraries, and other didactic materials often are deficient in rural schools. Rural schools may have substandard infrastructure, lacking even basic service provisions such as water or latrines. A key disadvantage, however, is the low quality of rural teachers, especially when compared with their urban counterparts (Dove, 1982).

In a report on secondary school education in Nigeria, Adaralegbe (1983) said that based upon inspector’s reports over the years, there is abundant evidence of a catalogue full of deficiencies in the availability and constructive use of school buildings and materials for instruction. He went on to reveal that many classes have been held in
unhygienic conditions, while some schools have no ceilings, some have no doors, windows are without shutters, and some classrooms have dirt floors. The situation was even worse in rural areas, and under these unfavorable conditions, very little learning can be expected to take place. As a result of these deplorable conditions, Obemeata (1995) explained that only a small proportion of secondary school graduates are qualified to enter the University in Nigeria. Akinwumiju and Orimoloye (1987) indicated that educational institutions from nursery to university in developing countries require buildings to house effective operations. Classrooms, offices, assembly halls, laboratories and staff quarters are needed. Also, for schools to function properly, important items like furniture for staff and students, books, science equipment, games and sport equipment should be adequate in number and in good condition. Likewise, Mwamwenda and Mwamwenda (1987) describe that school facilities including textbooks are factors that contribute to student achievement. Mwamwenda and Mwamwenda (1987) also add that studies in both the developing and the developed countries show that school facilities have a positive relationship with student achievement.

Bowers and Burkett’s (1989) reveal that the students in modern buildings in the United States scored significantly higher in reading, language and mathematics than their counterparts attending school in older buildings. The age of a building can influence many of the individual factors used in evaluating the condition of an educational facility. Earthman and Lemasters (1996) note also that the age of the building had significant impact on student achievement and behavior. Kennedy (2003) indicates that districts must maintain their facilities in an effective manner in order to provide a healthy learning environment. For example, poorly maintained roofs may leak, allowing moisture to enter
the building and increase growth conditions for mold. The presence of mold could cause respiratory problems for students and teachers, or even lead to the closure of the classroom or entire building.

London’s (1993) research demonstrates that in many developing nations certain physical facilities are nonexistent, and that in those instances where amenities are available, many are of sub-standard quality. London (1993) also adds that even more alarming is the correlation between quality of facilities and academic performance. In addition, London (1993) pinpoints that many research findings show that the success of any educational endeavor rests on the availability of physical facilities, especially the school building.

Ogunmoyela (1994) found that Nigeria, as one of the developing countries, had school buildings with no roof, windows or doors, and cracked walls. Instructional facilities were lacking, as teachers became frustrated by the lack of equipment/facilities for educational activities, compared to schools in other developing countries. Ahmad (1993) on the other hand, found that pedagogic factors, including basic facilities in school, play a significant role in the improvement of educational standards. He also added that a positive effect on education standards is achievable if appropriate conditions are created in relation to these factors (Ahmad, 1993).

Other studies focusing on developing countries also pointed to school infrastructure as an important factor for improved learning outcomes. For example, Glewwe and Jacoby (1994), using a survey of 1,600 households in Ghana that tested students on mathematics, reading, and abstract reasoning, investigated what kind of resources are important determinants of learning achievement and school completion.
Researchers found that providing blackboards and repairing leaky school roofs increased students’ learning each year (Glewwe & Jacoby, 1994). McEwan (1999) also indicated that in developing countries, schools in rural areas show a higher retention rate of male students than their urban counterparts. In Colombia, for example, the net primary enrollments were 86% for urban males and 78% for rural males (Alviar & Polania, 1993). Alviar and Polania (1993) also indicated that low enrollments sometimes are caused simply by lack of schools.

In addition, the Federal Ministry for Economic Cooperation and Development (MECD) (2010-2012) pointed out that rural regions in particular but also poor urban districts often lack a comprehensive primary school network. Children in rural regions often have to walk extremely long distances to school. Moreover, the MECD (2010-2012) indicated that many schools were poorly equipped, lacking textbooks and teaching materials. In instances where these were available, they often were as outdated as the furnishings. The MECD also added that many schools have no funding to cover overhead items such as water, electricity, or transport for pupils. According to the United Nations International Children's Emergency Fund (UNICEF), (2010), in most developing countries the budget allocation for primary education is too low to meet requirements and improve student achievement. The UNICEF (2010) also added that millions of children in the developing world attend schools that lack drinking water or clean lavatories.

**Teacher Quality**

Studies show that students taught by teachers holding subject-specific certification learn more readily (Druva & Anderson, 1983; Eberts & Stone, 1984; Hawk, et al., 1985; Goldhaber & Brewer, 1997, 2000; Hammond, 2000; Goldhaber & Brewer,
Although defining and measuring teacher quality remains difficult (National Science Board, 2004), a growing consensus is developing about some of the characteristics of high-quality teachers. Research and studies show that teachers are more effective teaching and improving student achievement if they themselves have strong academic skills, appropriate formal training in the field in which they teach, and several years of teaching experience (Ehrenberg & Brewer 1994; Ferguson & Ladd 1996; Hanushek, 1996; Ingersoll, 1999; Murnane & Phillips 1981).

According to Hawk’s, et al., (1989) study of a paired comparison design of 36 secondary teachers and 826 students, students taught by teachers certified in mathematics scored higher in both general mathematics and algebra than did students taught by teachers certified in other subjects. Goldhaber and Brewer (1997, 2000) also analyze the nationally representative group of secondary school mathematics teachers in the National Education Longitudinal Study of 1988 (NELS) data, which determined that students who had higher achievement rates were taught by teachers who were certified in mathematics, as compared with students whose teachers had no certification or certification in other subjects. In addition, Hammond (2000) conducted a state-level analysis using the National Assessment of Educational Progress (NAEP) data set and found that the percentage of teachers with full certification and the percentage of teachers who had majored in the subject they were teaching predicted higher state level student achievement in both mathematics and reading.

Using NELS data, Goldhaber and Brewer (1997, 2000) examined the impact of subject major or degree on student achievement gains among 10th and 12th graders and found that those students who were taught mathematics by teachers with an
undergraduate or graduate mathematics major made greater achievement gains than those who were taught mathematics by teachers with a non-math major or degree. Monk and King (1994) also found a relationship between student achievement and the number of subject matter courses teachers had taken in secondary school mathematics and secondary school science. However, studies that examined the impact of both subject matter courses and pedagogy courses showed that pedagogy course work had a larger impact on teaching performance (Ferguson & Womack, 1993) and student achievement in high school mathematics and science (Monk, 1994) than did subject matter course work only. Rowan, et al., (2002) surveyed data analysis from “Prospects: The Congressionally Mandated Study of Educational Growth and Opportunity,” 1991–1994, finding that subject-specific certification had no significant impact on elementary school students’ achievement growth in mathematics or reading. Also, Rice (2003) suggests that teacher certification matters in secondary schools but not in elementary schools.

Another indicator of teacher quality is teacher experience. If teacher skills and knowledge increase with each year of teaching, experienced teachers should be more effective than novice teachers in improving student achievement (Murnane & Phillips 1981). Many empirical studies have indeed shown a significant and positive relationship between experienced teachers and student achievement (Greenwald et al., 1996; Rice, 2003).

Similarly, Monk (1994) found that teachers' content preparation, as measured by coursework in the subject field, is positively related to student achievement in mathematics and science. Other studies have found that students achieve at higher levels and are less likely to drop out when they are taught by teachers with certification in their
teaching field, by those with master's degrees, and by those enrolled in graduate studies (Knoblock, 1986; Skonie et al., 1994; Council for School Performance, 1997; Sanders). In a meta-analysis of 60 empirical studies conducted in developing countries on school factors and student achievement, Fuller (1983) found the majority of studies concluded that some teacher characteristics matter, particularly years of tertiary education and in-service teacher training.

Globally, the United States appears to be one of many countries instituting higher standards and certifications for teachers (Khamsi, 2004). Education policy makers around the world have recognized the importance of teacher quality as a key factor in improved student learning (OECD, 2004, 2005; UNESCO Institute for Statistics, 2006). Attracting competent candidates to the teaching profession, retaining highly qualified teachers by providing support and incentives, and ensuring students’ access to high-quality teaching have been major focuses of educational reforms in many countries (OCED, 2005). According to a study of 25 countries conducted during 2002–2004 (OCED, 2005), policymakers in the majority of those countries were struggling with problems that result from a lack of highly qualified teachers, especially in science and math-related subjects; the low social status and salaries of teachers, and their poor working conditions; a lack of systemic induction programs; and inequitable distribution of qualified teachers between high-poverty and low-poverty schools. UNESCO also reports a severe teacher shortage in sub-Saharan African countries, the Arab States, and South Asian countries (UNESCO Institute for Statistics, 2006).

In 2006, UNESCO reported a gap was found in teacher quality when comparing rural to urban schools, in a study that included 13 southern and eastern African countries,
including South Africa, Botswana, Kenya, and Uganda. In most of these countries, a higher percentage of students in rural areas had teachers with less than three years of classroom experience than did students in large cities. Also, in Namibia, Tanzania, and Uganda, teachers in rural schools scored lower on a sixth-grade mathematics test than teachers in large city schools.

**Classroom Size**

Research indicates that student-teacher-ratio (STR) impacts academic achievement for boys and girls (Achilles, 1980; Word, *et al*., 1990; Hanushek, 1995; Wenglinsky, 1997; Harris & Plank, 2000; Stecher 2001; Zurawsky, 2003; SAGE law, 2004; UNESCO, 2006; Hainualt, 2010). Harris and Plank (2000) define small class sizes as classes with approximately 15 students, while large, or regular class sizes are defined as classrooms with approximately 24 or more students. The Student Achievement Guarantee in Education (SAGE) law also defines a goal of class size reduction as “reduce to class size 15” (SAGE law, 2004). According to UNESCO (2006), advocates of smaller classes believe improved student-teacher ratios will allow teachers to give more individualized attention to students, manage their classrooms more effectively, and provide more effective instruction that leads to better student performance. UNESOC (2006) also added that in smaller classrooms, teachers have more time to get to know each student’s personality and academic strengths and weaknesses, and that students receiving more attention and are less likely to become discipline problems. Based on the Student Teacher Achievement Ratio (STAR) (1996) Project in Tennessee, the most recognized class size reduction program is a longitudinal study of some 6,000 children from 1985 to 1989 (Achilles, *et al*., 2003). The STAR program studied class sizes in kindergarten through third grade and found that students in small classes (13 to 17 students) perform better than those in classes of 22 to 25. In 1999, STAR
researchers also (1996) found that students who had been placed in small class sizes in grades K-3 later had better high school graduation rates, higher grade point averages, and were more inclined to pursue higher education. Students in the small classes significantly outperformed students in the regular classrooms on standardized tests in reading and mathematics. The same students continued their success on achievement tests through middle school, with some indications of improved performance and behavior through middle school (Achilles, et al., 2003). Ehrenberg et al., (2001) conducted a meta-analysis of class size studies, examining its impact on student achievement. In contrast to the STAR evaluation, Ehrenberg concluded that there was no significant evidence that variations in class size explain improvements in student achievement. Even if some correlation did exist, Ehrenberg suggests the benefits are too modest to warrant the high costs of class size reduction implementation. Yet, researchers such as Word, et al., (1990) point out that there was an even larger success rate for the smaller class sizes among minority students. The researcher also explained that test scores of minority students improved more than those of non-minority students, decreasing the performance gap between the two groups.

In Wisconsin, the Student Achievement Guarantee in Education (SAGE) program began in 1996-97 to improve the academic performance of students living in poverty by creating several K-3 classrooms with a student-teacher ratio of 15 to 1. These completed longitudinal studies demonstrate that test scores show a correlation between higher academic achievement and lower class size. In addition, an evaluation team from the University of Wisconsin-Milwaukee concluded that the major difference in smaller classes is increased individualization (Hainault, 2010).

Stecher (2001) investigates the class-size reduction (CSR) program that took place in California. Investigators performed a qualitative research study to discover if
reduction in class sizes has a positive impact on student achievement. More than 98% of eligible school districts participated in the CSR program that began with a reduction of the number of students in kindergarten through third grade classes. Classes that normally averaged 30 students were reduced to a maximum of 20 students. Meanwhile, the governor and legislature appropriated an estimated $1.5 billion to achieve these class reductions. Students in these CSR programs were tested on a regular basis, and their scores were compared to other classes not involved in the CSR program. The study found that students in a classroom size of 20 had improved test scores. Stecher also found that third grade students enrolled in reduced classes performed better on the Standard Achievement Test (SAT-9) than did students in regular-size classrooms (Stecher, 2001).

Similarly, Wenglinsky (1997) agrees that there is a positive relationship between smaller class size and student achievement, specifically in mathematics. Zurawsky (2003) also reported that reading achievement increases in smaller class sizes, especially for minority students. Yet, there are examples of very large classrooms with excellent student learning outcomes such as in South Korea, a nation that placed second on the 1996 TIMSS. South Korea’s average class size was 56.9 students in mathematics and 48.8 in science. Similar conditions have been observed in both Japan and Singapore, where students also excel in larger classes (Benbow et al., 2007). On the other hand, in these same countries, Zhao (2004) reveals that language teachers sometimes avoid specific activities because they are difficult to implement in larger classes. These findings are based upon interviews with language teachers.

According to Benbow et al., (2007), class sizes of 30 students in Western countries were considered large and in need of reduction. Benbow et al., (2007) also
added that while some studies found that smaller classes have a positive impact on students’ achievement, others reported no significant impact. However, there were points of agreement. For example, both studies endorse findings that small classes benefit young children and students from disadvantaged or minority backgrounds in Europe and North America. Gates Foundation and Ark (2002) indicated that these benefits result from a number of factors, including: increased teacher contact, differentiated instruction, improved classroom management, and improved teacher morale. Researchers also have noted that the academic gains seen in young children from smaller classes tend to persist into higher grades (Gates Foundation, 2002; Ark, 2002).

Research also was conducted on large classrooms in developing countries, with findings that were equally inconclusive. Hanushek (1995) reviewed 96 studies that attempted to link various educational inputs to student performance in developing countries. Nearly a third of the studies reviewed specifically investigated the effect of pupil-teacher ratio. Of these, only eight identified reduced class size as a significant factor in improved academic achievement. Michaelowa (2001) also examined 37 variables hypothesized to impact basic learning competencies in five francophone sub-Saharan African countries (Cameroon, Cote d’Ivoire, Burkina Faso, Madagascar, and Senegal). The variables that Michaelowa (2001) used were analyzed hierarchically at three levels: student, school/class, and country level. Based on the researcher’s analysis, an inverse relationship was found between class sizes and learning outcomes in which, as class sizes increased, student learning decreased. Furthermore, she pinpointed the threshold number of 62 students per teacher. Once class size exceeds 62, she argued, learning effectively stops, or becomes so compromised as to have little or no effect.
On the other hand, UNESCO (2001) indicates that the ratio of primary pupils to teachers remains three times higher in the Least Developed Countries than in developed nations. For example, in countries such as Benin, Central African Republic, Chad, Congo, Gabon, Malawi, Mali, Mozambique and Senegal, more than 50 primary-age pupils and often as many as 70 students were reported for every teacher in the overall population. These are national averages, which need to be distinguished from class sizes. The UNESCO (2001) report also points out that average values on the order of 70:1 mean that classes of more than 100 children are not unusual. This compares with an average of 16 pupils for every teacher in the member countries of the Organization for Economic Cooperation and Development (OECD). Denmark, for example, counts 10.6 primary pupils for every teacher, Hungary 10.9, Italy 11.3, Luxembourg 12.5 and Norway 2.6 (UNESCO, 2001).

