

A Descriptive Assessment of Higher Education Access, Participation, Equity, and Disparity in Ghana

SAGE Open
July-September 2013: 1–16
© The Author(s) 2013
DOI: 10.1177/2158244013497725
sgo.sagepub.com


Francis Atuahene¹ and Anthony Owusu-Ansah²

Abstract

Since independence, Ghana has comparatively distinguished itself among many Sub-Saharan African (SSA) countries in its educational developments. Tertiary education in Ghana over the past decade has witnessed tremendous growth in various frontages—increased access and participation, relative expansion of academic facilities, a growing private sector, and most importantly, a transformative policy environment. Despite these overwhelming developments, there remain inequalities in the higher education system in Ghana: access has not been broadened to include all social groups. Available data suggest unequal participation among women, minorities, individuals from low socioeconomic backgrounds, and spatial-based disparities. Using enrollment data from universities, policy document from the Ministry of Education, and the National Council for Tertiary Education in Ghana, and academic research reports, the authors provide descriptive and critical analyses of the structures of inequalities and disparities in higher education in Ghana. The authors argue that in spite of the massive developments over the years, there exist accessibility and participation gap with respect to students' socioeconomic status, gender, regions of origin, and the type and location of secondary schools attended.

Keywords

Africa, Ghana, higher education access, participation, disparity, equity

Objective and Purpose

Higher education¹ in Ghana has recently seen remarkable growth in various frontages—widening access and participation, expansion of academic facilities, transformative policy environment that has led to the growth of private sector participation, innovative funding approaches to increase the financial sustainability of institutions, and so on. Universities in Ghana have become attractive to students from other countries, particularly in SSA. Public universities in Ghana are internationally recognized in terms of the quality of programs offered, teaching, research, and knowledge transfer. Several public universities, have well-developed international programs and partnerships with leading institutions such as Harvard, Yale, and Princeton, giving more credibility to their academic programs. However, in spite of these overwhelming developments, there remain inequalities in the Higher Education system in Ghana; access has not been broadened to include all social groups. Available data suggest unequal distribution of higher education among women, minorities, individuals from low socioeconomic status, and spatial-based disparities. Using enrollment data from universities, policy document from the Ministry of Education (MOE), and the National Council for Tertiary Education (NCTE) in Ghana, and academic research reports, the authors provide descriptive and critical analyses of higher education

disparities in Ghana. The authors provide a brief anatomy of the tertiary education in Ghana, followed by a descriptive examination of the various levels of inequalities that have persisted in the system with particular reference to access and participation—disparity based on students' socioeconomic status, gender-based disparities, regions of origin, and the type or location of secondary schools. The authors utilize the Gini coefficient and Lorenz curve concepts to explain the levels of disparity in tertiary education in Ghana.

Overview of Higher Education in Ghana

Tertiary education in Ghana dates back to the early 1940s when Mr. Justice Asquith was appointed by the British government to investigate the principles that will guide the establishment of universities in the Colonies in 1943 (Daniel, 1997). Historically, the British model of education bequeathed to Ghana like many Sub-Saharan African (SSA)

¹West Chester University of Pennsylvania, PA, USA

²Albany State University, GA, USA

Corresponding Author:

Francis Atuahene, Department of Educational Development Services, West Chester University of Pennsylvania, 222 Lawrence Center, West Chester, PA 19383, USA.
Email: fatuahene@wcupa.edu

countries was designed to educate an elite corps who will gradually take up roles in the civil service played by expatriates (MOE, 2008). The first Higher education institution established in Ghana was the University College of Gold Coast in 1948 and later renamed the University of Ghana (UG) after independence in 1957. By the close of the 1980s, there were three public universities in Ghana (UG, the Kwame Nkrumah University of Science and Technology [KNUST], and the University of Cape Coast [UCC]). In addition, there were other professional institutions offering postsecondary programs in the country. Starting with a few 100 students during its inaugural ceremony in 1948, student enrollment at the UG rose to 9,000 in 1976 and remained at this level until the government issued a white paper in 1991 on the reforms to the Tertiary Education System, a precursor of the report of the University Rationalization Committee (URC). The URC undertook a comprehensive review of postsecondary education in the country and came out with detailed proposals designed to overhaul the education system (MOE, 2008). The recommendations of the URC provided the basis for innovation in higher education. The committee recommended among other things, strategies to expand access particularly for the poor and female students; the creation of a new University in the northern part of Ghana; upgrading of the existing polytechnics into tertiary education status under the Polytechnic Law (PNDC; Provisional National Defense Council Law 321 in 1992). Another important recommendation by the URC report was the unification of all postsecondary educational institutions into a single, unified, and coordinated system with greater public accountability (Republic of Ghana, 2002). While the URC acknowledged that the Government cannot exclusively finance higher education, the report recommended that universities embark on innovative financial diversification approaches such as the introduction of cost-sharing and cost-recovery mechanisms, while tuition remained constitutionally free. These major developments led to massive expansion of access and participation between 1990s and 2000s. Prior to 1993, enrollment of the three public universities was 14,500, and by 2002 this had increased to 86,570, and then to 121,390 in 2005 (Adu & Orivel, 2006, cited in World Bank, 2011).

Over the past two decades, the number of tertiary institutions in Ghana has grown positively, particularly private institutions. And by 2012, there were more than 126 public and private universities accredited by the National Accreditation Board (NAB) in Ghana. Of these, there are 6 public universities, 49 private universities—two of which are chartered and have been given presidential authority to award degrees, 38 Teacher Training Colleges (TTCs) that have been upgraded to university status, 18 Nursing Training Colleges, and 10 Polytechnics. In addition to these, there are several private universities that have not received accreditation, but running several postsecondary education programs in the country. In the public universities, the enrollment growth rate has not reflected the proportionate expansion in

academic facilities to ensure equity, and inclusion of all social groups. For example, during the period between 1990 and 2004, the average annual growth rate reached 18% for all tertiary institutions combined, and 16% for universities alone (World Bank, 2011). During the 2006-2007 academic year, the total enrollment in the tertiary sector was just more than 135,000. At the polytechnic level, enrollment increased from about 1,900 in 1990-1991 to about 45,000 in 2008-2009 (Effah, 2011). These developments are due to various policies adopted by the Government to enhance higher education in Ghana. Another example is the policy of differentiation being implemented to allow accreditation of some polytechnics to run select bachelor's degree programs, thereby reducing pressure on universities to expand access and participation (Effah, 2011). In spite of this growth, universities and polytechnics are not fully equipped with the required infrastructure to admit the number of qualified students seeking participation. Every year, many qualified students are denied access to tertiary education due to limited institutional facilities.

Access, Participation, and Equity

As indicated hereinbefore, public tertiary education in Ghana was initially developed as residential institutions because of their national character and the model adopted from the metropolitan institutions in Britain (Republic of Ghana, 2002). Admission to any of the public universities in Ghana is influenced by the availability of academic and residential facilities, as well as Government subsidies to institutions. With the growing demand for participation and the unequaled pace of expansion in residential facilities, access to higher education is determined by available capacities of universities and polytechnics. Although, enrollment increased from as low as 14,500 prior to 1993 to 179,998 during 2009-2010, and then rose to 201,153 during 2010-2011 academic years, there remain greater percentage of students who are excluded from participating in tertiary education.² Between 2009-2010 and 2011-2012 academic years, the participation rate at universities increased by 57%, while polytechnics registered an impressive enrollment rate of 21.4%. Presently, universities are filled beyond reasonable capacity, and many academically qualified students are denied admission. The lack of adequate academic and residential facilities means that universities have to embark on highly selective admission procedures. For instance, enrollment trend at the UG provides an exposé of the accessibility challenge facing public universities in Ghana. In 2001, the total number of applications (see Figures 1 and 2) received by the UG was 6,268, of which 2,659 (i.e., 42%) were qualified and 2,550 were admitted to study in various programs (representing an acceptance rate of 96%, see Figure 2). However, this trend began to change as the number of applications increased in successive years. In 2011, for example, the total number of qualified applicants was 12,702 (i.e., 85% of total applications). Out of this, only

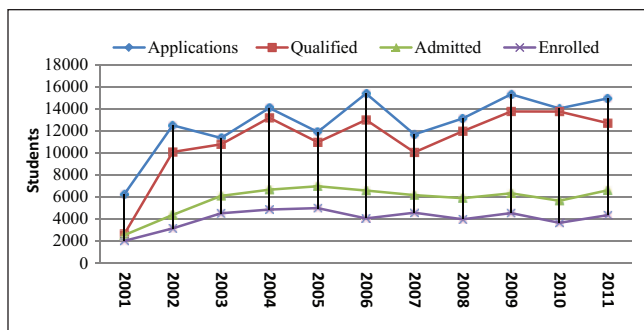


Figure 1. Enrollment trend at the University of Ghana.
 Source. Based on data from the Planning Management and Information Systems Directorate (PMISD) of University of Ghana, 2012.

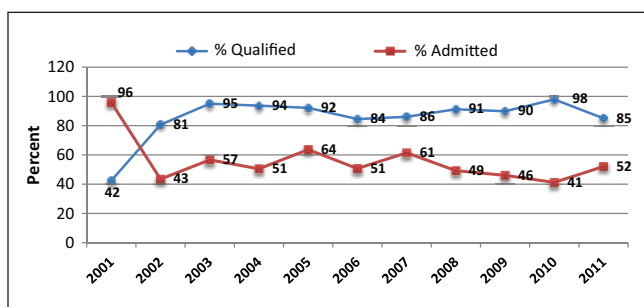


Figure 2. Percentage of qualified and admitted students—University of Ghana.
 Source. Based on data from the Planning Management and Information Systems Directorate (PMISD) of University of Ghana, 2012.

