



How do student and school characteristics influence youth academic achievement in Ghana? A hierarchical linear modeling of Ghana YouthSave baseline data



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ABSTRACT

Few attempts have been made to examine the influence of student and school factors on academic achievement of youth in West Africa. We examined student- and school-level predictors of academic achievement of Ghanaian junior high school students. Age, gender, academic self-efficacy, and commitment to school are significantly associated with math and English scores. Class size and the presence of toilet facility are significant predictors of English scores. Given the long-standing debate of whether student characteristics or school resources have larger effects on academic achievement, this study presents evidence on the importance of student characteristics on Ghanaian youth's academic achievement.

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1. Introduction

Decades of research on the effects of student, family, and school characteristics on student academic achievement have attempted to understand the implications for school success globally. In countries around the world, research studies have concluded that student characteristics such as gender, social background, and outlook play varying roles in the existence of achievement gaps and enrollment disparities (Bandura et al., 1996; Filmer, 2005; Lee et al., 2005). Family responsibilities, parental involvement, and household resources exemplify some of the home factors that influence student achievement and aspirations (Jeynes, 2003; Sackey, 2007; Salami, 2008). However, conclusions of the effects of school resources and characteristics on student educational outcomes are not consistent across countries (Bowers and Urick, 2011; Mensch and Lloyd, 1998; Wößmann and West, 2006). Further, there has been a long-standing debate of whether student/family characteristics or school resources have larger effects on academic achievement. Since the release of the Coleman Report (Coleman et al., 1966), researchers have investigated whether academic achievement is strongly predicted by student and/or

school factors (e.g., Baker et al., 2002; Chudgar and Luschei, 2009; Gameron and Long, 2007; Heyneman and Loxley, 1983; Nonoyama-Tarumi and Willms, 2010; Willms, 2006).

Despite widespread attention devoted to academic achievement, few attempts have been made to systematically investigate various student and school characteristics that may affect academic performance among youth in West Africa and other parts of sub-Saharan Africa (SSA). Most of what we know come from studies that were conducted at least 20 years ago (e.g., Heyneman, 1976a; Heyneman and Loxley, 1983; Lockheed et al., 1989). In addition, prior studies have focused mostly on examining the role of family background characteristics, particularly economic status, on educational outcomes (e.g., Cockburn and Dostie, 2007; Filmer and Pritchett, 1999; Glick and Sahn, 2000; Grimm, 2011). Few studies in SSA have examined the effects of student traits and social background, such as academic self-efficacy and level of commitment to school, on academic achievement (Christian and Charles, 2013; Dramanu and Balarabe, 2013; Etsey, 2005). This study seeks to provide empirical evidence on the relationship of student and school characteristics and academic achievement of junior high school students in the Ghanaian context.

Since the 1980s, Ghana has invested significantly in education. Government expenditure on education as a percentage of GDP increased from 2.7% in 1980 to over 8.1% in 2011. The number of junior high schools increased by nearly 20% from 2005 to 2010

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(Ghana Education Service [GES], 2010). Introduction of other programs such as capitation grant (i.e., tuition free), free lunch, exercise books, and school uniform have improved several educational outcomes at the junior high school (JHS) level. These educational outcomes include increased enrollment (i.e., 79.5% in 2010), gender parity (i.e., 0.92 in 2010), and reduced dropout rate (GES, 2010).

Despite the increased investment and strides in several educational outcomes, quality of education and academic achievement have not improved (Akyeampong, 2009; Okyerefo et al., 2011; World Bank, 2010). Available data show that academic achievement among Ghanaian JHS students has been historically low, dating back to the 1980s when the junior secondary school system (now junior high school) was implemented (Ajayi, 2012). For example, in the mid-1990s, about 80% of JHS students could not meet the required mastery level of at least 60 percentage points in English language and 55 percentage points in math (Mereku, 2003). From mid to late 2000s, about a third of students did not earn sufficient grades on the national standardized test to enable their progress to senior high school. Also, comparative international studies such as the Trends in International Math and Science Study (TIMSS) show that Ghana has consistently trailed other African countries, including South Africa, Morocco, Botswana, and Egypt in 2003, 2007, and as recent as 2011 (Abukari, 2010; Etsey et al., 2009; National Center for Education Statistics, n.d.). The evidence of a trend in poor academic achievement among Ghanaian JHS students highlights the importance of examining the determinants of academic achievement to inform relevant program and policy interventions in Ghana.

Therefore our study refocuses investigation using a three-fold level of potential predictors: the student, the family and the school. This study does not ignore the influence of government investments in education. Rather, we take a different approach to understand how student traits, household economic status and school characteristics influence academic achievement of JHS students.