Teachers around the world face many obstacles when attempting to teach in overcrowded classes. Used interchangeably, overcrowded or large classrooms are those where the pupil-teacher ratios (PTR) exceed 40:1. Such classroom conditions are particularly acute in the developing world where class sizes often exceed 100 students. There are differing opinions about the causes of overcrowded classes in the developing world: reduction/elimination of school fees and/or rapid population growth. The reality, however, is that each of these factors have worked to increase class size, and all of them affect the quality of education delivered in resource-poor schools (UNESCO, 2001).

Between 1999 and 2004, this amounted to an increase of over 37 million children enrolling in primary education. While increased enrollments may suggest school systems have increased their capacity to accommodate more children, this does not necessarily
translate into improved educational quality. Reduced quality can be reflected in the pupil-teacher ratios. Generally, when ratios rise above 40 for every teacher, the quality of teaching and learning in most contexts begins to suffer UNESCO (2006). UNESCO (2006) also estimates that 84% of classrooms have less than 40 students assigned to every teacher. Sub-Saharan Africa and Asia make up the majority of those countries that exceed 40:1. Sub-Saharan Africa has the highest median Pupil Teacher Ratio (PTR), with the Congo, Ethiopia and Malawi hovering around 70:1. South and East Asia also have high PTRs, with Afghanistan and Cambodia exceeding 55:1 (UNESCO, 2006).

**Government Policies**

According to Stromquist (as cited in Hamza, 2002), in order to understand the intentions of policymakers and help them formulate effective policies, researchers must focus on the analysis of policy instruments. Stromquist has suggested a classification based on the level of social transformation planned by the legislation. She categorized these policies as: coercive laws, supportive laws, and constructive laws. In addition, Stromquist believes in three kinds of gender policies: general policies against all forms of discrimination, policies specific to education but addressing women or men by implication only, and policies specific to women’s education. Table 1 summarizes generic and gender-specific policies as cited in Hamza (2002).
Table 1

*Comparison of Generic and Gender-Related Policies*

<table>
<thead>
<tr>
<th>Type</th>
<th>Desired Effect</th>
<th>Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandate</td>
<td>Eliminate of discrimination, waste, damage, etc.</td>
<td>Punishment to encourage compliance</td>
</tr>
<tr>
<td>System Changing</td>
<td>Devolution of authority, creation of new agencies</td>
<td>State’s goodwill: funds to create new institutions</td>
</tr>
<tr>
<td>Capacity Building</td>
<td>New capacities in individuals and institutions</td>
<td>Money for training and institutional improvements</td>
</tr>
<tr>
<td>Inducements</td>
<td>Provision of new services and administration of new services</td>
<td>Money for provision of services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Gender-Sensitive Policies</th>
<th>Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coercive</td>
<td>Eliminate discrimination</td>
<td>Withdrawal of contracts or fines to encourage compliance</td>
</tr>
<tr>
<td>Supportive</td>
<td>Institutions/units to promote gender issues and monitor coercive gender legislation</td>
<td>Funds to create new institutions/units</td>
</tr>
<tr>
<td>Constructive</td>
<td>New behaviors, knowledge and attitudes regarding women and men in society</td>
<td>Funds to enable curriculum changes, teacher training and retraining, and research</td>
</tr>
</tbody>
</table>

*Note. From McDonnell and Elmore (as cited in Hamza, 2002).*

The following conceptual Model (see Figure 2), based on Stromquist’s (as cited in Hamza, 2002) classification of educational policies, is used as an instrument for analyzing Jordanian government policies and practices. These factors (see Figure 1 Chapter 1) and Stromquist’s classification of the educational policies (see Figure 2) are both used in this study to examine their affect on boys’ educational achievement at the secondary level.
Policies Found to Affect Boys’ Participation

There is a shortage of studies in the literature addressing policies and programs to increase boys' access to education. The limited studies that do exist suggest school factors are an important influence on students’ participation and performance. Since the school factors have an effect on boys and girls’ school participation and performance as mentioned earlier, many governments have taken significant steps to increase and improve the condition of schools, recruit and train more teachers, and improve curriculum. Consequently, significant expansion of educational resources and opportunity has taken place in most countries in Asia, Africa, and Latin America since the 1950s. Kelly (1980) indicated that the expansion of educational resources in developing countries has resulted in educational improvements for both men and women.

Countries in developing regions have used different strategies and policies to increase boys’ achievement. For example, the government of Kenya abolished school fees and improved boarding facilities for the children of nomads (Nkinyangi, 1982). The Indian government also expanded budgetary outlays for primary education and launched
a nation-wide primary education program (World Bank, 1996). Yemen’s government offered programs that focused on building and renovating schools, providing basic equipment, training male and female teachers, and offering literacy classes for male and female students (Saba News & Freedom House Report Yemen, 2007).

Meanwhile, some developed countries also created gender sensitive polices to improve boys’ academic achievement. For example, in one of the largest failing schools in Australia, the government created a collaborative pedagogical approach primarily to help boys succeed academically (Jha & Kelleher, 2006). The method focused on team teaching and the use of technology during instructional time. According to Jha and Kelleher, (2006), this approach was found to improve boys’ and girls’ attainment, while improving their attitudes toward school. Other steps taken by the Australian Federal Minister for Education to improve boys’ literacy, included policies such as: (1) provide a wider range of non-fiction material related to TV content, war themes, science fantasy, nature investigations (2) get boys to learn by means of individualized instruction on cards or through a contract with a teacher (3) allow older boys to visit younger boys to listen to their reading and provide academic encouragement (4) work with boys to provide suitable incentives and rewards for readers (Jha & Kelleher, 2006).

Researchers Younger and Warrington (2005) found that single gender classes had positive benefit on boys’ achievement. Lloyd (2011) also pointed out that some countries that permit single gender classes have seen greater academic achievement. Also, single gender classes have been shown to be effective in reducing pressure and creating an atmosphere conducive to learning where boys are better able to concentrate, maintain self-confidence, feel more involved, and be more willing to ask questions (Lloyd, 2011).
The government of the UK also implemented policies in which schools no longer could exclude students because of behavior problems, especially boys. Positive effects on boys’ attendance and achievement were noticeable results of this policy (National Literacy Trust). On the other hand, Lundy et al., (2000) pointed out that policies that reduced the number of schools while also reducing class sizes were found to have a positive impact on boys’ behavior and on preventing students from being excluded from schools.

In addition, Lloyd (2011) indicated that educational policies such as child-centered provision, high quality teaching and learning, leadership, and a school that is connected to its local community have a positive impact attendance and performance for boys, as well as girls.

**Summary**

The literature review was divided into four sections. The first section presents a general overview of education in Jordan. The second section compares and contrasts boys’ and girls’ academic achievement in developed as well as developing countries. The third section focuses on boys’ academic achievement in the Arab world as well as Jordan. The last section presents those school factors that affect boys’ academic achievement at the secondary level. This section is divided into three sub-categories: availability of male teachers, teacher quality, student-teacher-ratio (STR), and availability and infrastructure of schools.

Research and studies found that boys are lagging behind girls academically (Bleach, 1998, Martino & Meyenn, 2001; Cresswell, et al., 2002; Graeme, 2002, Jha & Kelleher, 2006; University of Cambridge, 2007; UNESCO, 2007; Gosai, 2009, Belal,
A number of developed and developing countries are experiencing a new phenomenon where gender disparities in education now tend to favor girls, and work against boys, both in terms of participation and performance. This is particularly evident in countries that have achieved universal access and have high participation rates for both girls and boys, at least at the primary stage of schooling (including a number of Commonwealth countries in the Caribbean, Europe, East Asia and the Pacific, and some in sub-Saharan Africa and South Asia) (Jha & Kelleher, 2006).

There were very few studies found on the gender gap in Jordan, especially at the secondary level. These studies concluded that the Jordanian government should identify and investigate the factors that cause gender gap and create educational polices to improve boys’ academic achievement. Also in the literature, there are only a limited number of studies on factors that affect boys’ academic achievement, especially in developing countries. This limited research provides a few common perspectives that focus on school factors (e.g., lack of male teachers, teacher quality, school availability and infrastructure, and STR), and government polices. Consequently, many governments have made significant steps to increase and improve the condition of schools, recruit and train more male and female teachers, and improve curricula. Also, significant expansion of educational resources and opportunities has taken place in most countries in Asia, Africa, and Latin America since the 1950s. This expansion of educational resources in developing countries has improved education for boys and girls.

Significantly, the crisis that surrounds boys’ education today is recognized both locally and globally. Boys’ underachievement has become a matter of public and political concern in many developed and developing nations around the world, most
notably the UK, the USA and Australia (Rowan, 2001). Finally, Gallagher (2010) states that an educational system that fails a generation of boys ultimately will result in unprecedented misery for women, children, and for men themselves.
CHAPTER III
RESEARCH DESIGN AND METHODOLOGY

Introduction

Concurring with Bender (1985), social science researchers utilize different methods when conducting their research. These methods can be divided into three categories: theoretical, experimental or quantitative, and qualitative. Theoretical research is intended to provide scientific analysis, while quantitative methods are directed toward collecting data to test theories and hypotheses. Qualitative case study research on the other hand is aimed at understanding a given phenomenon from the subjects’ points of view, allowing the researcher to understand how and what kind of meaning is attributed to events affecting their lives (Taylor & Bogdan, 1984). For the purpose of this study, the researcher depends on a mixed method case study design in which secondary data on male performance obtained from the Jordanian Ministry of Education and interviews with key stakeholders are the primary sources for understanding male secondary students’ performance. Specifically, the study seeks to understand the academic decline of boys in comparison to girls in all subject areas at the secondary level. Furthermore, the study analyzes how school factors, such as the availability of male teachers, availability and adequacy of school buildings, student-teacher ratio (STR), teacher quality, as well as government educational policies contribute to boys’ academic performances.

Research Design

The issue of boys’ education and the strategies needed to address it worldwide, especially in developing countries, has been internationally examined by educators, researchers, and policy makers through various methods. This research used archival and
mixed methods of research to collect data. Both qualitative and quantitative frameworks have been used to analyze this data.

It is important to note that archival research methodology allowed the researcher to report existing gender difference between boys and girls in educational outcomes from archival documents. Descriptive statistics have been used in data analysis, to allow comparison of quantitative data from urban and rural areas nationwide over a five-year period. In retrospect, the qualitative method of utilizing semi-structured interviews permitted examination of various impressions held by those policymakers who had a major role in shaping educational outcomes in Jordan for boys as well as girls. The establishment of such consistency and the ability to understand how these factors are hypothesized to affect boys’ schooling in Jordan, data are collected and or reported through archival research as well as through semi-structured interviews with educators and policy-makers.

**Research Questions**

This study is designed to examine boys’ academic achievement at the secondary level. The focus of this study is to understand the government’s role in terms of the school factors, as well as policies that appear to affect boys’ academic achievement at the secondary level in urban and rural areas in Jordan. There is one general research question and three subsidiary questions.

**Main Research Questions**

1. What was the status of boys’ academic achievement between 2004 and 2009 at the secondary level in Jordan and how has this changed over time?
2. What school factors in terms of availability of male teachers, availability and adequacy of school buildings, student-teacher ratio (STR), teacher quality, as well as government policies, contributed to the academic performance of male students at the secondary level in urban and rural Jordan?

Subsidiary Questions

1.1 What is the passing rate at the secondary level of boys relative to girls in urban and rural Jordan, and how has it changed over time?

1.2 How has academic achievement among male students at the secondary school level in urban and rural areas been impacted by policies of the Jordanian government in respect to school factors such as availability of male teachers, availability and infrastructure of schools, STR, and teacher quality?

1.3 How have current government policies in urban and rural areas, if any, affected boys’ academic achievement in secondary education?

Population Sample and Subjects

This study uses both quantitative and qualitative methods for data collection and analysis. Through archival research, quantitative data on boys’ academic achievement over a five-year period (2004/05, 2005/06, 2006/07, 2007/08, 2008/9) and school-supplies were collected. First, a compilation of tables and figures were made to present a statistical profile of secondary boys’ academic achievement in Jordan, as well as school factors. Therefore, this study selects a spectrum of individuals including government official and educators. Educators in this study are referred to as the selected sample of teachers and administrators. Ten faculties; four teachers from urban, and four from rural areas, and two administrators, including one male principal from an urban school and one
principal from a rural area were selected for this study. All teachers held at least a Bachelors Degree, as well as 10 to 15 years of experience in the teaching profession. All participants were Muslims and married. The two educational officials were selected from the Human Resource and the Planning Department; one male and one female. This strategy of selecting interviewees guaranteed a wide variety of perspectives. Table 2 shows the number and description of the selected interviewees in this study.

Table 2

Number and Description of the Selected Interviewees in this Study

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Number of participants</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational officials</td>
<td>2</td>
<td>M/F</td>
</tr>
<tr>
<td>Teachers</td>
<td>8</td>
<td>M</td>
</tr>
<tr>
<td>Administrators</td>
<td>2</td>
<td>M</td>
</tr>
</tbody>
</table>

Instrument

Boys’ achievement in the 12th grade was analyzed using the general secondary examination in Jordan known as the Tawjihi test. According to Jordan’s Ministry of Education, this exam is a standardized scale designed for measuring the efficiency of the Kingdom’s education. This research specifically examines boys’ performance on the five streams of the Tawjihi: Scientific, Literacy, Health/Nursing, Information Technology, and Vocational for the 2004/05, 2005/06, 2006/07, 2007/08, 2009/10 school years. The purpose of the data analysis is not to compare results of the same cohort of students. The data examines the results of different cohorts of students over a five-year period. The Ministry of Education releases the distribution of the GSC (General Secondary
Certificate) by governorate, gender, and stream. There are twelve governorates, or regions, in total - seven urban and five rural. The Capital, Alzarqa, Irbid, Karak, Altafila, Ma’an, and Alaqba are the rural governorates. Albalqa, Madaba, Almafraq, Jarash, and Ajloun are the rural governorates.

Twelfth grade students are permitted to take the exam once a year. The Tawjihi test determines not only whether students will be permitted to enroll in university, but also sets limits on their choice of academic major and course curriculum. Students choose the exams they take in conjunction with their intended course of study following high school. The Ministry of Education hires both public and private school teachers to correct the exams.

Interviews were conducted and used as the second instrument in this study. Interview questions 1, 2, 3, and 4 include: “What are the procedures of male staff recruitment?”; “How many male teachers are assigned to a school at the secondary level?”; “Are there any shortages of the number of male teachers in general and/or in particular subject areas?”; and, “What are the guidelines for teachers’ salaries and benefits?” The purpose of these questions was to assess the availability of male teachers at the secondary level in Jordan for all subject areas and the recruitment policies.

Research indicates that the presence of male teachers is critical to boys’ academic achievement, (Brown, 2003). UNESCO’s reports (2006) indicate that the countries with the greatest shortfall in teachers also have low secondary enrollment ratios, resulting in a small pool of educated adults to serve as teachers. Also in these countries, although teacher salaries represent a large part of the education budget, low individual salaries contribute to the shortage of both male and female teachers.
Interview questions 5 and 6 are: “What are the qualifications for high school teachers?” and “Are teachers provided with training and workshops to enhance their teaching skills, and if so, how often?” Trained teachers are found to affect educational quality (UNESCO, 2008). Countries that lack trained and qualified teachers were found to affect students’ academic achievement (Murnane & Phillips 1981; Ehrenberg & Brewer 1994; Hanushek, 1996; Ferguson & Ladd 1996; Ingersoll, 1999; UNESCO, 2008). The goal of this question was to understand if secondary level Jordanian male teachers are certified, trained, and provided with workshops in order to improve the rate of male students’ academic achievement in school.