52% of the qualified applicants were admitted to study in various programs. The status of the 48% of students who were denied admission remains unknown. It is possible that some of the qualified students may have been accepted into other tertiary institutions in the country, because in practice, students usually apply to multiple institutions. As Eshiwani (1999) indicated, although the expansion of access to higher education led to training of the required manpower capacity needs of most African countries in the earlier days of independence, “the current growth exceeds the capacity of African economies to meet the high demand for university education” (p. 33). However, the fact that many students are faced with the challenge of accessing universities and programs of their choice due to limited academic facilities means that Ghana is potentially underutilizing a greater percentage of its human resource capacity.

Moreover, in discussing access and participation issues, it is important to note that globally, higher education accessibility is becoming a major national concern for all countries. While enrollment has increased at the primary and secondary education levels, similar trends have not been witnessed at the postsecondary levels. Over the past three decades, the number of students attending postsecondary education has increased from five to six million resulting in tertiary enrollment annual

Table 1. Pretertiary GER and NER by Gender 2008-2009.

	GER			NER		
	Primary	JHS	SHS	Primary	JHS	SHS
National	94.9	80.6	33.9	88.5	47.8	17.7
Boys	97.0	83.9	36.7	89.6	47.9	18.0
Girls	92.8	77.0	30.8	87.4	47.7	17.4
GPI	0.96	0.92	0.84	0.98	1.00	0.97

Source. World Bank (2011).
 Note. GER = gross enrollment ratio; NER = net enrollment ratio; JHS = Junior High School; SHS = Senior High School; GPI = Gender Parity Index.

average growth rate of 8.6% with SSA recording the highest participation growth rate (United Nations Educational, Scientific and Cultural Organization Institute for Statistics [UNESCO-UIS], 2009). Available statistics show that in SSA, enrollment rose by an annual growth rate of 10% between 2000 and 2005 (UNESCO-UIS, 2009). Nonetheless, there remains a huge gap between the secondary and tertiary Gross Enrollment Ratios (GER) in the region. For example, the upper secondary and tertiary GER were 19% and 4% in 1999, which increased to 27% and 6% in 2008, respectively (UNESCO-UIS, 2010). In 2006, Nigeria which is the most populous country in Africa registered a primary GER of 96%, secondary GER of 32%, and tertiary GER of 10%. Alternatively, Kenya’s GER within the same period was 96% for primary education, 49% for secondary, and 6% for tertiary. In Ghana, the secondary Net Enrollment Ratio (NER) in 2007 was 45% while tertiary GER was 6% (World Bank, 2011). Comparing these statistics with a non-African country, India, for instance, registered 112% primary GER, 54% secondary and 12% tertiary, which was even higher than the combined GER of all SSA countries of 95% primary, 32% secondary and 5% tertiary (World Bank, 2011). As shown in Table 1, it is instructive that the problem of access at the university is also a transition and progression issue from the pretertiary levels. The primary GER of 94.9% compared with Junior and Senior High GER of 80.6% and 33.9%, respectively, show a transition problem from primary to secondary education levels, which definitely affects the transition and progression to the tertiary education level. For example, during 2008-2009, the male to female primary GER was 97% to 92.8% compared with the respective GER of 83.9% and 77% at the Junior High School, and male to female GER of 36.7% to 30.8% at the Senior High School levels, respectively. Clearly, by the time students graduate from High School, a greater percentage of them would have dropped out. As a point of banality, one can candidly remark that if retention rates at the pretertiary education increases, and if many students were to qualify for universities, the existing institutional capacities will definitely be inadequate for such massive demands. The worse-case scenario would be either institutions overstretch their capacities and accept more students, which will potentially affect quality or completely deny some students admission.

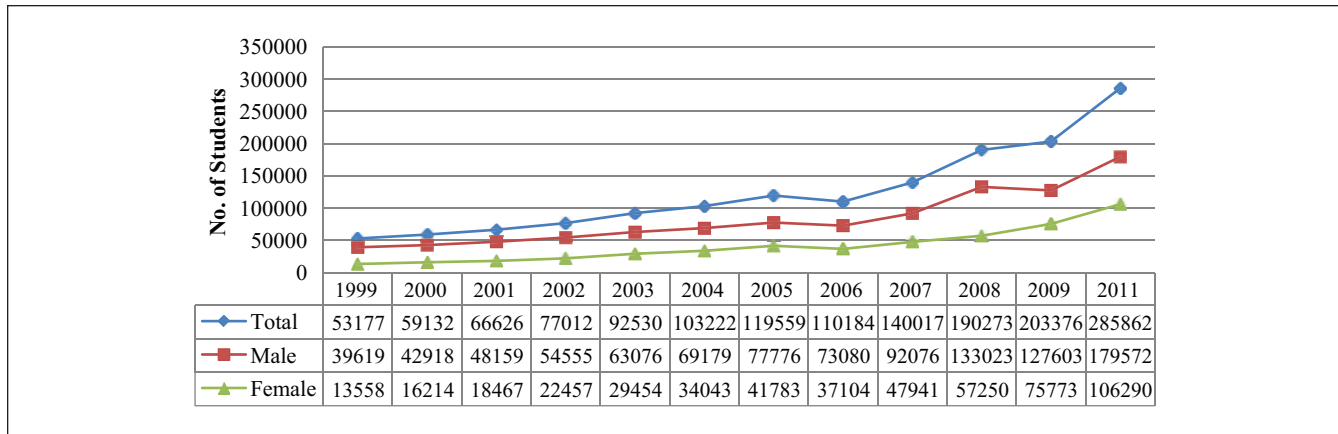


Figure 3. Enrollment Trend by Gender—University of Ghana.

Source. Authors' calculations based on data from United Nations Educational, Scientific and Cultural Organization database (UNESCO, 2012).

Furthermore, while the GER at the Senior High School level is lower for boys and girls, the trend depicted in Table 1 shows that as attrition of female students increases, their participation to higher education will be comparatively lower than that of male students. Similarly, the World Bank (2011) reported that while Junior High School GER reached 79.5 in 2009, the current estimated transition rate from Junior to Senior High School is 35% to 40%.

While high drop-out rates at the Junior High School accounts for the low Senior Secondary School GER, other socioeconomic and institutional factors, as well as high failure rates in the Basic Education Certificate Examination (BECE) play a major role in students' transition and progression between Junior and Senior High School levels (MOE, 2009; World Bank, 2011). For example, a report on the 2011 BECE by the West Africa Examination Council (WAEC) revealed that, most of the students who took the exam performed abysmally as compared with the previous years, leading to most students not being able to obtain admission into the Senior High Schools. It was noted in the WAEC report that most schools scored below 50% in the exam. In central region alone about 77 schools scored 0% in the exam. It is important to note that while generally tertiary education in Ghana has relatively seen expansion in the number of students attending, unfortunately, not all groups have benefited proportionately from the recent expansion. Ensuring participation for women remains a major policy snag for universities, although there have been efforts to bridge this gap.

Gender-Based Disparity in Higher Education

Gender-based disparity in education as argued by Assié-Lumumba (2008) “. . . is one of the areas that differentiates economically advanced from developing countries” (p. 18). Although SSA witnessed more than 66% increase in the number of students attending tertiary education between 1999 and

2005, access to the relevant age group remains relatively low with an average GER of 5% in 2005 (UNESCO-UIS, 2008). While the global Gender Parity Index (GPI) increased to 1.05 in 2005, the average tertiary GPI in SSA decreased from 0.68 in 1999 to 0.62 in 2005. Whereas gender disparities favoring men substantially increased in some countries such as the Congo, the Gambia, Lesotho, and Nigeria, women's participation in tertiary education improved significantly in Burkina Faso, Ethiopia, Malawi, and the United Republic of Tanzania (UNESCO, 2008).

Overall higher education access for female students has not seen much improvement despite the general consensus about the need to correct gender-based disparity (Figure 3). One often-cited reason for the low participation rate of females in African universities is the misguided colonial educational policy, which did not have specific place for women in higher education. Historically, the colonial higher education model for which Africa traces its modern universities was primarily designed to educate males who will provide administrative assistance to the colonial government, thus universities did not have any voice or important place for women (Assié-Lumumba, 2008; Mama, 2003). This practice did not change during the immediate years after independence as most first- and second-generation African leaders did not proactively make plans to improve women participation in higher education, thereby perpetuating the long-standing inequity. As Mama argued,

African governments have not formally excluded women from participation in higher education as the colonial policies did, but “they have tended to treat the attainment of nation-statehood as a collective restoration of conventional masculinity . . . which has precluded full and equal participation of women in the national project. (p. 102)

In Ghana, access to and participation in higher education by females has generally improved numerically over the past few decades, but disparity persists between male students.

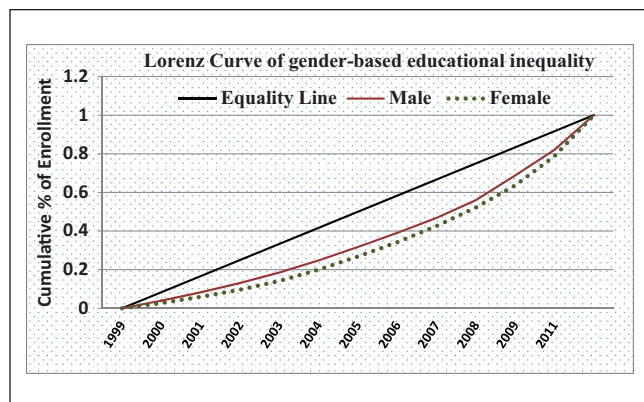


Figure 4. Educational Lorenz curve between male and female students: 1999-2011.

Source. Author's calculations based on United Nations Educational, Scientific and Cultural Organization Institute for Statistics (UNESCO) database (July, 2012).