Our study begins with a brief review of empirical evidence on the influence of student and school factors on educational outcomes, including academic achievement. From a global perspective, it is evident that some parallels can be drawn, as well as differences that can be highlighted regarding student, home, and school factors that influence adolescent schooling and academic achievement from the extant body of research studies across countries. We reviewed a subset of studies spanning the last 19 years from primarily SSA and other developing countries around the world. We included studies conducted with youth, although the age of students across studies ranged from 7 to 30. The study continues with presentation of data and methods used to examine our empirical questions. We used data from YouthSave, a large countrywide experiment in Ghana, to examine the relationship of student and school factors on youth's academic achievement. We then present and discuss our findings.

1.1. Definition and measurement of academic achievement

In this study, we define academic achievement as students' scores in math and English subjects. However, in our review of existing literature, we included studies that use different definitions and measurements of academic achievement and schooling. Different studies have assessed achievement by using a composite score of individual student marks in a given year, school achievement exams or standardized test scores in core subjects, grades or grade point average (GPA), or teacher rating scales (Asante, 2010; Jegede et al., 1997; Jeynes, 2003; Kiamanesh, 2005; Salami, 2008). Schooling is often considered from the perspective of attendance, attainment goals, enrollment, or completion (Fentiman et al., 1999; Sackey, 2007; Salami, 2008).

1.2. The effect of student characteristics on schooling and academic achievement

1.2.1. Gender

Gender disparities and differences exist in the areas of schooling, academic achievement, and school experiences in countries all over the world. For example, in some countries in Central, Northern, and Western Africa, and South Asia, enrollment in school is significantly less for girls than it is for boys (Filmer, 2005). Several factors may explain lower enrollment among girls compared with boys. For instance, household or domestic responsibilities such as taking care of young siblings has been shown to negatively affect school enrollment among girls contrasted with boys (Glick and Sahn, 2000). The high cost of schooling remains a barrier that compels lower income parents to send boys to school rather than girls (Elder et al., 2010). Further, parental education, particularly a mother's schooling, has been shown to have significant effect on girls' enrollment more than boys (Behrman and Wolfe, 1984; Tansel, 1997, 2002).

When children arrive at schools, disparities continue throughout their experiences. In some places in Ghana, for example, there are gender disparities in patterns of retention, with boys lasting longer than girls in school (Fentiman et al., 1999; Filmer, 2005). This is consistent with other studies in Kenya, Ghana, and Botswana that show that girls are more likely to drop out of school than boys (Dunne and Leach, 2005; Mensch and Lloyd, 1998). Along with gaps in attainment, compared to boys, girls achieve at a lower level; performance gaps in mathematics and literacy also favor boys in Ghana, Botswana, Zimbabwe, and Kenya (Asante, 2010; Dunne and Leach, 2005; Shabaya and Konadu-Agyemang, 2004).

All of these gender-related disparities may be explained, in part, by the gendered structure of the schooling experience, such as the differences in roles that girls and boys play in schools as illustrated in the delegation of student duties, treatment of authority figures, and behavior of students and staff (Dunne, 2007; Dunne and Leach, 2005; Mensch and Lloyd, 1998). In Botswana, Ghana, and Kenya, studies have shown that boys are often situated in the classroom surrounding the girls (i.e. in the back and sides of the classroom), and that they tend to dominate classroom conversations, are favored by teachers, have higher levels of bullying and harassment toward girls, and as prefects, are considered to have high-status duties (Mensch and Lloyd, 1998). In contrast, girls are often assigned domestic or menial duties—even as prefects sit in the front of the classroom—and are subjects of violence and harassment (Dunne, 2007; Mensch and Lloyd, 1998). In Botswana and Ghana, even female authority figures experience resistance in the classroom and stereotypical institutional practices, such as preference for male head teachers, are seldom challenged (Dunne and Leach, 2005).

1.2.2. Student traits and social background

A student's individual traits and social background can influence schooling and academic achievement. Research in sub-Saharan African countries shows that achievement is strongly related to students' social background in various ways (Lee et al., 2005). In Ghana, one indicator of dropout rates is often a child's age of first enrollment in school (Fentiman et al., 1999). Children who enroll in school at a later time are more likely to drop out because as the children age, they are expected to help out more at home by working and earning income (Fentiman et al., 1999; Glewwe and Jacoby, 1995).

How students perceive and think about schooling is a great predictor of student achievement. Students' self-concept, self-efficacy, attitudes, and motivation are all positively related to academic achievement (Adewuyi et al., 2012; Chevalier et al.,

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