Interview question 7: “Do salaries and benefits motivate and attract male teachers?” According to research, the presence of male teachers is critical to boys’ achievement (Brown, 2003). In order to attract male teachers, governments need to improve conditions by increasing teacher salaries and improving benefits (Skelton, 2002; Smith, 2012). The purpose of this question was to obtain the participants’ views on what motivates and attracts Jordanian male teachers to the teaching profession.

Interview question 8: “Is there a teacher-student ratio that has to be met?” This question was presented to teachers and the education officials involved in this survey. According to UNESCO (2008), the student-teacher ratio measures the number of students per teacher. It also reflects teacher workload and the availability of teachers' services to their students. Research shows that the lower the student-teacher ratio, the higher the availability of teachers’ services to students (UNESCO, 2001; Gates Foundation and Ark, 2002). Moreover, the student-teacher ratio has implications not only for the cost of education, but also for the quality of education (Hanushek, 1995; Finn & Achilles, 1999,
Benbow et al., 2007). This question sought to examine the observations of teachers and education officials regarding the overall quality of education in Jordanian schools.

Interview question 11: “What is the condition of the school facilities and do they accommodate males’ needs at this age?” According to research, inadequate school buildings have a significant impact on boys and girls’ schooling (Heyneman & Loxley, 1980; Olutola, 1982; Bowers & Burkett, 1989; London, 1993; Earthman & Lemasters, 1996; McEwan, 1999; Kennedy, 2003). This question was intended to provide an overall picture of the condition of the school buildings, and to assess if these structures were suitable in serving males’ needs.

Interview question 12: “Do public schools equip students with materials as well as access to technology (computers, TV, VCR, etc.)? If yes, are these provided annually or on an as needed basis?” The availability of materials, such as textbooks and computers, is vital to educational quality. King and Bellew (1991) found that girls and boys were 1.3 times more likely to attend school when the school provided free textbooks. Furthermore, researchers indicated that parents were more interested in sending their boys and girls to schools that provided textbooks and teachers. This question was intended to explore whether or not the Jordanian government was able to provide their male students with sufficient materials and technology equipment.

Interview question 16: “What are the government policies for increasing boys’ academic achievement in school? Are there any specific gender policies that target boys at secondary level grades?” The focus of this question was to determine whether or not the Jordanian government had established any gender policies. In addition, the question was intended to pinpoint unique policies that might enhance boys’ academic achievement.
and that could be applied in other countries that have a high rate of underachieving boys (Nkinyangi, 1982; Lundy et al., 2000; Hamza, 2002; Younger & Warrington 2005; Jha & Kelleher, 2006).

**Data Collection**

The purpose of the research is to understand the changes in female to male academic achievement in urban and rural areas, and the role of the national government in terms of school factors and policies that affect boys’ educational achievement. The focus is to identify the school factors and government policies that influence boys’ achievement. For the purpose of this study, the researcher selected government officials who work in education, as well as teachers and administrators, in order to receive in-depth views on school factors and educational policies that appear to affect boys’ academic achievement. The interviews with MOE officials took place in Amman, the capital of Jordan. Amman was selected because it is the researcher’s home region and home city, and because of her ability to speak the native language (Arabic) to facilitate her entry to the sector and communicate with the participants. Participants were selected to gain a comprehensive perspective and understanding of the effect of school factors on boys’ educational academic achievement. Data collection was completed in three parts:

1. Archival documents constituted the sources for numerical data. The MOE statistics and documents that included the Board of Education records on male teachers, student-teacher ratio (STR), number of schools, government educational expenditure, male to female achievement rates, teachers’ qualifications, as well as a review of all the MOE reports and documents on secondary education. Appropriate permission for reviewing these documents was obtained from the persons in charge of these documents.
2. Interviews: Interviews were conducted with officials from the MOE as well as teachers and administrators. All interviews were semi-structured with open-ended questions. According to Kerlinger (as cited in Hamza, 2002), open-ended items provide a frame of reference for respondents’ answers; however, they minimize the restraint on the answers and their expression. This method also has the advantage of allowing the interviewer to play a role in controlling the interview and keeping the conversation focused on the intended topic. It is also flexible in allowing the interviewer freedom to make modifications in the sequence and wording of the questions, even though the content of the interview was organized in advance.

3. Documents and printed materials, including national and international reports and articles provided perspective of the educational system in Jordan.

A researcher, who is fluent in both Arabic and English, was the principal interviewer, acting as the main instrument for this research. A tape recorder was used to record responses made by interviewees. All interviews were conducted in Arabic and translated by the researcher into English. Responses were summarized to identify patterns that emerged. A complete summary of responses to each question is presented in the results section, providing an overall picture of the participants’ responses. An effort was made to ensure consistency in data collection through the use of a list of questions (see Appendix B) to guide the interviews.

Interviews were conducted in July and August of 2011 with teachers, administrators, and education officials. During each interview, the interviewer took notes and recorded the conversation. Interviews lasted approximately two hours. Analysis was based exclusively on information from the interviews. Some interview questions were
posed to all interviewees, and some only to education officials. Appendix B shows each set of questions and for whom they were structured. These questions and the rationales for their construction are shown in the following paragraphs.

The following steps were taken to conduct this research:

1. Officials from the Ministry of Education were contacted by phone to introduce the researcher and make arrangements for lodging;

2. Permission was obtained from the appropriate officials to access relevant archival documents;

3. Once the interviewees in the study were identified, the involved education officials as well as the educators from the education sector were contacted by phone or visited in person, as their cooperation was sought for gaining access to the sample;

4. Letters of introduction were shown to the subjects and sent to officials from the researcher’s institution in order to receive permission to conduct the research.

Interviews with educators (i.e., teachers, administrators) and educational officials took place in Amman, the capital of Jordan. Two policy makers from Jordan’s Ministry of Education were interviewed to identify any government policies that were implemented to increase boys’ academic achievement at the secondary level in urban and rural areas.

**Description of Variables**

The following is a description of the variables for this study:

1. Student-teacher ratio (STR) is the average number of pupils per teacher at a specific level of education in a given school year. The higher the student teacher ratio, the lower the relative access of pupils to teachers. It is generally assumed that a low student-teacher-ratio signifies smaller classes, which enables teachers
to pay more attention to individual students, which may in the long run result in better performance of students (Hanushek, 1995; Finn & Achilles, 1999 Benbow et al., 2007; UNESCO/UIS, 2008).

2. Students’ achievement refers to students’ examination results or test performance. In this study the Tawjihi exam, which is the final assessment provided by the MOE of Jordan to all male and female students towards the end of 12th grade, is used for this study (MOE, 2005; UNESCO/UIS, 2008).

3. Educational expenditure refers to the total public expenditure on education in a given financial year (current and capital), expressed as a percentage of total government expenditure. A higher percentage of government expenditure on education indicates a high policy priority for education by government relative to the perceived value of other public investments, including defense and security, health care, social security for unemployment and the elderly, and other social or economic sectors (UNESCO/UIS, 2008) (change to the MOE expenditure).

4. Teacher quality: Research studies have found that teachers teach more effectively and improve student achievement if they themselves have strong academic skills (Ehrenberg and Brewer, 1994; Ferguson and Ladd, 1996; and Hanushek, 1996), appropriate formal training in the field in which they teach (Ingersoll, 1999), and several years of teaching experience (Murnane and Phillips). A trained teacher is a teacher who has received the minimum organized teacher training (pre-service or in service) normally required for teaching at the relevant level (NESCO/UIS, 2008).
5. School availability and infrastructure: Researchers indicated that the availability and condition of school buildings impact students’ academic achievement (Heyneman & Loxley, 1980; Olutola, 1982; Bowers & Burkett, 1989; London, 1993; Earthman & Lemasters, 1996; McEwan, 1999; Kennedy, 2003). Also, the availability of school furniture, heat, school materials such as textbooks, blackboards and chalk, are critical to educational quality.

Data Analysis

A content analysis of documents, reports, and studies was used to support the interviews. According to Patton (1990), using a variety of sources is important to strengthening the different types of data collection while minimizing the weakness of any single approach. Descriptive statistics that are common measures of relative frequencies, such as percentages, were used to determine boys’ academic achievement nationally. The achievement of boys from urban areas was compared to their peers from rural schools. Boys’ achievement levels also were compared to those of girls. In addition, a comparison of school-supplies (i.e., the number of male teachers, number of schools, male to female achievement rates, STR, and state expenditure) was conducted to determine the extent of the government’s efforts at increasing and supplying male students at the secondary level. The initial comparison was made of the difference between Grade 12 achievement levels of girls and boys in urban and rural areas in Jordan. A second comparison contrasted school factors in urban areas with those in rural districts. The analyses of data on male academic achievement as well as on school factors were used to assess answers to the research questions in this study. These measures also will determine the extent to which urban and rural differences as well as school factors affect boys’ schooling.
In addition, data collected from responses to semi-structured interviews, as well as from reports and articles, were analyzed and coded into themes (Patton, 1990). This data allowed the researcher to interpret ways in which school and government positively or negatively affect boys’ academic achievement. The school factors model (see Figure 1, Chapter 1) as well as the classification of the educational policies model (see Figure 2, Chapter 2) informed the analysis of this research. The archival documents, reports and articles, as well as interviews with key personnel in this study provided a thorough picture of boys’ academic achievement at the secondary level in Jordan. Interviews and archival documents provided detailed data on school factors, as well as government policies that affect boys’ schooling. Table 3 summarizes the design of this study.
Table 3

*Research Design*

<table>
<thead>
<tr>
<th>Main Research Questions</th>
<th>Subsidiary Question</th>
<th>Method</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What was the status of boys’ academic achievement between 2004 and 2009 at the</td>
<td>1.1 What is the passing rate at the secondary level of boys relative to girls in urban</td>
<td>Archival research</td>
<td>Ministry of Education documents on boys’ academic achievement (Tawjihi exam)</td>
</tr>
<tr>
<td>secondary level in Jordan and how has this changed over time?</td>
<td>and rural Jordan and how has it changed over time?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What school factors in terms of availability of male teachers, availability and</td>
<td>1.2 How has academic achievement among male students at the secondary school level</td>
<td>Archival research</td>
<td>Ministry of Education documents on school supplies (i.e., number of male teachers and schools,</td>
</tr>
<tr>
<td>adequacy of school buildings, student-teacher ratio (STR), teacher quality, and</td>
<td>in urban and rural areas been impacted by policies of the Jordanian government in</td>
<td>Semi-structured interviews</td>
<td>Student-Teacher Ratios, school infrastructure, and school materials and equipment).</td>
</tr>
<tr>
<td>government policies contributed to male students at the secondary level in urban and</td>
<td>respect to school factors such as availability of male teachers, availability and</td>
<td></td>
<td>- Interviews with principals and teachers from urban/rural areas</td>
</tr>
<tr>
<td>rural Jordan?</td>
<td>infrastructure of schools, STR, and teacher quality?</td>
<td></td>
<td>- Interviews with educational officials from the Ministry of Education</td>
</tr>
<tr>
<td>1.3 How have existing government policies in urban and rural areas, if any, affected</td>
<td>1.3 How have existing government policies in urban and rural areas, if any, affected</td>
<td>Archival research</td>
<td>- Reports, articles, and studies</td>
</tr>
<tr>
<td>boys’ academic achievement in secondary education?</td>
<td>boys’ academic achievement in secondary education?</td>
<td>Semi-structured</td>
<td>Board of Education records and documents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interviews</td>
<td>- Interviews with education officials from the Ministry of Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Articles and reports</td>
</tr>
</tbody>
</table>
Summary

This study was intended to investigate the changes in male academic achievement at the secondary level in urban and rural areas in Jordan, and explore the national government’s role in terms of school factors and policies that affected boys’ academic achievement. A mixed method form of research was used to conduct the study. A multi-methods approach that included interviews, reports and articles, as well as archival documents was used for this purpose. This chapter outlined the research design, methodology, research questions, and description of variables, interview protocol, instruments, data collection, and data analysis.
CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

Introduction

The objective of this study is to determine the changes in boys’ academic achievement compared to females at secondary schools in urban and rural areas in Jordan. The study also sets out to examine the role of the national government in terms of that body’s impact on school-related factors, including their role in establishing polices that improve boys’ academic achievement in secondary education. In order to determine the status of secondary academic achievement among boys in urban and rural areas, the study uses archival documents from Jordan’s Ministry of Education database. In determining the role of the national government in terms of school related factors (number of male teachers and male teachers attributes, school attributes, and Teacher-Student-Ratio) and in exploring government policies on improving boys’ academic achievement at the secondary level, the study uses Ministry of Education (MOE) documents, records, reports and articles. Input also was obtained from education and government officials, including teachers and administrators.

The researcher interviewed key personnel from the human resources and planning departments of the MOE, as well as teachers and administrators from rural and urban school districts. Statistical data was collected from the MOE in order to construct a picture of males’ academic achievement at the secondary level, as well as school factors. Also, documents related to rules and regulations, as well as projects and programs established by the MOE were analyzed in an effort to gain insight into the phenomenon of boys’ underachievement in secondary education.
The major research questions of the study were: 1. What was the status of boys’ academic achievement between 2004 and 2009 at the secondary level in Jordan, and how has this changed over time? 2. What school factors in terms of availability of male teachers, availability and adequacy of school buildings, student-teacher-ratio (STR), teacher quality, as well as government policies, contributed to the academic performance of male students at the secondary level in urban and rural Jordan? The subsidiary questions were: 1.1 What is the passing rate at the secondary level of boys relative to girls in urban and rural Jordan, and how has it changed over time? 1.2 How has academic achievement among male students at the secondary school level in urban and rural areas been impacted by policies of the Jordanian government in respect to school factors such as availability of male teachers, availability and infrastructure of schools, STR, and teacher quality? 1.3 How have existing government policies in urban and rural areas, if any, affected boys’ academic achievement in secondary education?

In seeking answers to the main research question and the subsidiary questions, a number of themes and issues emerged. The results of the study are broken into subsections that correspond to the research questions and their sub-components. The findings follow.

The First Main Research Question - What is the status of boys’ academic achievement between 2004 and 2009 at the secondary level in Jordan, and how has this changed over time? Subsidiary Question 1.1 What is the passing rate at the secondary level of boys relative to girls in urban and rural Jordan, and how has it changed over time?

Student Participation in Tawjihi Exam in Urban and Rural Areas
The purpose of the following paragraphs is to describe the number of youths in both urban and rural areas who took the Tawjihi exam. Table 4 displays the percentage, as well as the total number of male and female students who took all sections of the Tawjihi streams for grades 12 in urban and rural areas. Over a five-year period, data shows that the total number of students who took the Tawjihi exam decreased significantly by 37%. The overall decline in the percentage of urban students who took the exam was 37%, compared to 35% of rural youths. Figure 3 illustrates the changes in the total number of male to female students who attended Tawjihi in grade 12 in urban and rural areas between the years 2004/05 and 2008/09.

