Pakistan Journal of Social Sciences 10 (1): 27-34, 2013
ISSN: 1683-8831

Social Classes and Polytechnic Education Accessibility in Ghana

Adwoa Kwegyiriba
The Institute of Economics of Education and Management,
Graduate School of Education, Huazhong University of Science and Technology,
430074 Wuhan City, P.R. China

Abstract: To meet the needs of the rapidly expanding railway lines and mining activities in Ghana, technical institutes were established in Accra, Takoradi and Kumasi. In 1963, the Accra, Takoradi and Kumasi Technical Institutes were re-designated as polytechnics, by the year 2000 each of the ten administrative regions of Ghana has had a polytechnic institution. The Polytechnics Law (Act 745) gives a clear authorization to the polytechnics to operate as tertiary institutions. The promulgation of the polytechnic Act in 1993 gives prominence to the role polytechnics should play in developing the skilled manpower that Ghana needs for development of the country. Polytechnics were to develop the middle level manpower which was particularly crucial for the effective implementation of decentralization policies and planning reforms. Particular attention was be given to the areas of applied science and technology, arts, industrial commerce, secretarial and accounting practice, fine arts, social services and communication practice. Polytechnic institutions were expanded and each region in Ghana had a polytechnic as a result of Ghana government's plans to expand higher education accessibility to reach all social and ethnic groups. The result of this study is however different from the aim of the provision and expansion of the polytechnic to each regional capital in Ghana. The study used six out of the ten polytechnics to find out which social groups access polytechnic education in Ghana.

Key words: Polytechnic education, access, social classes, metropolitan, district

INTRODUCTION

The establishment of vocational and technical schools has an elongated history. Prior to the advent of the industrial revolution between 1750 and 1830 the home and the apprenticeship system were the principal sources of vocational education. Societies were however forced by the decline of handwork and specialization of occupational functions to develop institutions of vocational education. As the Lagasse (2001) noted manual training involving general instruction in the use of hand tools were said to have developed initially in Scandinavia in 1866. The term polytechnic as defined by the Chambers Encyclopaedia is an institute in which technologies that depend in enormous part upon a mathematical and scientific basis as in engineering and other applied sciences, architecture are taught.

The first school of this category was established by Paris in 1794 by the national convention under the name of school of public research. The Ecole polytechnique at it was called then has repeatedly re-organised as different political groups have succeeded to power. It became the institute in which France trains its artillery and engineer officers. Germans too developed polytechnic or technische, itochschulen. Those that came into being during the first half of the 19th century were in great part training schools for the higher branches of industrial arts. But when Zurich established in 1856 a polytechnic modelled on the plan of the German Universities most of German polytechnic followed suit. However, vocational education became popular in the elementary schools in the United States after 1880 and developed into courses in industrial training, bookkeeping, stenography and allied commercial work in both public and private institutions. Some of the early private trade schools in the US include Cooper Union, 1859 and Pratt Institute, 1887, the Hampton Institute, 1868 and Tuskegee Institute, 1881.

Polytechnic education started in Africa in 1963 as the case in Ghana, Nigeria, Botswana and later spread to other African countries like South Africa in 1990. Literature however available to the reach of this research indicates that Africa is lagging behind in preparing her workforce in vocational and technological education for the challenges of the rapidly changing global economy. Agodzo and Songsore (2005), Bokor (2005) and Hewlett (2005) all these writers indicate the neglect of polytechnic education in Africa but do not specify the degree of neglect or development of the polytechnic education with figures, data is however limited in this regard.

Development of Ghana's polytechnic education: About 75% of the polytechnic institutions in Ghana were traditionally instituted as technical schools that taught intermediate and advanced craft courses. The curriculum was offered from the United Kingdom, city and Guilds London institute provided accreditation for the programs offered by the technical institutions. The technical institutions offered courses tailored towards developing the handy skills acquisition for the socio-economic development of the nation. In the manpower requirements, the minor, focal point level, hands on, skilful man-power needed to drive industries was absent. The outcome was the institution of a number of technical schools to fill this gab and to drive for industrial development. Subsequent governments in Ghana have all emphasised with slogans the enormity of formal technical education as a mechanism to rapid national development.