Female participation rate in 1999 was about 25% of the total enrollment, which increased to 37% in 2011 representing about 154% increase from the total enrollment in 2005. By all indication, female participation has increased over the years, but is relatively lower than that of male students' representation in the tertiary education system. The increase in enrollment is high in the polytechnics, private universities, and professional institutes. For example, the percentage of enrollment in private universities and professional institutes rose from 4% to almost 20% in the last 4 years (MOE, 2008; World Bank, 2011). Probably, the entry requirements are less competitive than those in the universities (Morley, Gunawardena, Kwesiga, Lihamba, & Odejide, 2006; Morley, Leach, & Lugg, 2009; Morley, Lihamba, Mwaipopo, Forde, & Egbenya, 2010). According to Daddieh (2003), "... the growing gender gap in enrollment and retention remains one of the more vexing issues facing the Ghanaian education system" (p. 12).

Ghana has evidently seen an impressive increase in its higher education with Gross Enrollment Ratio increasing from 2.92 in 1999 to 12.14 in 2011, but equality and equity between female and male students have not been achieved, as the proportion of male to female student remains unequal. In 1999, the tertiary GPI was 0.35, by 2004 it was 0.79, and then dropped to 0.45 in 2008, but rose 0.62 in 2011. The education Lorenz Curve in Figure 4, for example, provides a further estimation of how Ghana is lagging in achieving gender parity or equality in its tertiary education system. As a measure of equality, the Lorenz curve maps the cumulative educational share against the cumulative population share ordered from the least represented in the tertiary education to the most represented on the y - and x -axes, respectively (d'Hombres, 2010). The Lorenz curve provides a geometric representation of educational inequalities. The 45° diagonal line differentiates the Lorenz curve. As depicted by the Lorenz Curve in Figure 4, the relationship between cumulative proportions, its initial and final points have coordinates (0, 0) and (1, 1), respectively. If

each gender group had the same enrollment distribution, the Lorenz Curve would be equal to the equality line. As enrollment distribution between female and male students is not equal, the Lorenz Curve falls below the equidistribution line. The surface of the area between the 45° line, along with which enrollment distribution of both social groups (male and female) is the same on the Lorenz curve, determines the degree of inequality in the enrollment distribution and participation. The bigger the surface, the more unequal the educational distribution and however, the larger the distance of the curve from the diagonal line, the larger the inequality. From Figure 4, it is evidenced that educational inequalities exist between male and female students with access favoring male students who are closer to the equidistribution line.

Various systemic factors have been cited to explain gender-based inequities in higher education in Ghana. Ironically, some of the factors that were discussed over a decade ago in a study by Daddieh (2003) were observed in recent studies (such as Morley et al., 2009; Morley et al., 2010). Among the factors causing the high rate of gender-disparity are Socio-cultural considerations, gendered social practices within households, financial difficulties associated with women education, lack of role models for girls in schools, and hostile school environment, which has been documented as sexual harassments from male students, inadequate institutional facilities, and so on. Socioeconomically, poor parents tend to sacrifice their girls' education in favor of males when they have to make the financial decision to send only one child to school. Culturally, in most rural areas when family budget is tight, there is the entrenched perception of parents sacrificing their daughters' education and request of them to participate in economic activities to supplement household income. Girls are more likely than males to support their family either by engaging in selling goods and services or babysitting their younger siblings especially in the rural areas. As articulated by Daddieh, "... negative parental attitudes and cultural practices have tended to devalue female educational achievements, and thereby undermine their educational participation" (Daddieh, 2003, p. 23). Although the negative perception about the value of women's education is gradually fading away in the Ghanaian society, some culturally endemic areas continue to perpetuate binary gender roles which have reduced women to household chores—a notion perceived traditionally, as the proper role and place of women in society.

Moreover, the high female drop-out rate at the primary and secondary education levels can generally be attributed to factors which include: financial stress and Socio-cultural constraints—early customary marriages, teenage pregnancy; unfavorable school environment such as poor sanitary facilities (e.g., toilets), lack of female role models, parents' level of education, high incidence of poverty in the family cause early labor entrance by children, and so on (Casely-Hayford, 2011, United Nations Children's Fund [UNICEF], 2010). In a baseline study, Campaign for Female Education (CAMFED; 2010) found that 65% of respondents suggested early

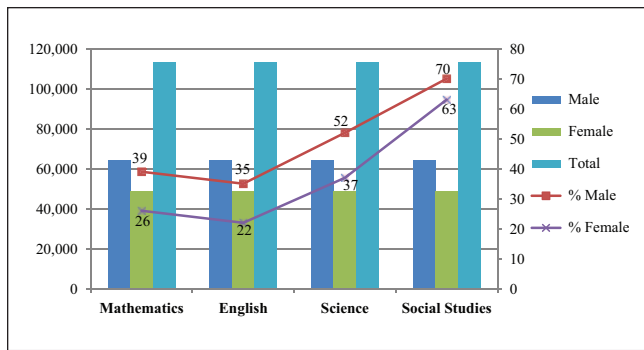


Figure 5. WASSCE pass rates by gender, 2006.

Source. Aggregate data from Education Sector Performance Report (Ministry of Education, 2009).

Note. WASSCE = West Africa Senior School Certificate Examination.

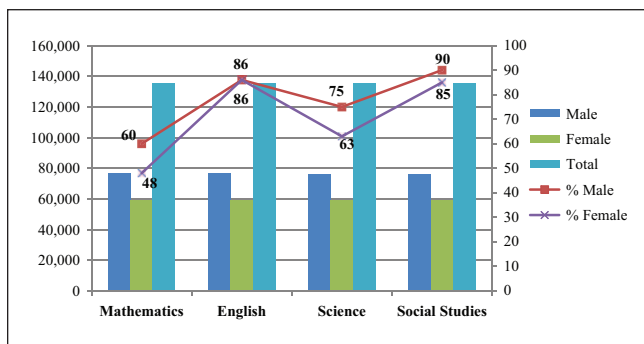


Figure 6. WASSCE pass rates by gender, 2009.

Source. Aggregate data from Education Sector Performance Report (Ministry of Education, 2009).

Note. WASSCE = West Africa Senior School Certificate Examination.

marriage and teenage pregnancy as the causes of student dropouts. A study by Morley et al. (2007) found that female students drop out from primary school because some face unbridled sexually aggressive gestures from male students. A similar report by the World Bank (2011) accounted that primary school dropouts are predominantly high for girls especially those from disproportionately rural settings and poorer households. Moreover, girls in deprived and nondeprived districts more consistently drop out of Junior High Schools than boys. Academically, a comparison of male and female pass rates (see Figures 5 and 6) at the 2006 and 2009 West Africa Senior School Certificate Examination (WASSCE) show that in all subjects taken at the Senior High School entrance examinations, male students outperformed their female counterparts. As admission to the higher education institution depends on students' success in the WASSCE, it comes as no surprise that male students have a better chance at success to enter the university.

Another important factor that impacts students' participation in higher education is their families' socioeconomic background. Historically, postcolonial African leaders perceived the development of tertiary-level skills as essential to

upward mobility in the labor force and a measure of social and economic progression (Assié-Lumumba, 2008). Socially, parents' educational backgrounds largely determine their economic and financial sustainability and their ability to positively contribute toward their children's education. Particularly, a mother's level of education impacts her children's attendance and performance in school (UNESCO, 2011). However, most often financial hardship militates against women's ability to pursue higher education, thereby affecting their contributions to their children's education. Instead of being in school, children in the rural areas in particular are made to work to support family income. In the extreme cases, girls from low socioeconomic backgrounds either get married too early or some of them become victims of sexual abuse, which could potentially lead to teenage pregnancy either caused by male peers or teachers. As Daddieh (2003) asserted,

the poverty of households often makes girls vulnerable to the advances of so-called "sugar daddies" and even male teachers. The resultant pregnancies exacerbated the rate of female dropouts, because girls are almost invariably expelled from school, but not the real culprits—the boys who got them pregnant in the first place. (p. 26)

However, Governments continue to press for the need to increase graduate output of female students. Various policies have been put in place at all levels of education to correct the historical and systemic marginalization of women. At the basic education level, for example, the Girl-Child Unit of the Ghana Education Service (GES) has been created to develop and maintain strategies aimed at increasing the retention rate of girls in Junior High Schools and ensuring their continuation at the Senior High School. While the Unit has made remarkable progress over the years, it faces several problems such as inadequate funding by the GES in some districts to fully support all their programs, lack of operation, and monitoring vehicle for easy accessibility to remote districts, lack of motivation for hardworking coordinators in assisting deprived areas in the district, and difficulty in mobilizing stakeholders to improve the quality of teaching and learning for girls. Although, gender-based disparity remains an issue of policy concern, spatially, individuals from economically deprived regions face more challenges in accessing higher education than those in economically advantaged urban areas particularly, in the cities. The following discussion focuses on how region of residence/origin affects students' chances of participating in higher education.

Spatial Disparity and Higher Education Access

While gender-based disparity remains an entrenched problem in higher education in Ghana, spatial or geographical inequality is very profound. Geographically, the location of

one's high school or region of residence is a major determinant of access to and participation in higher education. Statistical data across the world (UNESCO-UIS, 2009; UNESCO-UIS, 2011) and various studies (Assié-Lumumba, 2008; Leach & Mitchell, 2006; Mama, 2003; Morley et al., 2009; Morley et al., 2010) show that students from deprived school districts and in particular rural areas have limited access to quality education. Participation in higher education depends on the location and quality of Senior High School attended, which is also a proxy to measure one's performance in the Senior Secondary School Examinations (SSSCE). Performance in SSSCE/WASSCE depends on the geographical location or region of the high school, academic program, and of course the quality of teachers in the school. Students who have the opportunity to attend one of the top-ranked Secondary Schools, staffed with quality teachers and comparatively better educational facilities tend to perform better than their peers who attended mediocre Senior High School, predominantly located in rural areas in historically disadvantaged regions of the country, which have substandard academic infrastructure or facilities. Apparently, most of the best schools are located in the urban areas. Studies have shown that students who attended the top-ranked Senior High Schools dominate public universities. A study by Addae-Mensah (2000) estimated that more than 70% of the future doctors, scientists, engineers, architects, pharmacists, and other professionals graduating from tertiary institutions in Ghana came from only 18 of the country's 504 Senior Secondary Schools. This is because only few schools are well equipped with the facilities and quality teachers required to implement rigorous science intensive programs. Unfortunately, the best science schools are well-resourced and predominantly located in the urban areas.