Table 4

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total Students Participated U &amp; R</th>
<th>Total Students Participated U</th>
<th>Total Students Participated R</th>
<th>% Students Participated U</th>
<th>% Students Participated R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan</td>
<td>2004/05</td>
<td>222,685</td>
<td>174,973</td>
<td>47,712</td>
<td>78.6</td>
<td>21.4</td>
</tr>
<tr>
<td></td>
<td>2005/06</td>
<td>140,326</td>
<td>110,160</td>
<td>30,166</td>
<td>78.5</td>
<td>21.5</td>
</tr>
<tr>
<td></td>
<td>2006/07</td>
<td>144,642</td>
<td>113,673</td>
<td>30,969</td>
<td>78.6</td>
<td>21.4</td>
</tr>
<tr>
<td></td>
<td>2007/08</td>
<td>129,822</td>
<td>101,852</td>
<td>27,970</td>
<td>78.5</td>
<td>21.5</td>
</tr>
<tr>
<td></td>
<td>2008/09</td>
<td>141,154</td>
<td>110,040</td>
<td>31,114</td>
<td>78.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Percent Change</td>
<td>-37%</td>
<td>-37%</td>
<td>-35%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* From the Ministry of Education, 2004/05 to 2008/09.
Data in Table 5 displays the percentage as well as the total number of male and female students who participated and passed the Tawjihi exam in Grade 12 in urban and rural areas. The data shows that the percentage of the total number of students who passed the Tawjihi exam in urban and rural areas increased by 20% between 2004/05 and 2008/09. Yet, the percentage of students who passed the exam in urban and rural areas was about one-fourth the total number of participating students in 2004/05 (22%), and almost half (48%) in 2008/09. In addition, there is an increase of (16%) in the number of students who passed the Tawjihi exam in urban areas between the years of 2004/05 and 2008/09, as compared to the 3.6% increase in rural areas. These results show a greater improvement in urban areas in comparison to their rural counterparts. Figure 4 illustrates the percentage as well as the total number of male and female students who participated and passed the Tawjihi exam in Grade 12 in urban and rural areas.
Table 5

Total Number Students Who Passed Tawjihi (Grade 12) in Urban (U) and Rural (R) Areas In Jordan

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total Students Participated U &amp; R</th>
<th>Total Students Passing U &amp; R</th>
<th>% U &amp; R</th>
<th>Total Students Passing Urban</th>
<th>% U</th>
<th>Total Students Passing Rural</th>
<th>% R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan</td>
<td>2004/05</td>
<td>222,685</td>
<td>62,490</td>
<td>28.0</td>
<td>49,196</td>
<td>22.0</td>
<td>13,294</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>2005/06</td>
<td>140,326</td>
<td>65,712</td>
<td>46.0</td>
<td>52,222</td>
<td>37.0</td>
<td>13,490</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td>2006/07</td>
<td>144,642</td>
<td>66,844</td>
<td>46.0</td>
<td>52,620</td>
<td>36.0</td>
<td>14,224</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>2007/08</td>
<td>129,822</td>
<td>65,059</td>
<td>50</td>
<td>51,748</td>
<td>40.0</td>
<td>13,311</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>2008/09</td>
<td>141,154</td>
<td>67,668</td>
<td>48.0</td>
<td>54,105</td>
<td>38.0</td>
<td>13,563</td>
<td>9.6</td>
</tr>
</tbody>
</table>

Percent Change

8%   10%   2%

Note. From the Ministry of Education, 2004/05 to 2008/09

Figure 4: Changes in the total number and percentage of male and female students who attended and passed Tawjihi in grades 12, in rural and urban areas, 2004/05 to 2008/09.

Gender Differences in Participation

Based on Table 6, about one fourth (21.4% - 22%) of all students (the total male and female students only) who participated in Tawjihi exam were from rural areas compared to urban (78.6% - 78%) in the years 2004 – 2009. This data shows that the
number of male students from urban schools who participated in the Tawjihi exam decreased by 8.9% in a five-year period, compared with a corresponding increase of 8.9% for female students from urban schools. In rural areas, the number of male students also decreased by 8.6%, compared to an increase of 8.6% for girls participation. Figure 5 illustrates the total number of male and female students who passed the Tawjihi Exam in rural areas.

Table 6

Total Number and Percentages of Male and Female Students Who Participated in Tawjihi Exam (Grade 12) in Urban and Rural Areas in Jordan

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total Participated M &amp; F</th>
<th>% M U</th>
<th>% F U</th>
<th>Total Participated M &amp; F</th>
<th>% M R</th>
<th>% F R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan</td>
<td>2004/05</td>
<td>174,973</td>
<td>51.4</td>
<td>48.6</td>
<td>47,712</td>
<td>51.7</td>
<td>48.3</td>
</tr>
<tr>
<td></td>
<td>2005/06</td>
<td>110,160</td>
<td>53.4</td>
<td>46.6</td>
<td>30,166</td>
<td>53.4</td>
<td>46.6</td>
</tr>
<tr>
<td></td>
<td>2006/07</td>
<td>113,673</td>
<td>53.1</td>
<td>46.9</td>
<td>30,969</td>
<td>52.6</td>
<td>47.4</td>
</tr>
<tr>
<td></td>
<td>2007/08</td>
<td>101,852</td>
<td>52.7</td>
<td>47.3</td>
<td>27,970</td>
<td>52.8</td>
<td>47.2</td>
</tr>
<tr>
<td></td>
<td>2008/09</td>
<td>110,040</td>
<td>42.5</td>
<td>57.5</td>
<td>31,114</td>
<td>43.1</td>
<td>56.9</td>
</tr>
<tr>
<td>Percent Change</td>
<td>-8.6</td>
<td>8.6</td>
<td>-8.6</td>
<td>8.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gender Difference in Performance

The data in performance (see Table 7) showed that the passing rates for females exceeded those for males in both urban and rural areas for the five-year period. Between 2005 and 2009, the number of male students who passed the Tawjihi exam in urban areas decreased (44.5 / 39.3%), while the number of female students increased (55.5 / 60.7%). Also during this time period, the total percentage of male students decreased from 44.5% to 39.3% in urban areas, and 43.9% to 41.0% in rural areas. The trend of improved performance by female students followed a different pattern. Girls experienced greater gains than male students in urban (55.5% to 60.7%) and rural (56.1% to 59.0%) areas between 2005 and 2009.

As girls’ improving performance should be celebrated, the corresponding decline in boys’ results should be a cause of great concern.
Table 7

Male to Female Students Who Passed the Tawjihi Exam in Grade 12 in Urban and Rural Areas in Jordan

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Total Students Passing in U</th>
<th>% M U</th>
<th>% F U</th>
<th>Total Students Passing R</th>
<th>% M R</th>
<th>% F R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan</td>
<td>2004/05</td>
<td>49,196</td>
<td>44.5</td>
<td>55.5</td>
<td>13,294</td>
<td>43.9</td>
<td>56.1</td>
</tr>
<tr>
<td></td>
<td>2005/06</td>
<td>52,222</td>
<td>44.9</td>
<td>55.1</td>
<td>13,490</td>
<td>44.7</td>
<td>55.3</td>
</tr>
<tr>
<td></td>
<td>2006/07</td>
<td>52,620</td>
<td>44.6</td>
<td>55.4</td>
<td>14,224</td>
<td>44.6</td>
<td>55.4</td>
</tr>
<tr>
<td></td>
<td>2007/08</td>
<td>51,748</td>
<td>44.1</td>
<td>55.9</td>
<td>13,311</td>
<td>45.3</td>
<td>54.7</td>
</tr>
<tr>
<td></td>
<td>2008/09</td>
<td>54,105</td>
<td>39.3</td>
<td>60.7</td>
<td>13,563</td>
<td>41.0</td>
<td>59.0</td>
</tr>
<tr>
<td>Percent Change</td>
<td>9.9%</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. From the Ministry of Education, 2004/05 to 2008/09

Male to Female Participation and Performance in Content Domains

Literacy Stream

The following data and analysis includes the number of male and female students’ participating and their levels of achievement on the Tawjihi streams. Each stream is connected to a viable profession in Jordanian society. In analyzing the data, a clear connection is made between students and their interests with each stream.

According to the data in Table 8, between 2004 and 2009 there was a 59% decrease in the total number of male students who participated in the literacy stream exam, in addition to a 55% decrease of female students participating. Although data showed a decrease for both groups, girls outnumbered (55.1% - 57.4%) boys (44.9 - 42.6%) with a gender gap of 2.3% favoring girls.

The table also showed that only one-fourth of all students passed the literacy exam in 2004 and about 43% passed in 2009. Although the performance of boys’
improved over the five-year period (21.0% 36.1%), girls continued to outperform (30.0% - 47.9%) them in literacy.

Table 8

*Total Number and Percentage of Male to Female Students Who Participated and Passed the Tawjihi Literacy Stream exam for Grade 12*

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation Literacy</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing Literacy</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>104,062</td>
<td>44.9</td>
<td>55.1</td>
<td>26,995</td>
<td>21.0</td>
<td>30.0</td>
</tr>
<tr>
<td>2005/06</td>
<td>61,189</td>
<td>46.4</td>
<td>53.6</td>
<td>26,110</td>
<td>31.8</td>
<td>52.1</td>
</tr>
<tr>
<td>2006/07</td>
<td>58,126</td>
<td>44.2</td>
<td>55.8</td>
<td>23,271</td>
<td>29.8</td>
<td>48.2</td>
</tr>
<tr>
<td>2007/08</td>
<td>45,255</td>
<td>41.6</td>
<td>58.4</td>
<td>19,521</td>
<td>31.3</td>
<td>51.6</td>
</tr>
<tr>
<td>2008/09</td>
<td>45,014</td>
<td>42.6</td>
<td>57.4</td>
<td>19,311</td>
<td>36.1</td>
<td>47.9</td>
</tr>
</tbody>
</table>

Percent Change -57% -28%

*Note. From the Ministry of Education, 2004/05 to 2008/09. TS=Total Students, TM=Total Male, M=Male, TF=Total Female, F=Female.*

**Science Stream**

Table 9 shows the total number and percentage of male to female students (Grade 12) by year that participated in and passed the Tawjihi science stream exam in Jordan.

Data showed the number of students who participated in the science stream exam decreased by 43% between 2005 and 2009. Data also shows that in a four-year period, there were more boys (56.5% - 55%) participating in the science stream exam than female (43.5% - 45%). Yet, in 2008/09, girls outnumbered boys in the science stream exam.
The analysis of data on the passing rate of all students showed there was an increase of 9% between 2005 and 2009. Data also revealed there was an increase in boys’ achievement (29% - 58.3%) between 2004 and 2009. However, girls outperform (35.8% - 64%) boys over the same period. While in 2004, the 6.8% gender gap in the science stream favored girls, by 2009 this gap had been reduced to 5.7%.

Table 9

Total and Percentage of Male to Female Students (Grade 12) Who Participated and Passed the Science Stream of the Tawjihi Exam in Jordan

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation Scientific</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing Scientific</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>66,046</td>
<td>56.5</td>
<td>43.5</td>
<td>21,115</td>
<td>29.0</td>
<td>35.8</td>
</tr>
<tr>
<td>2005/06</td>
<td>40,084</td>
<td>56.2</td>
<td>43.8</td>
<td>22,790</td>
<td>51.0</td>
<td>64.3</td>
</tr>
<tr>
<td>2006/07</td>
<td>39,099</td>
<td>55.1</td>
<td>44.9</td>
<td>23,999</td>
<td>55.3</td>
<td>68.8</td>
</tr>
<tr>
<td>2007/08</td>
<td>36,570</td>
<td>55.0</td>
<td>45.0</td>
<td>23,226</td>
<td>56.2</td>
<td>72.4</td>
</tr>
<tr>
<td>2008/09</td>
<td>37,456</td>
<td>46.2</td>
<td>53.8</td>
<td>23,005</td>
<td>58.3</td>
<td>64.0</td>
</tr>
</tbody>
</table>

Percent Change  - 43%   9%

Note. From the Ministry of Education, 2004/05 to 2008/09. TS=Total Students, TM=Total Male, M=Male, TF=Total Female, F=Female.

The Informational Technology Stream (IT)

Data from the IT stream (Table 10) showed that the total number of students who participated in the IT stream exam increased by 95% between 2004/05 and 2008/09. The percentage of the number of boys who took the IT stream exam decreased (60.7% - 38%) between 2005 and 2009. While the number of boys participating in the IT stream exam decreased, the number of girls grew approximately 23% between 2005 and 2009.
The table also presented data on boys and girls achievement on the IT stream exam. According to the table, the total number of students who passed the exam increased significantly between 2004 and 2009. Yet, the data showed that girls outperformed (38.3% - 50.9%) boys (28%- 47%) between 2005 and 2009. The gender gap in the IT in 2004 was about 10% in favor of girls, but reduced to 3% in 2009.

Table 10

Total and Percentage of Male to Female Students (Grade 12) Who Participated and Passed The IT Stream of the Tawjihi Exam in Jordan

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation IT</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing IT</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>17,394</td>
<td>60.7</td>
<td>39.3</td>
<td>5,580</td>
<td>28.0</td>
<td>38.3</td>
</tr>
<tr>
<td>2005/06</td>
<td>16,137</td>
<td>66.0</td>
<td>34.1</td>
<td>8,905</td>
<td>47.3</td>
<td>70.5</td>
</tr>
<tr>
<td>2006/07</td>
<td>22,342</td>
<td>65.8</td>
<td>34.2</td>
<td>10,488</td>
<td>38.9</td>
<td>62.4</td>
</tr>
<tr>
<td>2007/08</td>
<td>26,227</td>
<td>63.0</td>
<td>37.0</td>
<td>14,069</td>
<td>44.0</td>
<td>70.1</td>
</tr>
<tr>
<td>2008/09</td>
<td>33,982</td>
<td>38.0</td>
<td>62.0</td>
<td>16,892</td>
<td>47.8</td>
<td>50.9</td>
</tr>
</tbody>
</table>

Percent Change 95% 204.3%

Note. From the Ministry of Education, 2004/05 to 2008/09. IT=Information Technology, TS=Total Students, TM=Total Male, M=Male, TF=Total Female, F=Female.

The Nursing/Health Stream

Table 11 shows the number of male and female students who took and passed the Nursing/Health Tawjihi stream exam. According to this data, the percentage of the total number of students who took the Nursing/Health Tawjihi stream exam decreased by 17% between 2004 and 2009. Boys’ participation on the other hand showed a slight increase
of 5.6% over the five-year period, while the percentage of female students who took the Nursing/Health stream exam decreased by 5.6% within this same timeframe.

Data on the percentage of the total number of students who passed the exam showed a decrease of 14% between 2005 and 2009. This data also showed the percentage of boys who pass the exam decreased slightly by 0.2%, compared with an increase of 4.3% for girls. The gender gap in 2004 in the Nursing/Health stream exam was 6.8% in favor of girls. By 2009, this gap had been widened to 11.3%.

Table 11

*Total and Percentage of Male to Female Students (grades 12) Who Participated and Passed the Nursing/HE Stream of the Tawjihi Exam in Jordan*

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation Nursing/HE</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing Nursing/HE</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>5,663</td>
<td>42.8</td>
<td>57.2</td>
<td>2,349</td>
<td>37.6</td>
<td>44.4</td>
</tr>
<tr>
<td>2005/06</td>
<td>5,082</td>
<td>53.0</td>
<td>47.0</td>
<td>2,404</td>
<td>40.0</td>
<td>55.5</td>
</tr>
<tr>
<td>2006/07</td>
<td>6,029</td>
<td>53.4</td>
<td>46.6</td>
<td>2,932</td>
<td>41.8</td>
<td>56.5</td>
</tr>
<tr>
<td>2007/08</td>
<td>2,978</td>
<td>48.8</td>
<td>51.2</td>
<td>1,431</td>
<td>41.8</td>
<td>54.0</td>
</tr>
<tr>
<td>2008/09</td>
<td>4,666</td>
<td>48.4</td>
<td>51.6</td>
<td>2,017</td>
<td>37.4</td>
<td>48.7</td>
</tr>
<tr>
<td>Percent Change</td>
<td>-17%</td>
<td></td>
<td></td>
<td>-14%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Sharia’h Stream

Table 12 presents the total number of male and female students who participated and passed the sharia’h stream of the Tawjihi exam. This data indicates that the total
number of male and female students who took the sharia’h Tawjihi exam decreased by 59% between 2004 and 2009. Findings also revealed that the percentage of male students in the total number who participated in the exam decreased by 3.6% in the five-year period. On the other hand, participation by female students in this exam showed an increase of 3.6% for the same time period.