It is worthy to note that to meet the needs of the rapidly expanding mining activities and railway lines in Ghana, technical schools were instituted in Takoradi, Kumasi and Accra. In 1963, the Accra, Takoradi and Kumasi Technical Institutes were re-designated as polytechnics without any legal backing. Two others at Tamale and Ho enjoyed the polytechnic status in 1984 and 1986, respectively. Cape coast polytechnic which was planned as a polytechnic from inception was opened in 1986 (Nsiah-Gyabaah, 2005). These six second-cycle polytechnics were elevated to tertiary status under the Polytechnic Law of 1992. Later, in 1997, Sunyani and Koforidua Technical institutes became polytechnics and enjoyed similar tertiary status. The building of Bolgatanga and Wa polytechnics in 1999 and 2000, respectively ensured that there is a polytechnic in each on the ten administrative regions of Ghana. The Polytechnic Law (PNDCL, 1992) has since, 2007 been replaced by the Polytechnics Law (Act 745). This gives a clear authorization to the polytechnics to operate as tertiary institutions. Prominence was on the role polytechnics should play in developing the skilled manpower that Ghana needs for development of the country. Polytechnics were to develop the middle level manpower which was particularly crucial for the effective implementation of decentralization policies and planning reforms (NCTE, 2006). Particular attention was be given to the areas of applied science and technology, arts, industrial commerce, fine arts, secretarial and social services, accounting practice and communication practice. Polytechnic institutions were expanded and each region in Ghana had a polytechnic as a result of Ghana government's plans to expand higher education access to reach all social and ethnic groups. Polytechnics fall under the responsibility of the Ministry of Education, supported by the National Council for Tertiary Education (NCTE). Oversight for the quality of teaching, learning and assessment in both private and public institutions is provided by the National Accreditation Board (NAB) and the National Board for Professional and Technical Examinations (NABPTEX). The polytechnics are currently developing technical managers who have the four main basic skills needed by a manager; technical, human, conceptual and design skills. Technical skill is the knowledge of and proficiency in activities involving methods, processes and procedures. Human skill is the ability to research with people and conceptual skills is the ability to see the big picture. Design skill is the ability to solve problems in ways that will benefit the whole enterprise.

Enrolment in the universities in Ghana increased by 165% during the 1990s rising from 11,857 in the 1991/1992 academic year to 31,460 in the 1998/1999 academic year (Effah, 2003). The exceptional increase was due to pressure from the demand for higher education, compelled by enrolment explosions in basic and secondary education following the introduction of the educational reforms in Ghana in 1987. During the same period, polytechnics registered an increase of 730% from 1,558 in 1993/94 when they were upgraded to tertiary status to 12,926 in 1998/99. Within a period of 13 years from 1983-96, total enrolment in universities and polytechnics thus increased by 162%. Despite this expansion, the enrolment rate for the 18-21 age groups in tertiary education is >3% (Effah, 2003). UNESCO statistics indicate that in 2004, 69,968 students were enrolled in higher education in Ghana and that 87% of this figure were enrolled on degree level programmes offered by universities (UNESCO, 2007). Figures from the NCTE suggest that university enrolment is now over 93,285 students of which 10% of students are enrolled in private universities. Addae-Mensah *et al.* (1973) indicated that graduates of the elite secondary schools in the country were over-represented in the country's higher education and in the most prestigious and strategically important programmes of study. These findings suggested that for one reason or another, students who attend the less endowed usually a district or rurally located schools were disadvantaged to access higher education. In a more recent study of admissions to two universities Addae-Mensah has shown that little has changed in terms of access to higher education in the intervening 20 years. His study revealed that at the University of Ghana and KNUST for 1998/99 and 1999/2000 the majority of students came from the top 50 schools in the country which forms <10% of the country's schools (Addae-Mensah, 2000).

Problem statement: About 19 years down the release of the government of Ghana's white paper on tertiary education, upgrading of expansion and provision of each region in Ghana with a polytechnic as a result of government's plans to expand higher education access to reach all social and ethnic groups, Ghana still has a large pool of unskilled senior secondary school graduates who lack any employable skills and are also not capable of job starters but rather parade along the big cities selling dog chains and doing menial jobs. Did the reform and the promulgation of the Polytechnic Law PNDCL 321 for polytechnics to provide equal opportunity to higher education access in technology education at each region for the youth in Ghana work? Important questions have emerged concerning the equal opportunity of higher education. Do the polytechnic institutions in Ghana provide equal access among the social classes? Ghana's inability to provide higher education to its large youth population to build and strengthen its human capital base for economic development has made the higher education in Ghana a suspect in the face of a feeble economy.