In a similar study, Manuh, Sulley, and Budu (2007) argued that "the most significant factor enhancing the chances of access to university in Ghana was the region (and indeed, location) of residence" (p. 82). About 70% of students in the five public universities reside in only three regions, namely, the Greater Accra (GAR; that is, capital), Ashanti (ASH), and Eastern Regions (ER), suggesting that students from these regions have the best chance at gaining entry into the university (Manuh et al., 2007). Manuh et al. study found enrollment variations in five of the nation's publicly funded universities and that 50% of students had come from only 29 secondary schools in the country. Available Institutional data at the UG and Kwame Nkrumah university indicate that enrollment in these institutions are dominated by students from about 50 of the more than 500 Senior Secondary Schools, with the majority of them from schools located in economically advantaged regions of the country. A recent study by Morley et al. (2009) found that 25% of the 2007 qualified students in Ghana were from deprived parts of the country. Approximately 5% selected from this group was compared with 15% from nondeprived schools. Only 1.16% of students selected were from deprived schools compared

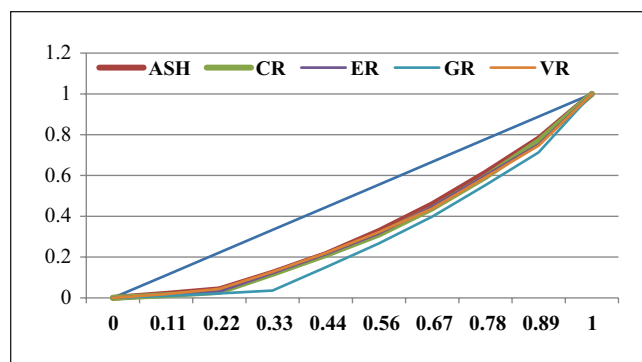


Figure 7a. Lorenz curve of educational inequality—Top 5 regions.

Note. BA = Brong Ahafo Region; NR = Northern Region; UER = Upper East Region; UWR = Upper West Region; WR = Western Region.

with 11.59% from nondeprived schools. The odds of being admitted to any of the tertiary educational institution in Ghana based on Morley et al. (2009) is 10 times higher for students who had the opportunity to attend schools located in nondeprived regions.

In expanding the analysis on the magnitude of higher education inequities based on individuals region of residence in Ghana, the Gini educational coefficient was employed using the Gini Coefficient formula by Brown (1994):

$$\text{Gini} = 1 - \sum_{i=0}^{k-1} (Y_{i+1} + Y_i)(X_{i+1} - X_i),$$

where Gini = Gini coefficient, X_i = Cumulative proportion of the regions, and Y_i = Cumulative proportion of students enrolled in universities.

As a measure of inequality, the Gini coefficient is based on the graphical representation of the Lorenz curve of the distribution of education by regions. The coefficient varies between 0, which reflects complete equality and 1, which indicates complete inequality. Increasing values of the Gini represents level of educational inequality among regions. The overall regional-analysis shows notable inequalities in the distribution of higher education in Ghana. The Lorenz curves in Figures 7a and 7b show a comparison of the trend of educational disparity of the ten geographic regions in Ghana from 2002 to 2010 using data of three public universities—KNUST, the UCC, and the UG. The Lorenz curves show that tertiary education in Ghana is distributed in favor of the top 5 regions—ASH, CR, ER, GAR, and Volta (VR).

The educational Gini coefficient in Figure 8 shows wide variations in the distribution of tertiary education by regions in Ghana. Statistically, the probability of getting access to higher education is higher for individuals residing in ASH (Gini = 0.315), CR (Gini = 0.338), ER (Gini = 0.334), GAR (Gini = 0.325), and VR (Gini = 0.332). In 2005 and 2010, 86% and 81% of the students, respectively, enrolled in the three public universities named the top-five regions as their places of origin.

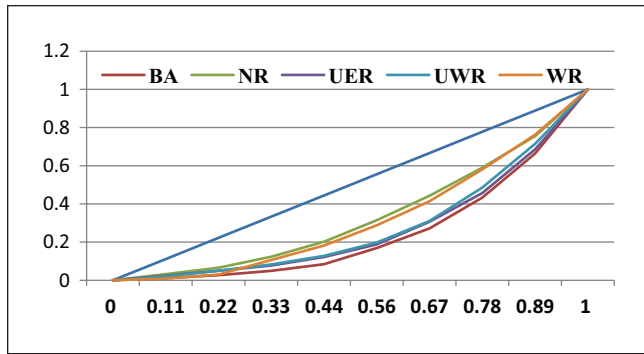


Figure 7b. Lorenz curve of educational inequality—Bottom 5 regions.

Source. Author calculation based on data from the Planning Management and Information Systems Directorate (PMISD) of UG, 2012; Planning Unit, KNUST (2011); and Student Records and Management Information Section (SRMIS), UCC (2010).

Note. ASH = Ashanti; CR = Central Region; ER = Eastern Region; GR = Greater Accra Region; VR = Volta Region; UG = University of Ghana; KNUST = Kwame Nkrumah University of Science and Technology; UCC = University of Cape Coast.

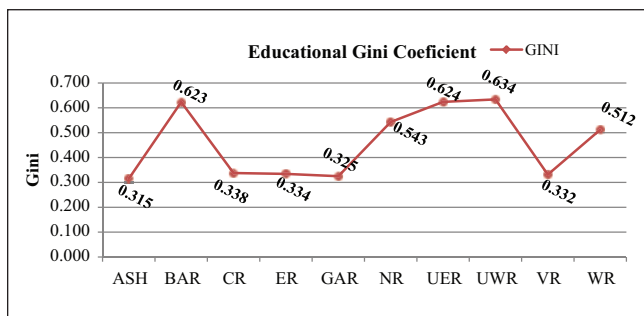


Figure 8. Regional Gini trend in three public universities (KNUST, UCC, and UG).

Source. Author calculations based on data from the Planning Management and Information Systems Directorate (PMISD) of UG, 2012; Planning Unit, KNUST (2011); and Student Records and Management Information Section (SRMIS), UCC (2010).

Note. ASH = Ashanti; BAR = Brong Ahafo Region; CR = Central Region; ER = Eastern Region; GAR = Greater Accra Region; VR = Volta; UG = University of Ghana; KNUST = Kwame Nkrumah University of Science and Technology; UCC = University of Cape Coast.

However, while the above analysis provides a general assessment of all students, a comparative assessment of participation rates by regular students (nontuition paying) with tuition-paying students reveals similar inequalities. Generally, admission to the universities is based on a student's performance on the national entrance examination, WASSCE, West Africa Senior Secondary School Certificate Examination. Students who do not meet the universities' competitive admission cutoff points and departmental restrictive requirements, but who meet the minimum entry requirements have the option to apply for admission as tuition paying. Students who meet the competitive requirements are admitted on regular status. Regular students do not

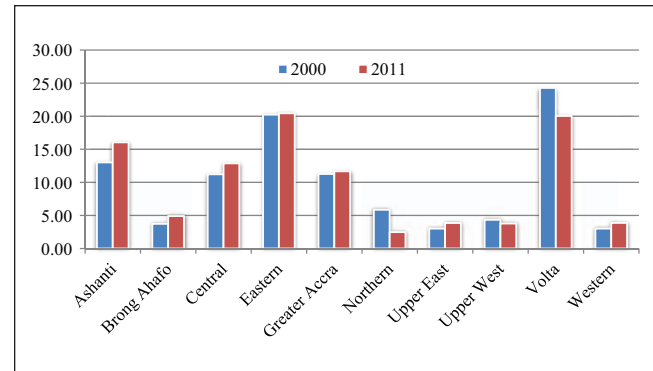


Figure 9. Region of origin of regular undergraduate students at UG-2011.

Source. Based on data from the Planning Management and Information Systems Directorate (PMISD) of UG, 2012.

Note. UG = University of Ghana.

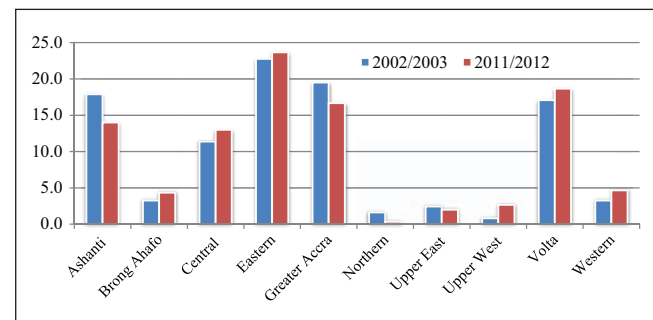


Figure 10. Region of origin of fee-paying undergraduate students at UG-2011.

Source. Based on data from the Planning Management and Information Systems Directorate (PMISD) of UG, 2012.

Note. UG = University of Ghana.

pay tuition, but they pay Academic User Facility and Residential User Facility fees, and other institutional imposed charges. Economically, one must have the financial support to either apply or continue as “tuition-paying” student. Intuitively, the ability to pay depends on several factors such as socioeconomic status, which also depends on student's family income background, level of parents' education, and of course the location and region of residence. The data reveal that in both admission streams, students who are able to participate in higher education are those from the five top regions identified hereinbefore. By all measures, access to higher education comes into conflict with one's socioeconomic status and ability to pay.