Also, based on data presented in Table 11, the percentage of all students who passed the exam decreased by 34.6% between 2004 and 2009. This analysis also showed that the percentage of male students who passed the exam increased by 12%, compared with an 8.5% increase in girls’ performance during this five-year period. The gender gap in sharia’h exam was 1% in 2004 and became wider (4.6%) in 2009.

Table: 12

*Total and Percentage of Male to Female Students (grades 12) Who Participated and Passed the Sharia’h Stream of the Tawjihi Exam in Jordan*

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation Sharia’h</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing Sharia’h</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>1,233</td>
<td>44.3</td>
<td>55.7</td>
<td>205</td>
<td>17.2</td>
<td>16.2</td>
</tr>
<tr>
<td>2005/06</td>
<td>721</td>
<td>48.3</td>
<td>51.7</td>
<td>184</td>
<td>24.4</td>
<td>26.5</td>
</tr>
<tr>
<td>2006/07</td>
<td>656</td>
<td>48.3</td>
<td>51.7</td>
<td>161</td>
<td>22.1</td>
<td>26.8</td>
</tr>
<tr>
<td>2007/08</td>
<td>484</td>
<td>52.1</td>
<td>47.9</td>
<td>165</td>
<td>30.2</td>
<td>38.4</td>
</tr>
<tr>
<td>2008/09</td>
<td>504</td>
<td>40.7</td>
<td>59.3</td>
<td>134</td>
<td>29.3</td>
<td>24.7</td>
</tr>
</tbody>
</table>

Percent Change -59% -34.6%

Note. From the Ministry of Education, 2004/05 to 2008/09. TS=Total Students, TM=Total Male, M=Male, TF=Total Female, F=Female

The Vocational Stream
Table 13 compares the results for male students to female students who participated in and passed the vocational stream exam. According to this data, there was a decrease of (30.9%) in the percentage of male and female students who participated in the vocational stream exam between 2004 and 2009. The analysis also revealed that the percentage of male students who participated in the vocational Tawjihi stream exam decreased by 9.9%, compared to 17.3% growth in female participation between 2004 and 2009.

On the other hand, Table 13 showed that the percentage of the total number of students who passed the vocational stream exam increased slightly by 0.9% in this five-year period. The number of boys who passed the exam showed a 14.5% increase, compared to a 4.2% increase by girls. The gender gap in vocational in 2004 was 9% in favor of girls. This had changed to 1.3% in favor of boys by 2009.

Table 13

*Total and Percentage of Male to Female Students (Grade 12) Who Participated and Passed The Vocational Stream of the Tawjihi Exam in Jordan*

<table>
<thead>
<tr>
<th>Year</th>
<th>TS Participation Vocational</th>
<th>M (%)</th>
<th>F (%)</th>
<th>TS Passing Vocational</th>
<th>M (%)</th>
<th>F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>28,287</td>
<td>52.7</td>
<td>39.9</td>
<td>6,246</td>
<td>18.5</td>
<td>27.5</td>
</tr>
<tr>
<td>2005/06</td>
<td>17,113</td>
<td>60.9</td>
<td>39.1</td>
<td>5,319</td>
<td>26.7</td>
<td>38.0</td>
</tr>
<tr>
<td>2006/07</td>
<td>18,390</td>
<td>61.2</td>
<td>38.8</td>
<td>5,993</td>
<td>27.7</td>
<td>40.4</td>
</tr>
<tr>
<td>2007/08</td>
<td>18,308</td>
<td>61.4</td>
<td>38.6</td>
<td>6,647</td>
<td>32.9</td>
<td>41.8</td>
</tr>
<tr>
<td>2008/09</td>
<td>19,532</td>
<td>42.8</td>
<td>57.2</td>
<td>6,304</td>
<td>33.0</td>
<td>31.7</td>
</tr>
<tr>
<td>Percent Change</td>
<td>-30.9%</td>
<td></td>
<td></td>
<td>0.9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note. From the Ministry of Education, 2004/05 to 2008/09. TS=Total Students, TM=Total Male, M=Male, TF=Total Female, F=Female

Summary

Data shows that the percentage participation levels of girls and boys in Grade 12 on the Tawjihi exam in both urban and rural areas in Jordan decreased slightly between 2004 and 2008. However, in absolute numbers, the participation of boys and girls in urban areas was greater, compared to participants residing in rural areas. The analysis also showed that while there has been an increase in the achievement rate of the total number of Grade 12 students in urban and rural areas, the passing rates for males tend to be lower than those of females.

On the other hand, data on the Tawjihi streams exam participation and achievement in Jordan revealed that the number of male and female students fluctuated between 2004/05 and 2008/09. Reported figures revealed that the total number of male and female students who participated in the Tawjihi literacy, science, nursing/health, sharia’h, and vocational stream exam decreased between 2004/05 and 2008/09. More female students participated in the exam than males. While the total number of male and female students decreased in the previous stream, there was a substantial increase in participation in the Tawjihi IT stream between 2004/05 and 2008/09.

The data also revealed that the total number of male and female students who took the literacy, sharia’h, and nursing/health exam decreased between 2005 and 2009. Although boys and girls achievement decreased for the previous streams, a gender gap was observed in favor of girls for five consecutive years (2005-2009). The gender gap in the science stream exam also was found to favor girls for the same time period. The IT stream exam data revealed a tremendous increase in the percentage of the total numbers
of boys and girls achievement between 2005 and 2009. Yet, girls continued to outperform boys in the IT stream between 2005 and 2009. This data analysis also revealed that boys outperformed girls only in sharia’h and the vocational stream exams.

**Question 2:** What school factors in terms of availability of male teachers, availability and adequacy of school buildings, student-teacher ratio (STR), teacher quality as well as government policies contributed to male students’ achievement on the Tawjihi exam in urban and rural Jordan? 1.2 How has academic achievement among male students at the secondary school level in urban and rural areas been impacted by policies of the Jordanian government in respect to school factors such as availability of male teachers, availability and infrastructure of schools, STR, and teacher quality?

**Government Policies and School Factors**

Literature on boys’ educational achievement identified several school factors that were found to have an influence on boys’ educational academic achievement in developed and developing countries: availability of male teachers, availability and school infrastructure, STR, and teacher quality (Achilles, et al., 1994; Marks & Ainley, 1997; Bleach, 1998; Alloway et al, 2000; Okpala et al, 2001; Graeme, 2002, University of Cambridge, 2007; Gosai, 2009; Belal, 2010). The researcher sought to understand the role of the Jordanian government in relation to these school related factors, and to explore to what extent these factors affected boys’ academic achievement in secondary education. Tables 13-16 present data on school related factors (i.e., number of male teachers in urban/rural areas, number of schools, student-teacher ratio, and educational expenditure) as well as educational policies that were established on the basis of school factors.

**Male Teachers**
Research (Nelson, 2003; UNESCO Institute for Statistics, 2006; Koutros, 2010) indicated that the lack of male teachers has become an epidemic throughout the world. A recent survey, conducted by the National Education Association (NEA), revealed that men accounted for less than one-fourth of all teachers (Koutros, 2010). Research also indicated that the lack of male teachers has an affect on male students’ performance (Koutros, 2010).

As a majority Muslim country, Jordan employed male teachers to teach boys at the secondary level in public schools as well as female teachers for girls in urban and rural areas. Only at the elementary level were female teachers allowed to teach boys. Also, private schools in Jordan allow both male and female teachers to teach mixed gender classes at the secondary level.

Table 14 presents data of the number of male and female teachers in public school who were teaching Grade 12 in urban and rural Jordan between 2004 and 2009. Data shows that the total number of male and female teachers increased by 35.6% in urban and rural Jordan. That data also shows that although the number of male teachers increased significantly (46%) in urban areas, it decreased slightly (6.3%) in rural areas. The decrease in the number of male teachers in rural areas may be a contributing factor in the decrease in the number of male students participating, and in their level of achievement on the Tawjihi exam between 2005 and 2009 (see Table 3). The data also revealed that the number of female teachers in urban areas was greater (69.3%) than the number of male teachers. Moreover, the analysis of the data also showed a decrease in the total number of female teachers (35.6%) in rural areas. Although research shows a connection between the increase of male teachers and improvement in male students’ performance,
data from Jordan’s Tawjihi exam shows a decrease in male students’ performance even with an increase in the number of male teachers, especially in urban areas.

Table 14

Total Number of Male to Female Teachers in Urban and Rural Areas in Jordan, Grade 12 in Urban and Rural Areas

<table>
<thead>
<tr>
<th>Year</th>
<th>MTU</th>
<th>MTR</th>
<th>FTU</th>
<th>FTR</th>
<th>T/M&amp;FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>4,621</td>
<td>1,892</td>
<td>4,166</td>
<td>2,167</td>
<td>12,846</td>
</tr>
<tr>
<td>2005/06</td>
<td>4,694</td>
<td>2,382</td>
<td>5,149</td>
<td>2,928</td>
<td>15,153</td>
</tr>
<tr>
<td>2006/07</td>
<td>5,458</td>
<td>2,097</td>
<td>5,939</td>
<td>2,194</td>
<td>15,688</td>
</tr>
<tr>
<td>2007/08</td>
<td>5,164</td>
<td>2,488</td>
<td>5,762</td>
<td>2,607</td>
<td>16,021</td>
</tr>
<tr>
<td>2008/09</td>
<td>6,747</td>
<td>1,772</td>
<td>7,053</td>
<td>1,844</td>
<td>17,416</td>
</tr>
</tbody>
</table>

Percent Change 46% -6.3% 69.3% -14.9% 35.6%

Note. From the Ministry of Education, 2005/06 to 2009/10. MTU=male teacher/urban, MTR=male teacher/rural, FTU=female teacher/urban, FTR=female teacher/rural, T/M&FT= total male and female teachers

Jordanian educational policies for recruiting teachers are explained in an interview with the head of the planning department in which she indicated the following:

The school principals for grades 11-12 usually request teachers based on the school needs. Then their request is sent to the planning department in the MOE with the number of teachers needed. After that, the head of the human resource department reviews the list of teachers needed and recommends the teachers based on the applications provided from applicants. Afterward, the chosen teachers are notified through the newspaper. No interviews or tests are required in order to be hired as a teacher. The number of teachers assigned to each school, according to the educational officials, depends on the staffing needs at the beginning of each year or during a school year. A certain number of teachers for grades 11-12 are hired based on the size of the schools and the number of students. Some large schools with a large number of students require more teachers than schools that are smaller and have fewer students.
In addition, this official pointed out that substitute teachers are provided at each school in order to cover any emergencies during the entire school year. Also, she said that in additional to having a general shortage of male teachers, Jordan has shortages of male teachers in specific subject areas at schools in both urban and rural areas for grades 11-12. “There are a significant number of female teachers (100%) especially for grades 1-10 in urban and rural areas, but a significant shortage on male teacher side,” she said.

“Jordan has enough female teachers for all subject areas but the shortage that the country is having in this present time is the number of male math and science teachers,” she added. In keeping with her comments regarding the shortage of male science and math teachers, data (see Table 9) shows a significant decrease in male students’ math and science participation.

**School Availability and Infrastructure**

According to research, the availability of schools in urban and rural areas is critical to boys and girls’ participation in secondary education (Teijen, 1991). Moreover, the types of schools provided by government, including single gender and religious schools, also are found to be vital to student success and achievement (as cited in Teijen, 1991). Governments in Muslim countries, including Arab states, established single-gender as well as religious schools in order to increase male and female students’ participation, especially in rural areas.

In keeping with Jordanian culture and Islamic belief, co-education-- especially for girls and boys reaching the age of puberty-- is prohibited and is considered immoral (Jordanian Ministry of Education, 1988). Therefore, the Jordanian government as well as some private sector organizations established single gender schools, typically for grades
Co-educational programs are provided by some private institutions, primarily within the capital at Amman, and at a few other government schools. All public schools for Grade 5-12 are single gender. Table 15 shows data on the number of public schools provided for male and female students at the secondary level between 2005/06 and 2009/10 (because of the missing data on the number of public schools for male and female students for the year of 2004/05, the researcher included the year of 2009/10).

The data indicates that the overall number of public schools in urban and rural areas has increased since 2005/06 (no data was found for the year of 2004/05). The number of public schools increased in urban areas (65.8-29%), but decreased in rural areas (33-55%) between 2005/06 and 2009/10. This decrease also may be a contributing factor in the decline of male students’ participation and achievement on the Tawjihi exam in rural areas. Meanwhile, the number of all-male public schools was higher than the number of all-female public schools in urban and rural areas.

Table 15:

*Type and Number of Public Schools in Urban and Rural Areas, Grade 12*

<table>
<thead>
<tr>
<th>Year</th>
<th>MSU</th>
<th>MSR</th>
<th>FSU</th>
<th>FSR</th>
<th>T/M&amp;FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td>205</td>
<td>272</td>
<td>186</td>
<td>175</td>
<td>838</td>
</tr>
<tr>
<td>2006/07</td>
<td>228</td>
<td>263</td>
<td>221</td>
<td>136</td>
<td>848</td>
</tr>
<tr>
<td>2007/08</td>
<td>224</td>
<td>279</td>
<td>205</td>
<td>139</td>
<td>847</td>
</tr>
<tr>
<td>2008/09</td>
<td>276</td>
<td>237</td>
<td>230</td>
<td>98</td>
<td>841</td>
</tr>
<tr>
<td>2009/10</td>
<td>340</td>
<td>182</td>
<td>240</td>
<td>78</td>
<td>840</td>
</tr>
</tbody>
</table>
Note. From the Ministry of Education, 2005/06 to 2009/10. MSU=male student/urban, MSR=male student/rural, FSU=female student/urban, FSR=female student/rural, T/M&FS= total male and female students

On the other hand, when an education official was asked about the availability of single-gender schools and coeducational schools, he stated that the government provided four types of schools for male and female students in grades 1-12: (1) the MOE public schools; (2) other government schools (religious schools that are part of the Ministry of Awkaf; army schools; and High Ministry of Education schools); (3) United Nations Relief and Works Agency (UNERWA); (4) and private schools. All public schools for Grades 4-12 in Jordan are single-gender in both urban and rural districts. According to the official: “…parents, especially the ones who live in rural areas, prefer to send their children, particularly daughters, to single gender schools. The Jordanians culture and religion prohibit mixed gender schools; it is considered immoral for both boys and girls.”

This official also said that public schools predominate in urban and rural areas for Grades 1-10 and 11-12, followed by UNRWA schools. The official explained that UNRWA schools are operated only in urban areas, where they serve students ages 6 to 15. The UNRWA schools also are supported by the United Nations, and primarily serve Palestinian refugees who were forced to leave their land in 1948 and settle in Jordan. Also mentioned by the same source, a few non-governmental schools are managed by the Ministry of Awkaf, the Army, and the Higher Ministry of Education, scattered in different cities and villages.