Scope of the study: There is a deficiency of research on the social classes accessibility to polytechnic education. Literature available shows research on access to, financing of and strategic management of polytechnics institutions in Ghana (Owusu-Agyeman 2006; Boakye-Agyeman, 2006; Afeti *et al*., 2003). Furthermore, six out of the ten polytechnics in Ghana have operated for 19 years since the government's white paper on education to upgrade polytechnic education to provide wider access into tertiary, this makes the study of which social class accesses polytechnic education significance at the moment since Ghana still records low higher education enrollment and high unemployment figures before and after the introduction of the polytechnic education (NCTE, 2008).

Due to rapid changes in the education industry with great emphasis on accessibility that interest development experts, there is a need to determine who accesses polytechnic education. Does the polytechnics enrollment factor in applicants from both metropolitan cities and the district or sub urban residents? Since, the scope of polytechnic education accessibility affects graduates employability skills and their employment nationwide, the importance of knowing if the polytechnics are providing equal access to all social classes is vital. The findings are useful to educational planners, policy makers and administrators who wish to identify areas where support or materials are needed to ensure successful implantation of tertiary education. Knowledge and information provided by the study would not only add to but also whip up interest in tertiary educational programmes in Ghana, particularly in the field of polytechnic education service delivery.

Research rooted in theory: Schultz (1961) stresses that investment in education is not a waste; rather it is very useful way to increase citizens productivity and a nation's economy. This is because education enhancement among the citizens produces quality researchers besides increasing productivity of the country. The effect is seen in term of its economic gain towards the nation. Becker (1962, 1994) believed that the height of workforce production have positive relationship with the education and training form in which the higher the educational and training form a person receives, the higher the skills acquisition the higher the productivity achievement of an individual. This theory is the basic understanding in choosing the polytechnic educational skills required by most Ghanaian youth where in the end of it they will be able to identify the effects of the skill selection. Becker (1994) explained that education and training received through knowledge delivery and useful skill presentations would be able to increase individuals productivities and at the same time lead to the increase of incomes which could improve individuals life.

Human capital is a determiner for individuals income which is related to certain facts such as individuals who have higher education are easier to get jobs. Besides that employees' education and training have an important relationship with the level of production. This is because education and training are lifelong learning process and function as the key to produce qualified and skilled human capital. Education and training are strategies use to prepare citizens which develop the socioeconomic (Rahman, 2006). Apart from that human capital also influenced one's level of maturity, personality and steadiness that could bring success in the field that the person is involved (Ismail *et al*., 1996). According to Fabian and Topel (2006), a person with great skills increases employers or the workplace productivity. Therefore, the application of human capital towards every person by providing higher education access to Ghanaians through polytechnic education will most likely increase economic productivity since education, especially higher education institutions are the repositories of these human capital stock.

MATERIALS AND METHODS

The study was designed to evaluate the extent to which social classes in Ghana access polytechnic education. This research basically employs empirical

Table 1: Population of study

Population	No./Students	Sampling technique
Current final year stdents	100/Poly/six	Random
Total	600	

study by hypothesizing that polytechnic education does have a significant wide coverage of all the social classes in Ghana and used a research question has the polytechnic education been effective in reaching the under-served, especially the rural populations in Ghana? To test the hypothesis, respondents chose from a range of characteristics that are applicable to demographics and polytechnic education access. The questionnaire had 100 respondents from the 2011/2012 final year students from each of the six polytechnics chosen from the ten existing polytechnics in Ghana. However, this forms part of a broader survey entitled Kwegyiriba Polytechnic in 2011, carried out by Adwoa Kwegyiriba on a research topic polytechnic education access and employability skills in Ghana. The choice of the final year students is due to the fact that they are almost completing the full circle of the polytechnic education. The six participating polytechnics are: Cape coast, Koforidua, Kumasi, Sunyani, Takoradi and Tamale poly (Table 1). The analysis and interpretation of the survey data went through the following process: the questionnaires were coded, cleaned and processed using frequencies and means testing.

RESULTS

Survey and data

Frequency analysis for the current student's sample: The questionnaire had a high response rate of 86%, thus 516 out of 600 respondents were returned. Table 2 shows various polytechnic institutions and their frequencies. All the six polytechnics had a good response figures ranging from the least of 79 with Kumasi poly to the highest frequency of 90 for Sunyani poly.