When compared, Figures 9 and 10 show that the majority of students who were attending the UG as regular and tuition paying in 2011 were predominantly from 5 of the 10 regions of the country. Most important of all, the fact that participation in universities is disproportionately distributed in favor of the economically viable regions for regular and fee-paying students shows persistent inequity. Students from top-five

regions which are relatively considered as economically well-resourced have better chance of accessing higher education than their counterparts from historically disadvantaged regions (see Figures 9 and 10).

Socioeconomic and Financial Dimensions of Access and Participation

One of the major and often-cited causes of educational inequality in developing countries is students' family background and socioeconomic status. There is no other factor that militates against students' access to tertiary education than their socioeconomic background, *ceteris paribus*. Constitutionally, pretertiary education in Ghana is tuition free, nonetheless there remain certain incidental fees that work against students from poor socioeconomic backgrounds especially, those in the rural areas and in particular girls. Thus, the socioeconomic status of parents is a crucial factor in deciding whether a student stays in primary school or progresses to the next higher level of school, and the opportunity to attend university. However, at the primary levels, there have been several policy initiatives such as the school Capitation Grant Scheme introduced in 2005 to eliminate school fees to expand access for poor students. In principle, the Capitation Grant is designed to eliminate indiscriminate charges such as fees at the basic educational level, especially for the poor and those in the rural settings who research had shown were not accessing education because of the costs, and enable schools to utilize the available funds to improve the quality of education (Akyeampong, 2011). These programs contributed to increase in enrollment at the primary school for girls. The elimination of fees also benefited the poor in remote areas. The national primary GPI has improved from 0.93 to 0.95. Nevertheless, as Akyeampong (2011) indicated, the Capitation Grant Scheme instituted in Ghana is a one-time shot approach because, at some point the enrollment growth rate reaches a norm, and in some cases it begins to plateau. Moreover, providing the facilities at the primary school level without a concomitant overhaul of facilities at the upper educational levels is a short-sighted policy goal. Similarly, eliminating school fees as a demand-side strategy to increase enrollment at the primary school level does not in itself lead to high attendance and participation rates (Akyeampong, 2011). Thus, although fee-free policies have been employed in many developing countries to improve educational access to the poor and minority students, the results have not necessarily translated into high attendance and completion of schooling (Akyeampong, 2009; Somerset, 2009).

Another dimension to this problem is that while higher education in Ghana remains tuition free for regular students, there exist several charges such as, registration fee, technology fee, examination fee, academic facility user fee, medical services fee, venture capital fee, and so on that make it very

expensive for individuals from low socioeconomic status to afford the cost of participation. Realistically, government alone cannot afford to finance higher education considering the skyrocketing enrollment rates coupled with the increasing per-unit cost of financing tertiary education. Likewise, the present state of the Ghanaian economy means a greater percentage of students are incapable of financing their education without government's subsidies.

A plethora of studies (Bock & Cammish, 1997; Casely-Hayford, 2000; Logan & Beoku-Betts, 1996; Morley et al., 2009; World Bank, 2011) have observed that students' socioeconomic status affect their ability to access and participate in all levels of education particularly, at the tertiary education level. For most 4-year colleges and universities, especially selective institutions, enrollment is contingent on students' academic preparation at the elementary and secondary school levels. Across the world, students from low socioeconomic status find it difficult to enroll in selective institutions and for those who made it through are usually academically ill-prepared, although they perform competitively as their peers from high-ranked secondary schools (Kirst, 2007). Individual's economic background can either serve as a barrier or incentive to apply to college or university because of the cost involve in attending specific schools. However, Tierney (1980) argued that socioeconomic status by itself may not affect the cost of applying to specific institution for minority students, but practically, students from low-income status may be hesitant to apply to specific selective and elite institutions even though they may be academically capable (Hearn, 1984; Maguire & Lay, 1981; Tierney, 1980).

In the United States, Bowen, Kurzweil, and Tobin (2005) asserted that low-income students are less likely to apply to one of the group of 31 selective colleges or universities that fall under the Consortium on Financing Higher Education (COFHE). A similar argument was made by McPherson and Schapiro (1991) that students from low socioeconomic backgrounds are less likely to be admitted to COFHE and are more averse to be accepted. Berg (2010) indicated, "statistically, the least academically qualified students from wealthy families have as much chance of going to college as the highest performing kids from low-income families" (p. 55). For economically disadvantaged students, the opportunity cost of participating in higher education is a major economic decision.

For many low-income Ghanaian students, the decision to take loans for private university or apply as "full fee-paying" if they do not meet the competitive entry requirements set by public universities is a difficult one. Hence, there are academically competent students who for economic reasons chose different paths to higher education. For example, in the past some students chose TTCs for economic reasons. Practically, there is a major incentive to attend TTC in Ghana because, not only are TTCs tuition free, but also students receive stipend from the government. In addition, TTC students get employed immediately after they graduate from

college. This is because the Government sends them to various schools throughout the country as teachers. As observed by Morley et al. (2009),

The subject area of Education attracted the most students from deprived backgrounds . . . While this is an important pathway, it is also a profession in Africa with a low exchange rate in the labor market, thus reinforcing economic hierarchies. (p. 21)

Even though socioeconomic status is the first barrier to higher education access for most poor students, admission selectivity to public universities remains the second major threat to participation. For instance, qualified students who did not meet the university's competitive cutoff point, but are financially capable can apply as tuition paying to participate in university education or even apply to one of the private institutions. However, qualified students who do not meet the competitive admission cutoff point, but are financially incapable dread losing the opportunity to participate in higher education. The existing competitive entry requirements into universities based on achievement in WASSCE is a major stumbling block for students from lower socioeconomic backgrounds.

Available fee structure for the 1st-year regular students enrolling in the UG for the 2012-2013 academic year ranges from Ghanaian Cedi (GH¢) 539 (US\$285) for humanities, GH¢ 599 (US\$317) for Administration/Law students, GH¢ 633 (US\$335) for Science including Agriculture, GH¢ 680 (US\$360) for veterinary program, and GH¢ 1,082 (US\$573) medical students. At the KNUST, it is GH¢ 567.47 (US\$300) for humanities, GH¢ 646 (US\$342) for Science, and GH¢ 770.87 (US\$408) for medicine. For students admitted as Ghanaian-tuition-paying status, their tuition and fees is in the range of GH¢1,800 (US\$953) for social sciences and GH¢ 4,000 (US\$2,118) for medical school at the KNUST. At the UG), Ghanaian tuition-paying students pay GH¢ 2,003 (US\$1,077) for humanities and GH¢ 3,491(US\$1,849) for students in various applied sciences. There are variations in tuition and fee within different programs in the same institution and among public universities. In addition to the published fees, students are required to pay other incidentals fees such as residential facilities user fee, and hall dues. Nonresidential students also incur other expenses for accommodation, textbooks, transportation, food, personal, and miscellaneous expenditures. For the average Ghanaian, and low-income students, paying for the yearly fees in addition to all the other incidental expenditures is an uphill struggle. As observed by the World Bank (2011),

Higher Education in Ghana is disproportionately “consumed” by the richest 20% of the population. Male students from the highest income quintile (Q5) are more than seven times more likely to enter and successfully complete HE than those from the poorest quintile (Q1). The situation is even more precarious for the female category where students come from only the richest 40% of the population. (p. 157)

However, instead of providing support for students from low socioeconomic status, universities and government policy penalize students for not performing well in high school, by rewarding the “brightest” students who had access to the best secondary schools in the country, thereby perpetuating inequality. Pillay (2009) contended that students from the highest income quintiles dominate universities and “often public funding mechanisms act to exacerbate such inequities by providing free higher education to the ‘best’ students who invariably come from the wealthiest households.” The case of Ghana clearly mirrors this point where students who did not meet the competitive admissions “cutoff points” are admitted to pay tuition; meanwhile the majority of these students are from either high schools with substandard facilities or from poor socioeconomic background. Students from poorer income quintiles

have much lower enrollment and completion rates. Students from economically deprived households have not only fewer chances than their rich counterparts to be enrolled in school, but those that are have an even smaller probability of completing a given cycle. (World Bank, 2011, p. iv)

Program-Based Disparities

Another area of inequality in higher education in Ghana is the type of academic program that a student pursues. Generally, there is huge disparity between the percentage of students enrolled in the Arts- and Humanities-related programs and Science, Technology, Engineering and Mathematics (STEM) fields. Available statistical data show that while women participation in higher education has increased considerably over the past few years, there remains a huge gap between male and females in STEM fields. Pillay (2009) argued that although

participation rates for women in SSA is “substantially” lower than males, where women have managed to enter higher education, their participation is often concentrated in so-called traditional women’s disciplines such as humanities and education, rather than in commerce, engineering, and science. (p. 20)

In Ghana, while government policy suggests a 60:40 enrollment goal for programs in Science & Technology and Arts & Humanities, respectively (Ministry of Education, Science, and Sport [MOESS], 2010), enrollment trends over the past few decades indicate that this policy goal is far from being realized. For example, STEM and Arts and Humanities ratio was 36:64 in 2001-2002, 35:65 in 2002-2003, and 38:62 in 2007-2008 academic years, respectively, in public universities. For the polytechnics, the ratio was 32:68 in 2006-2007 for STEM, and Arts and humanities, respectively (MOESS, 2010). The ratio of STEM to Arts/Humanities in 2010-2011 was 40:60 and 33:67 for public universities and polytechnics, respectively, in favor of Arts/Humanities (NCTE, 2012). At