Moreover, government policies are focused on remote and rural areas to ensure that both girls and boys have access to and participate in secondary education. Policies such as setting-up schools in rural areas are based upon the number of students who live
in those areas. According to the educational official: “… the MOE must build schools in rural areas even when the number of students ranges from five to ten.” In terms of the safety of male and female students, policies also were developed to ensure that schools are near students’ residences, far from areas where the safety or welfare of students might be jeopardized. In keeping with this policy, the government set the following criteria for establishing schools in rural areas:

(That) any school…the MOE established in rural or urban areas should follow certain criteria. The safety of all students, boys and girls, is top priority for the MOE when establishing schools. For example, a school should be distant from flooding areas and a safe distance from streets. Schools established in rural areas are placed far from tribes who have conflicts or problems of cooperation. Furthermore, for every eight students in rural areas, the MOE is obligated to open a school for these students. The distance from the students’ residence to the schools in flat areas must be less than 1 kilometer for grades 1-10, and less than 500 meters for students who live in high or mountain areas. For grades 11-12, a distance of 2000 meters is required in flat areas, and 1000 meters in high or mountain areas.

Data that concerns the total number of schools shows an increase in urban areas, but a decrease in rural precincts. Also shown is a corresponding decrease in male student participation and achievement in Tawjihi in rural areas (see Table 6 and 7).

**Availability of School Materials and Technology**

Research shows that male and female teachers as well as the availability of textbooks in schools appear to have significant impact on students’ academic achievement for boys and girls (Bellew, 1991 & Brown, 2003). In addition, researchers indicate that parents are more interested in sending their boys and girls to schools that provide both textbooks and teachers.

According to the educational official: “…all students’ grades 1-10 in urban and rural areas are provided with books free of charge. Students in grades 11-12 must
purchase their own books, and at prices which are considered reasonable by most
Jordanian families.” Some teachers and the administrators argued that the price of the
books for Grades 11-12 were too costly ($60.00 per student). One of the administrators
said, “…The price of books and school fees for grades 11-12 are very high for some poor
families. We give money or share our copies with some disadvantaged boys and girls.”

Meanwhile, other materials, including scientific equipment is provided to all
public schools. The science teacher said: “…the school district provides us with science
equipment and we as teachers and administrators have to maintain this equipment. If any
damage happens to any of the equipment, it is hard to replace.” On the other hand,
computers are provided to all schools in urban as well as rural areas with Internet access.
The official said: “When schools were supplied with computers, all teachers were sent to
training so they could use the technology in their classrooms.” Furthermore, this
emphasis on education and technology made Jordan a worthwhile target for investment
by international companies. For example, in July 2003, the Jordanian Government
launched the Education Reform for the Knowledge Economy (ERFKE) initiative that was
supported by USAID. This five-year, $380 million program was one of the most
ambitious attempts at education reform ever made in the Middle East and North Africa.
The main goal of this educational project was to re-orient education policy, restructure
education programs and practices, improve physical learning environments, and promote
learning readiness through improved and more accessible early childhood education. This
project also was supported by eight donor nations and multilateral organizations, later
expanded to ERFKE 1 and 11.
The ERFKE 1 and ERFKE 11 projects assisted the government’s early child care initiative by creating 100 public kindergartens, fostering the development of field-test curricula, and launching an accreditation system the following year. In addition, USAID worked with the Ministry of Education on school-to-work programs and developed an Informational Technology (IT) curriculum stream for high school students (USAID, 2006).

To meet the goals of ERFKE 1 and 11’s IT curriculum stream at the secondary level, teachers and administrators agreed that more computer training was needed for urban and rural personal. One administrator said: “We still have some teachers who struggle with the technology. I really would like to see more computer training in the future.” One of the rural teachers stated that the focus on using technology such as computers was time misspent that could have been better used instructing students: “We do not have time to teach as we used to a long time ago. I think the computer is taking us away from teaching.”

School Attributes/ Condition of School Facilities

The condition of school facilities and the lack of school amenities such as lavatories were found to be critical for boys’ and girls’ educational participation, particularly at the secondary level in developing countries (Shah & Eastmond, 1977). According to the official: “Recently, new school buildings have to meet certain criteria for both males and females. The old school buildings are always under renovation to improve their condition.” He also noted: “All school buildings, especially for Grades 7-12, are provided with special facilities such as health rooms to accommodate girls’ and boys’ needs. A yearly budget is provided to maintain and renovate school buildings, as
well as to enlarge them. Old school buildings do not have central heating or cooling systems. Teachers or administrators usually provide students with portable devices during the winter and summer months.”

Teachers from urban areas indicated that conditions in many school facilities such as lavatories were not adequate. “All school buildings have restrooms, but often have poor sanitation,” one teacher said. “Boys’ lavatories do not have sufficient staff to maintain them, and they lack water most of the time. The condition of some facilities, especially the restrooms, is very poor and most male students do not feel comfortable using them.” Another teacher stated: “My school building does not have enough staff to clean the facilities, which makes it hard for male students to use.” In addition, teachers and administrators agreed that the number of restrooms in some school buildings is not sufficient for the number of male students. One administrator stated: “Some school buildings might have only five toilets for 200 students. That is not sufficient to serve that number of students.” Another teacher said: “Because of the bad condition of the toilets, most male students do not use them during the day except if it is an urgent situation.”

The condition of some school buildings in rural areas also is not adequate to meet male students’ needs. As one rural teacher stated: “Some school buildings lack heat and cooling systems, adequate lavatories, and areas for special classes such as gym,” according to the Aldustor newspaper (2007).

Cost of Schooling

According to Tiejen (1991), the direct school cost was found to be one of the major barriers to boys’ and girls’ access to schooling in some developing countries. This direct school cost includes school tuition and textbook fees. For example, when these
countries removed school fees, educational participation and enrollment increased for both boys and girls (Birdsall et al., 2006).

This education official, as well as teachers and administrators, were asked for their general comments on direct school cost, and more specifically asked if Jordanian families could afford this cost. The official initially indicated that basic education from grades 1-10 is compulsory and free:

Students who are enrolled in grades 1-10 are provided with school books once a year without cost, but parents have to pay a small amount of money for the entire year which is 3.25 JD for grades 1-6, 6 JD for grades 7-10, and 26 JD for 11-12. Parents on the other hand are responsible for school supplies and school uniforms. A school uniform price varies based on the sizes, costing from 5 JD and up. Students in Grades 11 and 12 are required to pay a yearly school fee, which is about 20 JD and 20 JD additional fees for the yearly exam, Tawjihi. In addition, students in grades 11-12 must purchase and pay for their own school books.

According to teachers, school fees are considered expensive for many families, especially for families that have more than one child in school (e.g., students in Grades 11-12 have to pay approximately $50 a year for school tuition, books and exam fees). One teacher said: “The school fee for Grade 12 is considered out of reach for some deprived families in urban or rural areas. Some of them have difficulties paying the school fees as well as the school uniforms and books.” One of the administrators also indicated that teachers sometimes share their own books with students who cannot afford the cost. According to this education official, the school building principals are allowed to waive school fees. He also added: “Occasionally, King Abdullah II assists Jordanian families, especially in rural areas by waiving school fees as well as providing students with clothes and school uniforms.”

Student-Teacher Ratio (STR)
According to research (Achilles, et al., 1994), reducing the number of students per teacher is shown to have a positive effect on students’ achievement, while helping teachers focus on each individual student’s needs. However, in some developing countries, overcrowded schools and large student-teacher ratios have led to high rates of teacher absenteeism. Consequently, many male and female students drop out of schools, especially at the secondary level (World Bank 1997; UNESCO, 2008).

Table 16 shows changes in the STR in urban and rural areas of Jordan between 2004 and 2009. Data indicated the STR in urban and rural areas for Grades 12 in Jordan decreased between 2004 and 2009 (see Table 16). In urban areas for example, the STR was 14.2 in 2004/05, and decreased to 12.0 in 2008/09. In rural areas, the STR decreased from 12.8 to 7.8 in 2008/09. Although the reduction of STR ratios in Jordan described in previous research (Achilles, et al., 1994) confirmed the idea that such reductions should have a positive influence on male and female students educational achievement, data still showed a decrease in achievement for five years, especially for boys. Figure 6 illustrates changes in the STR for Grades 12 between 2004 and 2009.

Table 16

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>14.2</td>
<td>12.8</td>
</tr>
<tr>
<td>2005/06</td>
<td>13.4</td>
<td>9.4</td>
</tr>
<tr>
<td>2006/07</td>
<td>13.0</td>
<td>8.6</td>
</tr>
<tr>
<td>2007/08</td>
<td>13.2</td>
<td>9.1</td>
</tr>
<tr>
<td>2008/09</td>
<td>12.0</td>
<td>7.8</td>
</tr>
</tbody>
</table>

*Note.* From the Ministry of Education, 2004/05-2008/09.
In response to a question on existing policies regarding student teacher ratios in Jordan, an educational official indicated that Jordan does have policies on the number of students assigned to each teacher. “There is a student-teacher ratio that should be met in Jordanian schools. However, schools in some cities might exceed the requirement ratio because of the large number of students.” However, one teacher from an urban school setting said that some class sizes might surpass 50 students per teacher, especially in cities such as Amman and Zarqa. (Amman, Zarqa, and Irbid are the largest and the most populated cities in Jordan). In addition, the teacher indicated that in most schools in Amman, the student-teacher-ratio typically is thirty-five to forty. Data on the STR (see Table 16) shows a general decrease between 2005-2009, a trend that runs contrary to the teacher’s observation that there are many schools in urban areas with large student-teacher ratios.

Educational Expenditure
According to UNESCO (2003/04), increasing educational quality requires significant government expenditure. In addition, educational expenditure is a useful proxy indicator for educational quality. In reviewing documents on the Jordanian government educational expenditure, data showed the MOE budget in Jordanian Dinar (JD) (US $100.00 = 70 JD) for the past six years increased by 58.7% between 2004 and 2009 (see Table 17). The largest increase (20.9%) was observed between the years of 2008 and 2009. Figure 7 depicts changes in the MOE educational expenditure between 2004 and 2009.

Table 17

*Comparative Statistics of MOE Budget in Jordanian Dinar Between 2004 and 2009*

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>MOE Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>304,120,000</td>
</tr>
<tr>
<td>2005</td>
<td>307,000,000</td>
</tr>
<tr>
<td>2006</td>
<td>327,250,000</td>
</tr>
<tr>
<td>2007</td>
<td>365,555,000</td>
</tr>
<tr>
<td>2008</td>
<td>399,088,600</td>
</tr>
<tr>
<td>2009</td>
<td>482,715,000</td>
</tr>
</tbody>
</table>

*Figure 7. Comparative statistics of the MOE Budget in Jordanian dinar between 2004*
and 2009.

**Teachers’ Qualifications**

Because teachers’ qualifications impact male students’ attendance and attainment, questions were posed to education officials concerning the effects of Jordanian law on teachers’ qualifications, and on the availability of trained male teachers for Grades 11-12. According to the official, all male teachers who teach students in Grades 11-12 hold at minimum a Bachelor’s Degree (BA): “All teachers who are hired to teach Grades 7-12 should have at least a bachelor’s degree. Teachers also should teach students based on their academic specialty. Math teachers should teach math and science should teach science and so on.”

In addition, Jordanian Educational Law / part fifteen (2007 p. 40-44), directs the MOE to hire and assign teachers within the following categories: A. Teaching position and B. Supporting specialist. Teaching positions are divided into three levels: Level 1, Teacher 2; Level 2, Teacher 1; and Level 3, Expert Teacher. This law specifies that any teacher hired for Level 1 should hold a bachelor’s degree and have a minimum of five years teaching experience. He or she also should have an International Computer Driving License (ICDL) or its equivalent, and at minimum a good evaluation. For teaching position Level 2, a candidate should have at minimum one year of postgraduate study and 10 years of teaching experience. In addition, the candidate should have successfully completed an educational training program related to his/her educational specialty, as required by the MOE. This educational training should be equivalent to 160 hours. In addition, he or she should hold an ICDL, and have at minimum a satisfactory evaluation. For teaching position Level 3, the candidate should have 15 years of teaching experience...
and a minimum of a master’s degree. He or she also should be able to show a satisfactory evaluation, and to have completed at least two pieces of research, or to have written two books related to the education field.

Rank B, the Supporting Specialist category, is divided into three levels: 1. Assistant Educator; 2. Educational Administrator; and, 3. Expert Educational Administrator. For the second educational rank, candidates who are applying for position Level 1 should have completed a minimum of two years college and five years of teaching experience. He or she also should possess an ICDL or equivalent program approved by MOE. For position Level 2, the candidate should have a minimum of 10 years of teaching experience, and should possess one year of postgraduate education. He/she also should have completed a minimum of 160 hours of educational administration training and passed a test that is required after the completion of the program (Jordan Educational Law, 2007 p. 40-44). Yet, as one teacher indicated, because of the severe shortages of male teachers, some schools allow uncertified male teachers or substitute teachers to teach, especially classes in science and math.

**Teachers’ Salaries and Benefits**

Because qualified male and female teachers are critical to establishing and maintaining educational access and participation for both boys and girls, school districts and Boards of Education should promote the recruitment of male and female teachers by offering reasonable salaries and benefits. In response to a question regarding male and female teachers’ salaries and benefits in Jordan, an official stated the following:

New hire teachers’ salaries start from 314.70 JD a month (which is equivalent to US $450.) If a teacher, male or female, is married, then their salary is based on the size of their families. For example, 15 JD are added to each married teacher’s monthly salary, while 20 JD is added to salaries of teachers with children (15 JD
At the same time, teachers are offered full benefits such as a pension as well as medical insurance for the whole family, including teachers’ parents. Yet, the MOE deducts 5.5% for pension and 3% health insurance from employees’ salaries. Teachers are also permitted 14 days, 7 sick and 7 personal days, as part of their yearly benefits. In addition, teachers have 21 days vacation to do their religious pilgrimage to Mecca without affecting their salaries or benefits. Also, the MOE provides teachers with opportunities to continue their education in or outside the country but without salaries or benefits. A yearly salary increase is also provided to teachers. Additionally, the King of Jordan, Abdullah II, provides teachers, especially those in rural areas, with living quarters as an accommodation that allows them to continue teaching in these areas.

However, some male teachers and administrators argued that salaries and benefits were not sufficient for teachers’ survival. “Salaries are not encouraging and the only reason that we prefer to stay in the teaching position is our passion to education,” one teacher said. Another teacher made the comment that “Private schools pay more money than public schools. However, because most private schools are located in Amman, it is hard for some of us from other cities or villages to travel a long distance to work for them.” They all agreed that in order to attract more people to the teaching profession, the MOE should increase the salaries of teachers, both male and female.

One teacher stated, “Many males do not choose teaching because of how society perceives teachers.” He continued, emphasizing that, “Teaching is considered one of the lowest-wage jobs in society.”

Based on a cartoon character in the Jordanian newspaper Al Rei (2000), male teachers were depicted as homeless and begging for money. Male teachers also explained that many male math and science teachers leave Jordan and migrate especially to the Gulf to seek better teaching opportunities and higher salaries. In keeping with these observations, there is a huge shortage of male teachers in Jordan, especially at the secondary level.
Teachers’ Training and Workshops

As mentioned previously, providing workshops and training for teachers is critical to enhancing their teaching skills, which ultimately will be reflected in higher student achievement. According to one official, the MOE provides teachers with workshops and training once or twice a year. Special education personnel assigned to each city or district by the Board of Education conduct training. However, some teachers argue that not all workshops are beneficial. “Some are useful and some are not, and their effectiveness depends on the knowledge and the ability of the presenters,” one teacher said. “Their effectiveness also depends on the topic, and to what extent it is related to students’ issues.” Teachers and administrators agreed that very few workshops have been provided for administrators. One of the teachers said, “Administrators are scarcely provided with training and workshops. They need support in order to assist students and their teaching staff.” In addition, one teacher indicted that the MOE does not provide enough training for teachers to enhance their teaching skills unless it receives donations or assistance from Western nations. Also, many teachers do not attend training sessions unless they receive monetary compensation, especially when these training sessions are held after school or during summer breaks.

