Chapter 17
Achievement Differences Between Students in Single-Sex Schools and Students in Coeducational Schools:
A Hierarchical Linear Modeling Approach

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ABSTRACT

This study used hierarchical linear modeling (HLM) approach to investigate relationships between student achievement and single-sex school status with a sample of 57,041 students in 996 secondary schools in Kenya. An ANOVA was conducted to compare achievement levels of student enrolled in computer science courses and those who are not. The results showed that students enrolled in computer science courses achieved at a higher level whether in single-sex or coeducational schools. Students in single-sex schools achieved at a significantly higher level than those in co-education schools across all counties studied and across all subjects. The study concluded with a discussion of the importance of the study findings and call for the education stakeholders to be cognizant of the contribution the variables discussed in this study make to teaching and learning environment so that they are fully involved in providing the kinds of educational experiences that promote student learning.

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INTRODUCTION

There has been a lot of research done on student learning and how to best to provide the best form of education to learners. There are also varied findings and conclusions that have come from different studies with researchers supporting competing positions. Salomone (2013) discussed a range of factors compounding achievement gaps of single-sex classes and schooling while Gadin, Weiner, and Ahgren (2013) look at a variety of issues including gender equality and pupil participation in learning and creation of an environment conducive to better educational performance and achievement. Single-sex education is a historical phenomenon (Shah & Conchar, 2009) and there is no single study which can claim to have accounted for every other variable and fully investigated the single-sex or co-education factors (Smithers & Robinson, 2006). Research indicates that single-sex teaching has the potential to raise achievement levels in some contexts but that this potential can be realized when differential teaching approaches are methodically planned, monitored, fully implemented and evaluated. Younger and Warrington (2002) studied single-sex teaching in a coeducational school where single-sex teaching had been the tradition of the school and found that the relative improvement levels of both girls and boys over time were similar. A study conducted in Australia found that single-sex classrooms are only effective if the teacher has the knowledge, experience and skills needed to teach to one specific gender.

Further, the fact that the class is made up of only one gender isn't what improves student achievement but rather the modeling done by the teacher (Martino, Mills, & Lingard, 2005). With the concept of single-sex classrooms being rather common around the world, a longitudinal study was conducted at the University of London that concluded that girls who attended single-sex schools showed a higher level of achievement than their counterparts at a coeducational school (Sullivan, Joshi, & Leonard, 2010). However, this was only the case up until the age of 16, at which point they then became very similar. Another study done in the United Kingdom, at the University of Lancaster, suggests that the academic performance of girls and boys may be negatively affected in a coeducational classroom regardless of any other variables that may come into play (Clark, 2004). On the other hand, The British liberal consensus that posits that coeducational schooling was healthier for both male and female students, since it allows for greater opportunities for both male and female students to study a sex-atypical curriculum has been challenged by both proponents and opponents of coeducation schooling (Dale 1969, 1971, 1974). This position was also supported by a study conducted in India (Kaushik, Garg, & Saxena, 2013).

FRAMEWORK

Several educational researchers (Bennett, 1978; Carroll, 1963; Walberg, 1981) have proposed theoretical models to explain linkages existing among learning variables and student's educational outcomes and each theoretical model includes characteristics of the learner, the learning environment, and the quality of instruction the learner receives (Haertel, Walberg, & Weinstein, 1983). Wang, Haertel, and Welberg's (1993) review of empirical literature on the correlates and predictors of academic achievement, indicated that student characteristics exhibit the most significant direct influence on achievement. Walberg's (1981) theory of educational productivity was empirically tested as one of very few theories of academic achievement. Walberg's theory of academic achievement posits that psychological characteristics of individual students and their immediate psychological environments influence educational outcomes (cognitive, behavioral, and attitudinal) (Reynolds & Walberg, 1992c). Further, Walberg's research identified nine