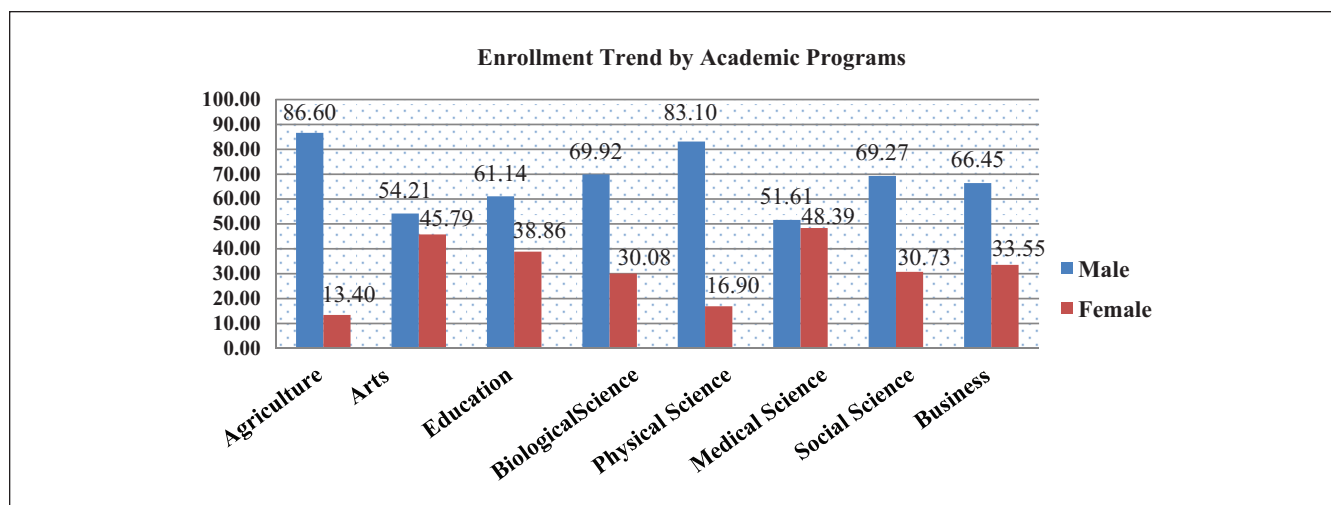


Figure 11. Science and arts enrollment in public universities (2010-2011).

Source. Data from National Council for Tertiary Education (2012).

the UG, the percentage of students enrolled in science-related disciplines was just 23% in 1999 and by 2006 this dropped to 17.3%. In view of this, the NCTE recommends pegging the STEM and Arts/Humanities growth at 5% and 3%, respectively (MOESS, 2010), which may take about 57 years to reverse the present trend. However, a study by Somuah (2008) cited in the 2010 Education Sector Performance Report indicated that if Ghana wants to increase STEM education within 12 years, universities may have to peg their enrollment growth to 8% for science-related disciplines and 0% for the Arts/Humanities. Similarly, polytechnics have to increase science enrollment by 6% and Arts/Humanities by 1% (MOESS, 2010). By making such proposition, the Government assumes that student interest in pursuing Arts or Humanities may decline in favor of STEM courses. However, the implementation of such policy prescription can potentially derail individual's career focus as well as creating fertile grounds for discriminatory admission practices that favor students in the sciences. As shown in the Figure 11, the number of students enrolled has generally increased but those in the sciences increased by small margin. It is equally important to point out that the KNUST and University of Mines and Technology (UMAT) are science-based institutions, although KNUST has over the years expanded the number of Arts and Humanities programs offered.

At the UCC, the ratio of STEM and Arts & Humanities ratio in 2010 was 28:72, which is below the government projected rate of 60:40. Also, when broken down by gender, the ratio of male to female was 63:37 in Arts and Humanities and 78:22 in the STEM. Even though women usually dominate in the Arts and Humanities fields, the data show that male students outnumbered females in all broad fields of academic programs in universities in Ghana.

However, the low numbers of students in STEM is not because of lack of students' interest in science-related

disciplines, but universities do not have adequate physical infrastructure—lack of science laboratories and workshops; inadequate human capacity—research faculty, technicians; lack of enforcement of Science and Technology enrollment targets by tertiary educational institutions. At the pretertiary education level (Senior High School) only a limited number of schools offer rigorous General Science education because most of the schools do not have the resources to facilitate science and math education. As Effah (2011) posited, “there are an insufficient number of science schools and where they do exist, particularly in the rural areas, they do not have required laboratories to facilitate the teaching of science and mathematics” (p. 377). Several factors could explain the disparity in the Arts & Humanities, and STEM fields. Among the notable ones are (a) lack of academic instructors in science- and technology-related fields at the Senior High School level, (b) lack of science and laboratory equipment at the lower educational levels, (c) low level of morale and motivation especially for women to pursue STEM disciplines at the secondary school level, (d) lack of financial support for institutions to run highly intensive science laboratories, and so on (MOESS, 2010). There is also limited number of well-trained science and mathematics teachers at the postgraduate level to teach at the second cycle institutions. This is even worse at the polytechnics and private universities. Private universities tend to gravitate toward offering programs in the Arts, Humanities, and Social Sciences than Physical Sciences. In view of the fact that private universities are quite, recent development and considering that the operation of a highly intensive science program is logistically and financially expensive, it will be more pragmatic for these new institutions to focus on programs that do not require expensive equipment needed to run and maintain quality STEM programs. However, the immediate consequence of this is that, universities and polytechnics are not producing enough graduates with the skills needed to

spur technological innovation and economic growth (United Nations Conference on Trade and Development [UNCTAD], 2010).

In view of the deficiency faced by many of the second cycle institutions, the Government established the national Science Resource Center (SRC) project in 1995 in 110 Senior Secondary Schools throughout the country. The centers were created within a 40-km radius to bridge the gap between well-resourced and underresourced schools. The goal was to help students in school who do not have science laboratories for rigorous science programs to have access to the SRC through weekly visits to the centers. The advantage of this model was to create one center that will serve a greater percentage of students instead of having to establish one for each school, which was financially impossible. While the centers have contributed to teaching and learning of science, most of the centers have experienced various forms of funding and logistical challenges such as transportation for shuttling students to the centers, limited number and type of equipment available in the centers, maintenance of equipment, and so on (World Bank, 2007).

Realizing the challenges faced by some of the centers, the MOE in 2011 contracted with Educational Training Equipment (Eduteq) to upgrade facilities in 200 schools to enhance the SRC Projects. As at the end of 2012, the first phase of this project was completed with the installation of equipment in 83 centers, while the remaining 117 are scheduled for installation in 2013. The strength of the nation's science, technology, and innovation base depends on the quality of education and training in science and mathematics in basic and second cycle schools to produce the number of students who are well prepared for courses in science, mathematics, engineering, and technology at the polytechnics and universities (Ministry of Environment, Science and Technology [MEST], 2010). Cognizance of this need, government current policy projects to ensure that, 60% of all students in the public universities and 80% of those in the polytechnics and vocational institutions will enroll in science-related disciplines by the year 2020. Efforts are being made to promote postgraduate education in scientific disciplines targeting 10% of the student population in tertiary educational institutions enrolling at the postgraduate level, and provide incentives for students and graduates of science and technology (MEST, 2010).

Program-based disparity is not only restricted to students, but it is evident within the teaching and academic staff. Available statistical data from the NCTE (see Figure 12) show huge gender-disparity among faculty members. Using data from the UCC and the NCTE, there were 3,105 full-time teaching faculty representing 545 (17.6%) females and 2,560 (82.4%) of males.

Undoubtedly, the male faculty and staff far exceed their female colleagues even in the so-called traditional fields where society has prescribed as the fitting academic disciplines for women. Areas such as the arts, humanities, social sciences, and education are all male dominated. By all

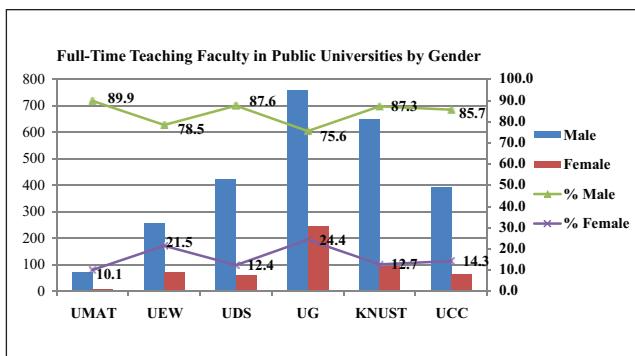


Figure 12. Distribution of faculty and staff by gender and academic programs.

Source. Authors' calculations based on data from the National Council for Tertiary Education (2010-2011) and (2011-2012), UCC data are from 2010-2011.

Note. UMAT = University of Mines and Technology; UG = University of Ghana; KNUST = Kwame Nkrumah University of Science and Technology; UCC = University of Cape Coast.

standards, the human resource capacity, particularly at the university level is persistently masculine; the ratio of male to female in support services is 5:1. Tettey (2010) argued that the low proportion of female postgraduate students is a challenge to faculty regeneration for universities.

The foregoing discussions have revealed that higher education in Ghana over the past two or so decades has witnessed different levels of developments. Governments have provided the financial support to expand access and participation, universities have introduced several policies to improve their financial diversification approaches; universities are also streamlining their admission processes, and have introduced affirmative action policies and quota system to increase female participation, as well as reserving admission slots for students from historically deprived Senior High Schools. However, various factors such as gender, region of origin, location of high school, and socioeconomic status of students continue to challenge students' ability to access and participate in higher education. Nonetheless, there still remain several policy initiatives designed by the Government and institutions to broaden accessibility and participation for females, minorities, and individuals from historically disadvantaged regions.

Policies Initiatives and Way Forward

The first policy initiative addresses spatial-based disparity. As part of efforts to provide opportunities for students who attended high schools in the rural areas, public universities in Ghana have been accepting students from institutions that have been identified by the GES as the Less-Endowed Secondary Schools (LESS) and who meet the minimum entry requirements set by universities. Under the present competitive admission standards established by universities, some of these students may not have been accepted into the university. The UG, for example, has been admitting students from LESS

since 2003, and some have been awarded with scholarships. Available data from the UG's Office of Financial Aid show that between 2005 and 2011 the total number of financial aid applications received by the university was 1,736, comprising 1,579 (91%) males and 156 (9%) females. Of this, 90 (58%) of the total female applicants were awarded scholarship compared with the 902 (57%) of the total male applicants. At the UCC, the Joint Admission Board identifies students from the LESS and admits them to pursue various programs.