Summary of School Factor Data

The data on school side factors in Jordan revealed that the number of male and female teachers in urban and rural areas increased between 2004/05 and 2008/09, with female teachers remaining the majority in both urban and rural areas. In addition, the number of male and female teachers decreased in rural areas almost between 2004 and
2009. At the same time, a decrease in student-teacher ratios was observed in urban and rural areas for the same reference years.

Additionally, the Jordanian government provided three types of schools for male and female students in Grade 12: public schools, other governmental schools, and private schools. All public schools provided by the MOE for Grades 4-12 are single gender schools. Co-education is provided only at some private sector schools, as well as a few government-run schools. Data shows that between 2004 and 2009, the number of public schools increased in urban, but decreased in rural areas. On the other hand, more boys than girls’ schools were found in both urban and rural areas. Finally, data pertaining to government educational expenditures revealed that the Jordanian MOE increased its educational spending between 2004 and 2009.

Subsidiary Question 1.3 How have existing government policies in urban and rural areas, if any, improved boys’ academic achievement in secondary education?

This research question seeks to explore the type of educational policies that impact male students at the secondary level in urban and rural areas in Jordan. In order to answer this question, an interview was conducted with one official from the planning department of the MOE in Jordan. The interviewee was able to answer all interview questions regarding government educational policies for male students at the secondary level. The meeting with this official took place in the MOE, and lasted approximately one hour. The conceptual model on the type of educational policies (see Figure 2, Chapter 2) is used in the analysis of this research question. According to the generic model, policies are classified into two categories: generic policies, and gender-sensitive policies. Generic policies are government policies established primarily to increase girls
and boys participation in compulsory education. Gender sensitive policies are those that establish single-gender schools in urban and rural areas for female/ male students that meet their cultural and religious requirements, as well as improve their educational participation and achievement.

**Compulsory Education Policy**

Education policies in Jordan are created to meet the needs of both male and female students. For example, compulsory education is a basic policy that applies to both male and female students. The Jordanian government established an enforcement act to assure citizen compliance. Batanieh (2008) indicated that the law establishing compulsory education in Jordan became effective in 1952. It made Grades 1-6 obligatory. In 1964, the MOE extended compulsory education to encompass nine years: Grades 1-9. In 1987, the law governing compulsory education was further extended to ten years, Grades 1-10, and was made free for all students.

One education official stated: “The Hashemite Kingdom of Jordan, according to the Constitution, guarantees education for all Jordanians. Accordingly, the government created the policies and regulations that assure free education for all Jordanians from Kindergarten to Grade 12.” Punishment for parents with children in Grades 1-10 who fail to comply include fines of up to 500 JD (equivalent to about $800.00 US) and prison sentence of up to three months.

**Policies for Informal Education of School Dropouts**

Educational polices such as the establishment of informal schooling programs were found to help both male and female students, especially those who drop out of school at the secondary level. This type of inducement policy provides boys and girls
with the opportunity to continue their education, and prepares them for the marketplace if they wish to work before attending college. These informal programs include: (1) Literacy programs; (2) The follow-up program that is a continuation of the literacy program; (3) Evening Class Centers Programs; (4) Household Studies Program, and (5) Summer Studies Centers Programs. All these programs are supported financially by the MOE, and staffed by qualified male and female teachers. Informal education programs provide girls and boys with learning opportunities and a comprehensive unified teaching environment, especially for students who drop out and are unable to finish their schooling. These programs therefore, play a key role in achieving EFA goals and implementing inclusive development plans (Integration between the Formal and Non-Formal Education in Jordan, 2004).

Besides informal education, other inducement mechanisms are used in the establishment of special education and inclusion programs. At the end of the 1990s, the Jordanian government recognized the importance of meeting the needs of students with learning disabilities. Accordingly, special programs were implemented, and teachers’ training was provided to serve these students. The integration of all students with learning, behavior, and physical disabilities into regular classrooms also was accomplished to create suitable learning environments and equal educational opportunities for students assigned to special education classes (Al-Jabery & Marshall, 2008).

To support the provisions for special and inclusion as established by law, the government provided funds for all teachers to attend workshops, training programs, and college courses to prepare them to assist students with all types of disabilities, as
confirmed by an educational official who said: “We implemented inclusion programs in all schools, in order to serve all students with disabilities.”

**Education Policies to Increase Male Teacher Recruitment in Urban/ Rural Areas**

Although the Jordanian government had not previously designed gender sensitive policies for boys, because of the severe shortage of male teachers (especially math and science teachers) and the high percentage of male students who fail at Grade 12, new educational polices have been established that focus on factors mentioned previously. In order to increase the number of male teachers, especially in math and science, the MOE offers full scholarships to all students in Grade 12 who commit to teaching both during their college years, and after they have graduated from college. Also, the MOE offers merit pay to math and science teachers in urban and rural areas.

The MOE also provides male teachers who can teach in rural areas with living quarters and special pay. In addition, the MOE recruits math and science students while they are in college in order to reduce teacher shortages in some cities and rural areas.

**Summary**

Interviews with teachers, administrators, and other education officials revealed that there is a severe shortage of male teachers, especially to teach math and science, but that no shortage was found regarding the number of female teachers.

Archival documentation of teacher qualifications shows that teachers must possess a minimum of a bachelor’s degree in their subject areas in order to teach Grades 11-12. Despite this requirement, interviews with male teachers revealed that many male teachers who teach science and math are not certified. On the other hand, all female teachers who teach Grades 12 in Jordan were found to be highly qualified. But although documentation
does note a significant number of teachers with high ratings, a scarcity of training programs and workshops also was noted in interviews with teachers and activities administrators. Also, according to interviews with teachers and administrators, salaries and benefits are not sufficient to encourage enough teachers to continue in the profession.

In terms of school attributes, this analysis of interviews also shows that the Jordanian government provides male and female students with three types of schools: public schools, private schools, and other governmental schools. In addition, single-gender as well as coeducation programs were found to be available to all male and female students. However, conditions are poor at some school buildings in urban and rural areas. For example, a lack of sanitation in some school buildings prevents boys and girls from using restrooms during the school day. This condition might be due to a shortage of maintenance staff, or to a lack of annual upkeep of these buildings. In addition, an absence of heating and cooling systems, as well as limited areas for extracurricular educational activities were found to be some of the major drawbacks at these school buildings. Also, some schools in urban areas were found to have high STR, which may have had a negative impact on the participation and achievements of male and female students.

A review of standards for school materials such as textbooks in Grades12 found that both male and female students are required to purchase these supplies. High prices for these textbooks placed them beyond the reach of some female students. In addition, direct costs, along with the cost of school tuition, and the annual purchase of school uniforms, also were found to be too high for some male and female students. To offset these costs, King Abdullah II, the head of the Jordanian government, provided assistance
to all students, males and females, in urban and rural areas. This aid included school uniforms, free winter clothes, and the waiver of school fees or tuition for all students in Grades 12.

In terms of technology, Jordanian schools in urban and rural areas were found to be advanced in the use of computers, in comparison to some Arab countries and other developing nations. This advantage was apparent especially after the implementation of ERFKE 1 and ERFKE 11 in 2003. These projects that were supported by the USAID were intended to improve the whole educational system and develop an Informational Technology (IT) curriculum stream for all high school students.

Lastly, Jordanian educational policies are formed to meet the needs of all male and female students. Policies such as compulsory education, the establishment of schools and their proximity to students’ homes, teachers’ qualifications, the establishment of non-formal education, the technological integration of all schools, the inclusion policy of students with disabilities, school tuition, and the increase of government and MOE spending on education were all intended to increase educational opportunity and output for male and female students. Yet, gender sensitive policies were necessary to offset the shortage of male teachers. These policies are expected to improve boys’ academic performances.

Chapter V will discuss these findings, draw implications and make recommendations for future research, policy and practice.
CHAPTER V
SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

“From better health to increase wealth, education is the catalyst of a better future for millions of children, youth and adults. No country has ever climbed the socioeconomic development ladder without steady investments in education,” (Bokova, 2013)

This dissertation consists of five chapters. Chapter One introduces the study, describes the nature of the problem, the purpose of the study, significance, delimitation and limitation of the study, as well as definitions of terms used in the study. Chapter Two examines a variety of literature related to boys’ academic achievement in developed and developing countries, as well as school factors that affect their academic success. Chapter Three describes the research design and research methodology. Chapter Four highlights results of the analysis of the study by answering the main and subsidiary research questions of the study. Chapter Five offers findings, conclusions, discussion, and recommendations for practice, policy, and future research. First, the researcher discusses findings related to each research question. Second, the researcher examines implications of the study. Finally, the researcher presents a conclusion and recommendations based upon the researcher’s personal reflections.

Purpose of the Study

The overarching focus of this study is to examine the status of boys’ academic achievement at the secondary level in urban and rural areas in Jordan, and the role played by the Jordanian government in terms of school factors and the establishment of
governmental policies that improved male academic achievement in secondary schooling. Based upon prior research regarding schooling for boys in developed and developing countries (Bleach, K, 1998; Martino & Meyenn, 2001; Cresswell, et al., Graeme, 2002; Jha & Kelleher, 2006; *University of Cambridge*, 2007; UNESCO, 2007; Gosai, 2009, Belal, 2010), an interview protocol was established to examine the school factors and government policies that affected boys’ educational achievement in Jordan. The school factors model (see Figure 1, Chapter 1) as well as educational policy model (Figure 2, Chapter 2) were used for analysis within this study.

**Description of the Research Design**

In order to understand changes in males’ academic achievement in urban and rural areas at the secondary school level in Jordan, as well as the role played by government policies in improving boys’ academic success, the researcher reviewed government educational documents. These documents include the achievement rates for girls and boys on the Tawjihi exam (as mentioned earlier in Chapter 1, the Tawjihi is a national exam given to students at the end of Grade 12 by the Ministry of Education (MOE). This test is used to assess performance and assign students based upon their academic streams, as well as to evaluate various school factors such as the number of male teachers, number of schools, and student-teacher ratio (STR). In addition, multiple data collection methods were used, such as semi-structured interviews, analyses of articles and reports, and archival reviews of available documents related to boys’ schooling at the secondary level in Jordan. Data on boys’ academic achievement was obtained from government documents that covered the period 2004/05 to 2008/09. This time span permitted the
researcher to observe the trends and changes in boys’ achievement at the secondary level over a five-year period.

Content analysis of articles, including archival documents, was conducted to determine the causes of the academic gender gap in Jordan’s urban and rural public schools. Interviews with key personnel from the MOE, as well as with teachers and administrators, were conducted as a part of this study. These interviews took place in homes and offices. Descriptive statistics were used to analyze the gender academic gap in educational outcomes, as reported in the national registry of educational statistics for the five-year period. Interviewees provided commentary on those factors they saw as having the most impact on boys’ performance in secondary school.

Summary of Findings

In this section, the researcher will present a summary of findings derived from the study’s main research question and three subsidiary research questions. These findings will be drawn from a variety of sources, including excerpts from literature, interviews, and the researcher’s processing of study-derived data. Key questions in this study include the following: 1. What was the status of boys’ academic achievement between 2004 and 2009 at the secondary level in Jordan, and how has this changed over time? 2. What school factors in terms of availability of male teachers, availability and adequacy of school buildings, student-teacher ratio (STR), teacher quality, as well as government policies, contributed to the academic performance of male students at the secondary level in urban and rural Jordan?

Subsidiary question 1.1 What is the passing rate at the secondary level of boys relative to girls in urban and rural Jordan, and how has it changed over time?
Through content analysis of the MOE documents, this study established the existence of the academic gender gap in achievement at secondary schools in Jordan. Descriptive statistics were used to examine the gender academic gap in education over a five-year period, using proportions and percentages to make gender comparisons. The researcher found that participation levels for 12th grade girls and boys in all Tawjihi exam streams in urban and rural Jordan decreased significantly (37%) between 2004/05 and 2008/09. However, in urban and rural areas, the number of male students decreased by 8.6%, while girls’ participation increased 8.6%. This decrease in the number of male students participating in the exam in urban and rural areas should be the subject of further study. Policymakers as well as educators should devise intervention programs and strategies for male students at the secondary level to improve and to increase their participation.

The analysis also showed that boys’ achievement in all subject areas decreased by 5.2% in urban areas, and 2.9% in rural areas, between 2004 and 2009, compared to an increase of 5.2% in girls’ achievement in urban and 2.9% in rural areas for the same years. The result of this research coincided with findings of Belal (2010) that showed girls outperformed boys in all subject areas on the Tawjihi exam for the years 1999-2005. On the other hand, data showed that the total number of male and female students who participated in the Tawjihi literacy, science, nursing/health, sharia’h, and vocational stream exams decreased dramatically (57%, 43%, 17%, 59%, 30.9%) between 2004/05 and 2008/09. However, the percentage of decrease by female students who participated in Tawjihi exam was smaller over the five years when compared with the number of participating male students, except in nursing/health, where the percentage decrease for
Girls was higher (25.6%) than for boys (6.9%). While the total number of male and female students decreased in the previous stream exams, there was a tremendous increase (95%) in participation in the Tawjihi Informational Technology (IT) stream between 2004/05 and 2008/09. This significant shift of a number of students from the literacy and science stream to the IT stream should be studied further.

Meanwhile, data on student achievement in literacy, science, nursing/health, sharia’h, and vocational stream exams revealed a decrease in the total number of students who passed the exam between 2004 and 2009. The data also showed that girls outperformed boys in the years between 2004 and 2009 in all Tawjihi stream exams except for sharia’h. Although there was a 15% increase in student achievement in literacy over the five-year period, the study showed the gender gap in literacy stream in favor of girls became wider between 2004 (9 points) and 2009 (11.8 points). This gender gap in literacy should be further investigated, and specific education polices should be created to improve boys literacy skills. However, the findings of this study on boys’ literacy skills support previous research on male and female student performance in reading and writing conducted worldwide. For example, female students from 65 participating countries in Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) scored significantly higher than boys in reading literacy (PISA, 2000, 2003, 3006, 2009; TIMSS, 1995, 1999, 2007). In addition, the US National Assessment of Education Progress (NAEP) (2009) results for Grade 12 showed that in 2009 female students scored 12 points higher in reading than male students on average.
Also according to data, the total number of students who passed the science stream exam increased by 9% (the science stream exam includes advance math, biology, chemistry, physics, and general science) between 2004 and 2009. Data also showed boys’ scores in the science stream exam improved (29.3%) between 2004 and 2009. However, the study revealed a gender gap of 5.7 points in favor of girls in the years between 2004 and 2009. This finding on the science stream exam is inconsistent with international testing such as the PISA result that showed in almost half of the 65 participating countries, boys outperformed girls in math, and that girls outperformed boys in math in only five countries (PISA, 2009). Also, the 2005 and 2009 NAEP results on mathematics in the U.S. showed that male students in Grade 12 scored three points higher on average than female students (Institute of Education Sciences U.S. Department of Education NCES, 2011). Conversely, results for the PISA science exam were in keeping with the researcher’s finding that female students outscored males in 21 countries, while male students outscored females in only 11 countries (PISA, 2009).