Figure 1 shows various polytechnic institutions and the percentages. All the six polytechnics had a good response figures, Sunyani poly had the highest percentage of 17.4 whilst the Kumasi had the least percentage of 15.3. However, the range of responses was not wide apart from each other. This indicates the uniformity in the responses rate.

What are the demographics of polytechnic students' population in Ghana? Table 3 shows the demographics of the polytechnic students. The 377 of the final year sample come from the metropolitan cities as against 139 who come from the district to attend higher education.

Figure 2 shows the demographics of the polytechnic students. The 73% of the final year samplecomes from the metropolitan cities as against 27% who come from the district to attend higher education.

Table 2: Poly name

Sample	Polytechnics institutes	Frequency	Percent	Valid percent	Cumulative percent
Valid	Cape coast	88	17.1	17.1	17.1
	Takoradi	84	16.3	16.3	33.3
	Kumasi	79	15.3	15.3	48.6
	Kagoridua	86	16.7	16.7	65.3
	Sunyani	90	17.4	17.4	82.8
	Tamale	89	17.2	17.2	100.0
	Total	516	100.0	100.0	-

Table 3: The demographics of the polytechnic students

Sample	Polytechnics institutes	Frequency	Valid percent	Percent	Cumulative percent
Valid	Metropolitan	377	73.0	73.0	73.0
	District	139	26.9	26.9	99.8
	Total	516	100.0	100.0	

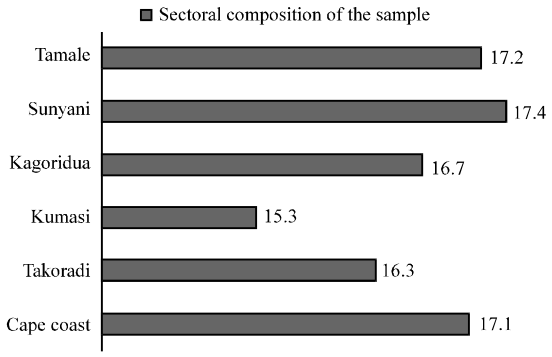

Fig. 1: Compositions of the participating polytechnics

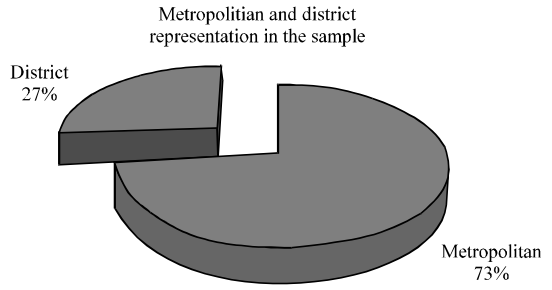

Fig. 2: Metropolitan and district level access composition

Means comparison for students from metropolitan and districts: Using the means testing the views of the two social classes thus those from the metropolitan cities and the district residents to access polytechnic education was also assessed from twenty employability indicators. The means of the metropolitan students are all higher than that of the district students except for action orientation that the district had higher mean than the metropolitan. This is highly reflective of the actual situation as the district level dweller's education is low and even getting access to the higher education is a challenge as shown in Table 4.

Table 4: Means testing for the sample of students from metropolitan and districts

	Metropolitan (N = 376)		District (N = 139)	
Levels	Mean	SD	Mean	SD
Theoretical	3.2314	0.89869	3.1151	0.98598
Practical oriented	4.2048	0.90514	4.0647	0.97214
Creativity	4.0559	0.86998	3.9496	1.01670
Team-working	3.8590	0.95153	3.7986	1.02278
Leadership	3.6941	0.94068	3.7266	0.99859
Interpersonal skills	3.8138	0.99461	3.8201	1.07846
Customer orientation	4.1835	0.83321	4.0072	0.95929
Oral communication	3.1516	1.04353	3.2590	1.09900
Self-awareness/Confidence	4.1383	0.87454	3.9353	0.96466
Self promotion skills	3.7872	0.93663	3.7698	0.96547
Initiative and proactivity	3.9814	0.95061	3.9353	0.84449
Networking skills	3.6410	1.10094	3.6403	1.04262
Willingness to learn	3.7048	1.00695	3.6115	0.94417
Action oriented	3.8191	1.04013	3.9209	1.06366
Problem-solving	4.0851	0.88435	4.0360	0.84622
Computer/IT	3.0851	1.06743	3.1799	1.02329
Flexibility	3.8723	0.92646	3.8921	0.93010
Numeracy skills	4.0106	0.86711	3.9209	0.89333
Business acumen	4.2234	0.83783	4.2230	0.78982
Commitment	4.2979	0.69788	4.0935	0.82438
Curriculum	3.8378	0.53192	3.7320	0.75039
Coordination	3.7108	0.56417	3.7032	0.70747
SelfRskills	3.8453	0.53576	3.8022	0.55697
GeneralistSkills	3.9291	0.46824	3.8909	0.53264
Valid N (listwise)	-	-	-	-