Another important development is the creation of the remedial science program, the mature students' entrance examinations by the UCC, and the concessionary selections of students from deprived schools identified by the Joint Admissions Board. This program accepts applications from students who did not meet the highly selective admission requirements, but demonstrated the potential to succeed in higher education. Students who participate in this program are brought to the university to take remedial classes and take final examinations. Successful students are accepted to pursue various academic programs of their interest. Available data from the UCC indicates that during the 2008-2009 academic year, the university admitted about 80 students from a number of deprived areas from the several LESS in the country. At the KNUST, the former Vice Chancellor, Professor Adarkwa in his Matriculation address indicated that during 2007-2008 academic year, a total of 243 students (representing 3.5% of the total admission) comprising 183 males and 60 females were offered admissions under the LESS protocol (Adarkwa, 2007). However, during 2011-2012 admission year, the KNUST received 27,459 applications of which 18,640 of the applicants were qualified by admission criteria. In all, 12,008 students comprising 7,947 males and 4,061 females were admitted. However, due to admission competitiveness and the lowering of cutoff points for all academic programs, the university was not able to admit students from the LESS.

In addition to the above policies and programs, affirmative action policies have been instituted in university admission since the mid-1990s as a corrective measure of the long-standing historical gender-based disparities. To correct this problem, universities have adopted various quota policies such as lowering the admission cutoff points by 1 point for female students in various programs. "What this meant was that if admissions for a program stopped at aggregate 12, all girls with that aggregate were guaranteed admission, or if there was space for one aggregate below the cutoff, it was filled with women" (Tagoe, 2008, unnumbered document). At the UCC, as a result of the affirmative action policy the University increased its female enrollment from 2,091 during 1999-2000 to 5,198 during 2010-2011 representing an increase of 145% over a period of 11 years. During 2006-2007 academic year, the university admitted a total of 3,870 undergraduate students comprising 2,417 (62.5%) males and 1,453 (37.5%) females out of a total of almost 16,000 candidates who applied for admission to the University (Morley et al., 2007).

Moreover, to address the socioeconomic-based disparity, the MOE approved the Capitation Grant Scheme in 2005 to eliminate school fees for all basic schools. Through its successful pilot implementation in 2004, it was observed that eliminating school fees bridged the gender gaps in basic schools. For instance as a result of the Capitation Grant programs, enrollment at the Kindergarten rose from about 500,000 during 2004-2005 to more than 800,000 during 2005-2006 academic years, representing an increase of 67% within a period of one academic year.³ At the same time, primary education showed expansion of female enrollment with an increase in the net enrollment rate from 59.1% during 2004-2005 to 68.8%, while that at the junior secondary level increased from 31.6% to 41.6% (United Nations Girls' Education Initiative [UNGEI]). The increase in enrollment was particularly higher for girls than for boys, thus further narrowing gender gaps. The national primary GPI has also improved from 0.93 to 0.95.³ Although this policy has not impacted the completion and graduation rates, the plethora of data available show its immediate success, particularly for the poor and people from the rural areas of the country.

Concluding Remarks

Higher education in Ghana has seen outstanding development relating to accessibility and participation. Within a period of 15 years, tertiary education enrollment increased from below 9,997 in 1992 to more than 132,000 in 2010, representing an increase 1,300% (13-fold). Female enrollment has seen considerable degree of improvement with a GER of 1.52% in 1999 to 9.24% in 2011, although male enrollment increased from 4.28% to 14.92%, respectively. Ghana has made positive and impressive progress toward increasing access to education and narrowing gender gaps at the pretertiary education levels, yet these developments have not trickled down to the tertiary education level. Disparities persist among gender, rich and poor, location and regions of origin, academic programs, and the type of high school a student attended.

Whereas providing access to higher education to all qualified Ghanaians is financially impossible, there are certain policies that could be streamlined to address the huge disparity rates. The first point of departure is a massive review of the "full fee-paying" policy being implemented by universities alongside the student loan scheme. Generally, most Ghanaians have come to realize that tertiary education can no longer subsist under the socialist agenda, although current developments show that tertiary education is indeed not completely free. Economically, there remains a small percentage of the Ghanaian population who are financially capable of paying tuition fee, but financially, the majority of the students will not be able to afford it. Psychologically, for students to embrace the idea of paying tuition for their education at the university level, they should be given enough loans to cover the cost of tuition, as well as other charges

such as academic and residential facility user fees, and so on. The implementation of the present student loan scheme, where all students, irrespective of their socioeconomic status are given the same amount is an affront to cost-sharing mechanisms. Thus, any efficient cost-sharing policy must be accompanied by a corresponding student loan scheme that is designed to expand access and participation. Moreover, there should be a well-established need-based financial aid scheme that provides support for needy students. However, the efficiency of a need-based student loan scheme depends on the availability of accurate and reliable national database. The current need-based assessment compiled by the Student Loan Trust Fund (SLTF) statistically lacks validity and reliability as it is based on self-reported data from students. Another important consideration is borrowers aversion to loans. Providing huge loan amount to students does not eliminate the psychological fear of repayment after graduation especially with the present rate of unemployment. Universities have to reevaluate their curricular to prepare students with the skills needed for self-employment and the knowledge-based economy. When students are positive about getting employment on graduation, borrowing for their education will be evaluated based on the social and private returns to their investment than the debt they accumulated while attending college.

Furthermore, affirmative action and quota policies are perceived as some of the alternative policy initiatives designed to address educational inequities and disparities. Opponents have criticized this idea as reverse discrimination against male students. However, in the Ghanaian society, universities should be encouraged to raise the acceptance rates for students from LESS regardless of the level of competition in a given admission year particularly, for female applicants. This should be continued until such a time that the country achieves gender parity at the higher education level. While admitting academically underprepared students, university should consider establishing academic support centers that will offer remedial support services for students who may not be ready for college.

Another important policy development that has impacted higher education participation in Ghana is the upgrading of polytechnics and TTCs into tertiary education status. To complement this initiative however, there is the need for efficient national curriculum development to established institution-wide articulation agreement to enhance easy transfer of credits from one tertiary education to another. This will not only provide credibility to the academic programs offered by the polytechnics, but also an easy route for students to enter the tertiary education system while reducing the pressure on public universities. In addition, it will enable the country to reconstitute higher education into a single unified system. While granting polytechnics the accreditation to run selected bachelor's degree programs is a novel policy idea, this arrangement should not replace the existence of efficient articulation agreement that builds

strong partnerships among colleges, polytechnics, and universities.

In conclusion, higher education access and participation in Ghana is stratified by four equity concerns: gender-based disparity, socioeconomic status, spatial disparity, and program-based disparity. The available data suggest that higher education is inequitably distributed in favor of males, and individuals from upper income bracket. Data from the Ghana Living Survey indicate that higher education in Ghana is dominated by 67% of individuals from the richest quintile and 10% from the poorest two quintiles. Students from rural areas and regions with deprived economic and social infrastructure do not have equal access to tertiary education as students from relatively economically endowed regions such as ASH, ER, GAR, and CR. However, universities have developed various strategies to address the equity problems.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. In this paper, higher education is used interchangeably with tertiary and postsecondary education. In Ghana, Tertiary education comprises of education provided by universities, polytechnics, colleges, and professional institutes.
2. Reasons for exclusion may include: not meeting the restrictive and competitive admission requirements set by the universities and departments; not having the financial support to apply as tuition paying or one of the private universities. Although higher education is theoretically tuition free, there are several charges that make it quite expensive for students without strong family support. Besides, almost all the public universities in Ghana are concentrated in the main urban cities, which favor students who either live in the cities or have strong urban ties. The cost of living in these urban cities is very high.
3. United Nations Girls Education Initiative (UNGEI) <http://www.ungei.org/infobycountry/ghana.html>

References

- Adarkwa, K. K. (2007). *Matriculation address delivered by the Vice-Chancellor of the Kwame Nkrumah University of Science and Technology*. Kumasi, Ghana: Kwame Nkrumah University of Science and Technology.
- Addae-Mensah, I. (2000, April). *Education in Ghana: A tool for social mobility or social stratification?* Paper delivered at Danquah, J. B. Memorial Lectures, Ghana Academy of Arts and Sciences, Accra, Ghana.
- Adu, K., & Orivel, F. (2006). *Tertiary education financing strategy in Ghana* (Report to the National Council for Tertiary Education). Accra, Ghana: National Council for Tertiary Education.