The analysis of the study on the IT exam showed that boys’ scores increased by 19.8% between 2004 and 2009. However, the gender gap of 10 points in favor of girls that was observed in 2004 had been reduced to 3 points by 2009. On the other hand, boys’ scores in nursing/health decreased slightly (0.2%) over the five-year period, compared to an increase of 4.3% in girls’ achievement. The nursing gender gap of 6.8 points in favor of girls in 2004 had grown to 11.3 points by 2009. In sharia’h stream, boys outperformed girls in 2004 and 2009 (this gender gap was 1.2 points in 2004, then 4.6 in 2009). In the vocational stream exam, boys showed a significant improvement (14.5%) between 2004
and 2009. The analysis also revealed that a gender gap that favored girls was found in 2004 (9 points), but in 2009, a gender gap of 1.3 points in favor of boys was found.

**Subsidiary question 1.2** How has academic achievement among male students at the secondary school level in urban and rural areas been impacted by policies of the Jordanian government in respect to school factors such as availability of male teachers, availability and infrastructure of schools, STR, and teacher quality?

This study used the school factors model (see Figure 1, Chapter 1) to determine what the government had done in terms of school factors to increase male academic achievement in secondary education in urban and rural areas. School factors in this study included: the number of male teachers, number of schools, and Student-Teacher Ratio (STR). According to research (Achilles, 1980; Heyneman & Loxley, 1980; Olutola, 1982; Hawk et al, 1985; NELS, 1988; Bowers & Burkett, 1989; Tiejen, 1991; Earthman & Lemasters, 1996; Snyder et al., 1996; World Bank, 1997; West, 2000; Burn, 2001; Twigg, 2003; Nelson, 2003; OECD, 2004, 2005; Krieg, 2005; UNESCO Institute for Statistics, 2006; Moors, 2010; Koutros & Petruso, 2010; Hainault, 2010; Owoeye, 2011; Clark, 2012; Babylon, 2012), the lack of trained male teachers, adequate schools, as well as the high Student-Teacher-Ratio (STR), were all identified as barriers to student achievement for boys and girls both in developed and in developing countries. For example, the availability and adequacy of school buildings contribute to good academic performance by expanding the scope of teaching and learning activities (Olutola, 1982; Owoeye, 2011).

According to West (2000) and Nelson (2003), boys were at a disadvantage in primary schools because of the lack of male teachers. They sought an increase in the
number of male teachers to offset the effects of gender imbalance in school faculties. Also, Krieg (2005) reported that a number of findings suggest a correlation between the presence of male teachers and higher achievement scores for boys. Additionally, shortages of teachers and school buildings may result in very large class sizes and high STR (World Bank, 1997). The shortage of teachers also forces schools to implement double shifts, which shortens the school day for individual students. According to the World Bank (1997), some consequences of excessively large class sizes include teacher inattention, infrequent and ineffective supervision, and high rates of teacher absenteeism.

Data on the availability of male teachers showed that the number of male teachers increased significantly (46%) in urban areas, but decreased slightly (6.3%) in rural areas between 2005 and 2009. However, female teachers continued to outnumber males in both urban and rural areas. One interview with teachers and an educational official revealed that Jordan has a shortage in the number of male teachers, especially in science and math, for boys in Grade 12 in urban and rural areas. This lack of male teachers, especially in science and math, should be considered an important factor in the gender achievement gap.

Results of interviews also showed that male and female teachers in urban and rural areas who are hired to teach Grade 12 all are certified and at minimum hold a bachelor’s degree. But interviews with teachers and administrators also revealed general concern over a lack of workshops and teacher training in Jordan. However, as mentioned earlier, teachers’ training, experience, and expert knowledge in specific subject areas, all are critical to teacher quality. All impact the academic achievements of boys and girls
Teachers and administrators in this study were found to be dissatisfied with their earnings and benefits. As a result, many male teachers, especially in math and science, left Jordan for the Gulf Countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates) to seek better-paid teaching positions. Accordingly, the Jordanian government should increase teachers’ salaries and improve teachers’ benefits to motivate more male teachers, especially in rural areas, to teach math and science in Jordan.

In terms of school availability and infrastructure, this study found that the Jordanian government provides male and female students with schools in urban as well as rural areas. Also, in an effort to provide choice, the Jordanian government offered three types of schools for male and female students in Grade 12: public schools, other government schools, and private schools. All public schools provided by the MOE for Grades 4-12 are single gender schools. Co-education is offered only at private schools and in a few other governmental schools. Data indicates the number of male public schools increased (65.8%) in urban areas, but decreased (33%) in rural areas between 2004/05 and 2008/09. The lack of schools in rural areas should be addressed by the MOE, as this study has shown a decrease (6.6%) in boys’ achievement in those same rural areas.

An assessment of boys’ schools was made through interviews with public school teachers, administrators, and educational officials. Results showed that the condition of many public school buildings is unsatisfactory. It also was determined that while separate lavatories were provided for male students, these facilities often lacked sanitation, and
janitorial support typically was insufficient. In addition, the number of men’s lavatories was insufficient to accommodate the large number of male students at some public schools.

According to UNESCO (2003/04), it is assumed that lower student/teacher ratios, higher teacher qualifications and higher levels of public spending likely are good indicators of educational quality. Data in this study showed that the STR in urban and rural areas for Grade 12 in Jordan decreased between 2004/05 and 2008/09. For example, in urban areas the STR was 14.2 in 2004/05 but had decreased to 12.0 in 2008/09. In rural areas, the STR decreased from 12.8 to 7.8 in 2008/09. Concurrently, Jordan’s STR (14.2, 12.0) was found to be lower than the world’s average (25, 25) and developing countries (27, 28) between 2004 and 2009 (UNESCO, 2009). Surprisingly however, teachers interviewed in this study stated that some schools have a high STR, especially those located in urban areas. One study of Jordanian schools done by UNESCO (1997) revealed that under-qualified teachers and overcrowded classes in urban and rural areas were factors in student violence that leads to dropping-out and academic failure, especially for boys. An investigation of these schools with high STR should be conducted with the intention of developing strategies and interventions to reduce the ratio of students to teachers.

Research and studies show that teachers are more effective at teaching and improving student achievement if they themselves have strong academic skills, appropriate formal training in the field in which they teach, and several years of teaching experience (Ehrenberg & Brewer 1994; Ferguson & Ladd 1996; Hanushek, 1996; Ingersoll, 1999; Murnane & Phillips 1981). Results of the study show the MOE requires
all teachers to be fully certified and have a minimum of a bachelor’s degree in order to teach secondary level male and female students. However, because of the shortage of males to teach math and science, the MOE has allowed undergraduate students who are not fully certified to teach male students in Grade 12. Data in this study shows improvement in boys’ academic achievement. However, to reduce the gender achievement gap that favors girls, the MOE should focus on providing fully qualified teachers for boys in Grade 12.

Finally, in examining the Jordanian government’s educational expenditures, data shows the MOE increased its educational spending between 2004 and 2009, with the largest increase made between 2004/05 and 2008/09. This increase is expected to have a positive affect on educational factors (schools, teachers, students, etc).

**Subsidiary question 1.3 Have existing government policies in urban and rural areas improved boys’ academic achievement in secondary education? If so, how?**

For this question, the researcher used the category-referenced version of the educational policies model (see Figure 2, Chapter 2). According to the model, educational policies are divided into generic and gender sensitive policies. Generic policies are those created to meet the basic needs of male and female students, such as compulsory education. Gender-sensitive policies are strategies that focus on either male or female students in order to improve their enrollment, attendance, or performance. Typically, they are implemented in countries with high gender disparities. For example, policies such as decreasing travel distances to school for students have been established in some developing countries in order to raise girls’ enrollment and attendance by addressing their concerns about safety and reputation (Patrinos, 2002). In another
example, Younger and Warrington (2005) found that some countries that implemented single gender classes have seen improvement in boys’ academic achievement as well as their behavior.

When reviewing educational polices in Jordan, the researcher found that national policies are overwhelmingly broad in their application, and usually reflect an intention to provide equal opportunity for all of Jordan’s children ages 6-18, regardless of gender. One example of a generic policy is the free and compulsory education afforded to all students in Jordan. According to an MOE official interviewed for this study: “The Hashemite Kingdom of Jordan according to the Constitution, guarantees free education for all Jordanians, males and females. It created the policies and regulations that assure free education for all citizens from Kindergarten through twelfth grade.” To enforce the compulsory education law, the Jordanian government created regulatory policies with penalties that include fines or prison sentences for parents who do not comply with the law.

Additionally, the educational policies of the Jordanian government are focused on establishing schools in urban and rural areas in convenient locations for both male and female students. For example, schools in rural areas were located based on an evaluation of where students lived. Set distances for students to travel were established for flat areas as well as high mountainous zones. In addition, the MOE provides students with single gender schools where only male teachers teach boys, and only female teachers teach girls at Grade 12.

The Jordanian government provided all educational institutions with trained and qualified teachers to meet male and female students’ needs at the secondary level. In
addition, the government provided schools with technology (i.e., computers and internet services) in urban and rural areas. Also, more educational services were established such as special education, inclusion, and informal education. These services were funded and supported by the Jordanian government to assist all students in urban as well as rural areas. Yet, because of the high percentage of boys falling behind girls at the secondary level, and because of the lack of male teachers, especially in math and science, the government implemented new educational polices such as: (1) Offers of full scholarships for all students who pursue math and science degrees (2) Job offers after graduation for all male teachers at their schools of choice (3) MOE offers of merit pay for math and science teachers in urban and rural areas.

In short, data revealed that male students were falling behind female students in every subject area, except for the sharia’h stream, between 2005 and 2009. This research also showed there is a shortage of male teachers, especially math and science teachers. This research also revealed that the condition of public schools is not adequate, and that there are high student-teacher ratios at urban schools. In addition, there are some underqualified teachers who are hired to teach male students math and science. These facts should be taken under consideration by the Jordanian government and the MOE in order to improve boys’ academic achievement and prepare male students academically as well as professionally to compete globally.

**Recommendations for Educational Practice, Policy, and Research**

Findings from this investigation have various implications. The results of the study suggest that Jordan’s cooperation with world organizations such as UNESCO on
the Education For All (EFA) initiative resulted in general educational progression for girls and boys in secondary education. It has examined the Jordanian government’s efforts to provide schools with certified male teachers, school buildings, single-gender and private education, and appropriate educational policies, leading to improved participation and academic achievement by male and female students. However, the study found there was a gender achievement gap in which males fell behind females in almost every subject area at Grade 12. This result will have a negative impact on males specifically, and on the country in general. Accordingly, the study found that the educational system in Jordan needs improvement.

**Recommendations for Practice**

1. Apply best practices and theories to improve male students’ academic skills in order to increase the achievement rates on the 12th grade exam.

2. Provide and increase the frequency and quality of professional development of opportunities for all teachers and administrators in urban and rural areas of Jordan.

3. Provide teachers, especially male teachers, with competitive salaries and benefits so they will stay to teach in Jordan, and not migrate to other countries.

4. Encourage young male students to pursue degrees in math or science to close the teaching gap in these fields

**Recommendations for Policy**

1. Investigate the drastic decrease in the number of male students who participate in the Tawjihi exam in literacy, science, shari’a, nursing, and
vocational streams, and implement workable strategies to improve and increase participation.

2. Investigate the gender gap achievement of male students in all Tawjihi stream exams, and develop policies and interventions to improve boys’ academic skills in all subject areas.

3. The MOE needs to increase facilities and improve conditions at school buildings in terms of the number of lavatories, maintenance staff, heating, and cooling systems, especially in rural areas. The government needs to focus specifically on old school buildings by providing ongoing physical improvements and renovation to assure the wellbeing of male and female students.

4. Investigate the decrease in the extent of male students achievement in rural areas, and develop policies and interventions to improve overall achievement.

5. Investigate the decrease in the number of male teachers in rural areas, and implement policies to improve and increase their numbers.

6. Investigate the lack of male math and science teachers, and implement strategies to motivate more male students to seek math and science proficiency.

7. Investigate the high STR that exist in some urban school districts, and develop appropriate educational policies to improve STR at these schools. Policies such as enlarging the school building or hiring more staff might be helpful in decreasing the STR.

**Recommendations for Future Research**

1. Replicate and expand the study in five years.
2. Expand the study to include other factors, such as economic pressures, family involvement, and curriculum elements to determine their affect on boys’ academic achievement at the secondary level.

3. Do a comparative study of Jordan and a similar country to demonstrate the gender academic gap at the secondary level by using only school factors and other constructs determined for this study.

**Conclusion**

This research found that at present education for boys is considered to be in crisis both globally and locally. Also, boys’ underachievement has become a matter of public and political concern in a large number of developed and developing countries around the world, most notably the UK, the USA and Australia (Rowan, 2001). Gallagher (2010) believes that an education system that fails a generation of boys eventually will produce unprecedented human misery for children, for women and for the men themselves.

This study focused on boys’ academic achievement at the secondary level in urban and rural areas in Jordan. This research also provided a profile on the role of the Jordanian government in regards to school factors and policies that contributed to male secondary education in urban and rural areas. The study found there was a gender academic achievement gap that favored girls in the Tawjihi exam in all academic streams in urban and rural areas of Jordan between 2005 and 2009. In addition, the study found there was a shortage of math and science teachers in Jordan at the secondary level. Despite the Jordanian government’s positive role in providing school buildings, male teachers, and school materials and technology to male students, more attention must be
paid to maintaining school facilities, increasing pay to recruit more male teachers, and to improving the quality of teaching by providing regular teacher training.

Although the intent of this study was meant to look at the achievement of boys, in examining the achievement, the data reveals that both boys and girls are not doing well on the Tawjihi exam. These findings raise the following questions:

1. Is the purpose of the exam to filter out students, which can lead to instant stratification?
2. Does this foreclose the mobility of students?
3. How does this effect Jordan’s competitiveness in the global economy?

Reaching the goal of gender equality in education, especially at the secondary level, requires commitment from governments in terms of expanding and increasing schools, especially in rural areas, providing certified teachers, and increasing public awareness of the importance of boys and girls education. This study focused on the important issue of boys’ education that is critical to every society around the world. If our goal is to develop educated, healthy, and productive citizens, we need to work collectively. National and international organizations need to provide adequate education to all boys and girls globally.
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APPENDIX A

Map of Jordan

APPENDIX B
Interview Guides

1. What are the procedures of male staff recruitment? (MOE officials, HRD)

2. What are the qualifications for high school teachers? (MOE officials, HRD)

3. Is there a lack of male teachers in Jordan? If so, what are the reasons for that? (MOE officials, HRD)

4. Is there a lack of math or science male teachers? If so, does the principal allow other teachers who are not certified in the field to teach instead? (MOE officials, HRD)

5. What are the guidelines for teachers’ salaries and benefits? (MOE officials, HRD, teachers)

6. Does that [salaries and benefits] motivate and attract male teachers? (MOE, principal, teachers)

7. Does the school send teachers for trainings/workshops and if so, how often? (MOE officials, HRD, principal, teachers)

8. What is the ratio of students to teacher? Are classrooms overcrowded? (MOE officials, HRD, teachers)

9. What types of schools (coeducational, single-gender schools, religious, private) are available for boys at the secondary level in urban and rural areas? (MOE officials, HRD)

10. How would you describe the infrastructural condition of classrooms and school buildings? Are they safe, clean, spacious, close to students’ homes, warm in the winter and cool in the summer? (MOE officials, HRD, teachers)
11. Are schools provided with science labs, computers, gym, cafeteria, medical office, etc.? (principal, teachers)

12. Do students pay for schoolbooks and registration fees to enter school? If so, can they afford it? (MOE officials, HRD, principal, teachers)

13. Are there any government policies to improve boys’ academic performance? (MOE officials, HRD)

14. Are there any government policies in place to help improve the condition of teaching for male teachers in order to encourage them to stay in the teaching field? (MOD official, HRD)