- Akyeampong, K. (2009). Revisiting Free Compulsory Universal Basic Education (FCUBE) in Ghana. *Comparative Education*, 45, 175-195.
- Akyeampong, K. (2011). *(Re)assessing the impact of school capitation grants on educational access in Ghana* (CREATE Pathways to Access Series, Research Monograph). Falmer, UK: Centre for International Education, Department of Education, University of Sussex.
- Assié-Lumumba, N. T. (2008, December). *Higher education as an African public sphere and the university as a site of resistance and claim of ownership for the national project*. CODESRIA 12th General Assembly: Governing the African Public Sphere, Yaoundé, Cameroon.
- Berg, G. A. (2010). *Low-income students and the perpetuation of inequality: Higher education in America*. Farnham, UK: Ashgate Publishing.
- Bock, C., & Cammish, N. K. (1997). *Factors affecting female participation in education in seven developing countries* (Research Paper No. 9, Commissioned for DFID). UK: Universities of Oxford and Hull.
- Bowen, W. G., Kurzweil, M. A., & Tobin, E. M. (2005). *Equity and excellence in American higher education*. Charlottesville: University of Virginia Press.
- Brown, M. (1994). Using Gini-style indices to evaluate the spatial patterns of health practitioners: Theoretical considerations and an application based on Alberta data. *Social Science Medicine*, 38, 1243-1256.
- Campaign for Female Education. (2010). *Ghana baseline report: Compendium of data and analysis for Ghana*. Accra, Ghana: Author.
- Casely-Hayford, L. (2000). *Education, culture and development in Northern Ghana: Micro realities and macro context: Implications for policy and practice* (Unpublished doctoral dissertation). University of Sussex, UK.
- Casely-Hayford, L. (2011, April). *The political economic analysis of the education sector in Ghana: The implications for STAR Ghana* (Commissioned by STAR Ghana). Retrieved from <http://www.starghana.org/assets/Report%20of%20Political%20Economy%20Analysis%20of%20the%20Education%20Sector%20of%20Ghana.pdf>
- Daddieh, C. K. (2003). *Gender issues in Ghanaian higher education* (Occasional Paper No. 36). Accra, Ghana: The Institute of Economic Affairs.
- Daniel, G. F. (1997). The universities in Ghana. In *The commonwealth universities year book* (Vol. 1, pp. 649-656). Retrieved from <http://www.users.globalnet.co.uk/~univghana/ghanahed.htm>
- d'Hombres, B. (2010). *Inequality in tertiary education systems: Which metric should we use for measuring and benchmarking?* The World Bank. Retrieved from http://siteresources.worldbank.org/EDUCATION/Resources/Inequality_tertiary_education_systems_Beatrice.pdf
- Effah, P. (2011). A Ghanaian response to the study of "Widening participation in higher education in Ghana and Tanzania: Developing an equity scorecard." *Research in Comparative & International Education*, 6, 374-382.
- Eshiwani, G. S. (1999). Higher education in Africa: Challenges and strategies for the 21st century. In P. G. Altbach, & P. M. Peterson (Eds.), *Higher education in the 21st century: Global challenge and national response* (pp. 31-38). Annapolis Junction, MD: Institute of International Education.
- Hearn, J. (1984). The relative roles of academic, ascribed, and socio-economic characteristics in college destinations. *Sociology of Education*, 57, 22-30.
- Kirst, M. (2007). Overcoming educational inequality: Improving secondary education linkage with broad access postsecondary education. In S. Diekert-Conlin, & R. Rubenstein (Eds.), *Economic inequality and higher education* (pp. 44-66). New York, NY: Russell Sage.
- Kwame Nkrumah University of Science and Technology. (2011). *Planning unit*. Kumasi, Ghana: Author.
- Leach, F., & Mitchell, C. (2006). *Combating gender violence in and around schools: Gender violence in schools in developing world*. Stoke on Trent, UK: Trentham Books.
- Logan, B. I., & Beoku-Betts, J. A. (1996). Women and education in Africa: An analysis of economic and sociocultural factors influencing observed trends. *Journal of Asian & African Studies*, 31, 217-239.
- Maguire, J., & Lay, R. (1981). Modeling the college choice process. *College & University*, 56, 123-139.
- Mama, A. (2003). Restore, reform but do not transform: The gender politics of higher education in Africa. *JHEA/RESA* (Boston College & Council for the Development of Social Science Research in Africa), 1(1), 101-125.
- Manuh, T., Sulley, G., & Budu, J. (2007). *Change and transformation in Ghana's publicly funded universities. Partnership for Higher Education in Africa*. Oxford, UK: James Currey and Accra.
- McPherson, M., & Schapiro, M. (1991). Does student aid affect enrollment? New evidence on a persistent controversy. *American Economic Review*, 81, 309-318.
- Ministry of Education. (2008). *Education sector performance report*. Accra, Ghana: Author.
- Ministry of Education. (2009). *Education sector performance report*. Accra, Ghana: Author.
- Ministry of Education, Science, and Sports. (2010). *Education sector performance report 2010*. Accra, Ghana: Author.
- Ministry of Environment, Science, and Technology. (2010, February). *National science, technology and innovation policy*. Accra, Ghana: Author.
- Morley, L., Gunawardena, C., Kwesiga, J., Lihamba, A., Odejide, A., Shackleton, L., & Sorhaindo, A. (2006). Gender equity in commonwealth higher education: Emerging themes in Nigeria, South Africa, Sri Lanka, Tanzania and Uganda. *Department for International Development*. Retrieved from http://94.126.106.9/r4d/PDF/Outputs/ImpAccess/Educationalpaper_65.pdf
- Morley, L., Leach, F., & Lugg, R. (2009). Democratizing higher education in Ghana and Tanzania: Opportunity structures and social inequalities. *International Journal of Educational Development*, 29, 56-64.
- Morley, L., Leach, F., Lugg, R., Opere, J., Bhalalusesa, E., Forde, L. D., & Mwaipopo, R. (2007). *Widening participation in higher education in Ghana and Tanzania: Developing an equity scorecard* (An ESRC/DFID Poverty Reduction Programme funded Research Project). Retrieved from http://r4d.dfid.gov.uk/PDF/Outputs/ESRC_DFID/60335-working_paper_1.pdf
- Morley, L., Lihamba, A., Mwaipopo, R., Forde, L. D., & Egbenya, G. (2010). *Widening participation in higher education in Ghana and Tanzania: Developing an equity scorecard* (An ESRC/DFID Poverty Reduction Program Research Project,

- Draft Research Report). Retrieved from <http://www.sussex.ac.uk/wphegt>
- National Council for Tertiary Education. (2010). *2010 budget report*. Accra, Ghana: Adwinsa Publication.
- National Council for Tertiary Education. (2011). *2011 budget*. Accra, Ghana: Adwinsa Publication.
- National Council for Tertiary Education. (2012). *2012 budget*. Accra, Ghana: Author.
- Pillay, P. (2009). Challenges and lessons from East and Southern Africa. In J. Knight (Eds.), *Financing access and equity in higher education* (Global Perspective on Higher Education, pp. 19-40). Rotterdam, Netherlands: Sense Publishers.
- Provisional National Defense Council Law 321. (1992). *The poly-technic law*. Accra, Ghana: Republic of Ghana.
- Republic of Ghana. (2002). *Meeting the challenges of education in the twenty first century* (Report of the President's committee on review of education reforms in Ghana). Accra, Ghana: Adwinsa Publication.
- Somerset, A. (2009). Universalizing primary education in Kenya: The elusive goal. *Comparative Education*, 45, 233-250.
- Somuah, C. (2008). *World Bank/MOESS consultancy assignment on tertiary education*. Washington, DC: World Bank.
- Tagoe, C. N. B. (2008, September). *Speech delivered by the Vice-Chancellor of the University of Ghana at the launch of a photo exhibition on women in the life of the University of Ghana to mark the 60th Anniversary of the university*. Retrieved from <http://www.ug.edu.gh/index1.php?linkid=383&page=31§ ionid=608>
- Tetty, J. W. (2010). *Challenges of developing and retaining the next generation of academics: Deficits in academic staff capacity at African Universities*. Partnership for Higher Education in Africa. Retrieved from http://www.foundation-partnership.org/pubs/pdf/tetty_deficits.pdf
- Tierney, M. (1980). The impact of financial aid on student demand for public/private higher education. *Journal of Higher Education*, 51, 527-545.
- United Nations Children's Fund. (2010). *An analysis of out of school children in Ghana: Ghana Demographic and Health Surveys (GDHS) 2003-2008*. Accra, Ghana: Author.
- United Nations Conference on Trade and Development. (2011, November). *Science, technology & innovation policy review: Ghana*. Geneva, Switzerland: United Nations. Retrieved from http://unctad.org/en/Docs/dtlstict20098_en.pdf
- United Nations Educational, Scientific and Cultural Organization. (2008). *Education for all by 2015: Will we make it? Education for all Global Monitoring report*. Author. Retrieved from <http://www.unesco.org/education/gmr2008/press/Full-report.pdf>
- United Nations Educational, Scientific and Cultural Organization. (2011). *Education counts towards the Millennium Development Goals*. Paris, France. Retrieved from <http://unesdoc.unesco.org/images/0019/001902/190214e.pdf>
- United Nations Educational, Scientific and Cultural Organization. (2012, July). *Ghana*. Montreal, Quebec, Canada: UNESCO Institute for Statistics.
- United Nations Educational, Scientific and Cultural Organization Institute for Statistics. (2008). *EFA global monitoring report 2009: Overcoming inequality: Why governance matters*. Paris, France: Author. Retrieved from <http://unesdoc.unesco.org/images/0017/001776/177683e.pdf>
- United Nations Educational, Scientific and Cultural Organization Institute for Statistics. (2009). *Overcoming inequality: Why governance matters education for all global monitoring report 2009*. Paris, France: Author.
- United Nations Educational, Scientific and Cultural Organization Institute for Statistics. (2010). *EFA global monitoring report: Reaching the marginalized*. Paris, France: Author.
- United Nations Educational, Scientific and Cultural Organization Institute for Statistics. (2011). *Global education digest 2011: Comparing education statistics across the world*. Montreal, Quebec, Canada. Retrieved from http://www.uis.unesco.org/Library/Documents/global_education_digest_2011_en.pdf
- University of Cape Coast. (2010). *Basic statistics* [Student Records and Management Information Section (SRMIS)]. Cape Coast, Ghana: University of Cape Coast Press.
- World Bank. (2007). *Developing science, mathematics, and ICT education in Sub-Saharan Africa patterns and promising practices*. Washington, DC: Author.
- World Bank. (2011). *Education in Ghana: Improving equity, efficiency and accountability of education service delivery*. Washington, DC: Author.

Author Biographies

Francis Atuahene is an assistant professor and a faculty academic advisor in the Department of Educational Development at West Chester University of Pennsylvania, United States. His research interests span across contemporary issues in international comparative higher education with particular concentration on educational accessibility, finance and cost sharing, student development, and retention.

Anthony Owusu-Ansah is an assistant professor of education at Albany State University, Georgia, United States. He is the coordinator of Middle Grades Education program of the College of Education. His research interests are in middle grades reading and curriculum issues.