DICUSSION

Unequal access to polytechnic education among the social classes of ghana: A measure of accessibility to polytechnic educati on services was taken from the 2011/2012 current final year students on their belongingness to a district or metropolis across the six polytechnics in their regions. This was done by calculating the responses to the questionnaire item on the data. The demographics result show that 73% of the final year polytechnic students come from the metropolitan cities as against 27% who come from the district to attend higher education, the outcome of this research does not support the hypothesis that polytechnic education does have a significant wide coverage of all the social classes in Ghana. Moreover, Ghana has more district level population than the metropolitan cities as there exists only 10 metropolitan cities as against 210 districts in the country. The findings show that the metropolitan class has a greater access to polytechnic education in Ghana than the district class. The metropolitan class has around 270% chances of accessing polytechnic education than the district class this is unfair and causes a developmental treat to the growth of Ghana. The result reveals the spatial disparity of the distribution of educational within the six polytechnics and among the social classes of these administrative regions of Ghana. It also shows the inequality of accessibility to educational services. Providing a form of a higher education system which has a significance correlation to employability skills to only a segment of the population to access is bias among social classes where the upper class in the metropolitan cities can easily access polytechnic education due to location proximity to the disadvantage of the district resident is highly uneven and does not address the spatial and structural concerns of education to the human capital development. This has contributed to the overall uneven development pattern in the regions of Ghana where the south is more developed than the north because of lack of access to educational opportunities.

It is obvious that equality in education provision is still an important problem. Indeed, the problem of differentiation in education is still at the centre of research in the sociology of education (Archer's, 1978; Collins, 1979; Popkewitz, 1991) and in broad-spectrum works on this critical issue (Bidwell, 1995; Coleman, 1968, 1995; Edwards *et al*., 1995). The problem's complication, the reliance of social processes in education on a lot of factors, vagueness and the difficulties of predicting the dynamics of the processes are generally identified. The cross-impacts of economic, political, demographic, social structure, cultural factors add to the difficulty of the educational field and require continuing research. Creating the next generation's human capital through social and financial investments, problems of social injustice in new realities, perspectives of schooling and education as a worth in diverse strata of society are typical research themes. Again, the distinctive features of educational systems in different countries are fundamental factors to be considered. A class of society that assumed the legitimacy of social status and its transmission necessary for inequality reproduction was ensured through education. Hence, providing equal opportunities is not the true object of the education system. Another interpretation supposed that educational policy aimed at promoting scholarship but met with failure as most families did not show any interest since they had no guarantee that their offspring would obtain the necessary formal qualifications and corresponding economic, social and cultural goods (Boudon, 1974).

The spatial distribution of the polytechnic education in Ghana limit and deny access to people who wish to acquire polytechnic education but do not reside in the metropolises. With this findings access to higher education is unequal among the social classes and not expanded. According to the Executive Secretary of the National Council for Tertiary Education Effah (2003), total enrolment in the four public universities in 2004 was 63,576 compared with 24,353 for the ten polytechnics. Yet many polytechnic qualified applicants do not get access to enrol due to limited institutional capacity.

The polytechnics in Ghana exist only at the regional levels and expansion of polytechnic education to the district level will expand the polytechnics capacity to absorb some of the wasting valuable human resource in the country, since these denied qualified tertiary level applicants do not posses any skill, craft or technology to be able to earn any meaningful living. The polytechnics when strengthen and expanded could train these wasteful human beings into quality human capital capable of contributing to the nation's development. It is against this background that this research posit that the production of useful and quality human resource for the manpower needs and industrial usage through tertiary education in Ghana rest on the polytechnic due to its regionally base capacity and technological form of education to increase students enrolments and to offer technology education to equip, enhance, optimise and provide adequate skilful human resource for industrial use and individuals capable of job creation in Ghana as the nation struggles to maintain a middle income status. Hence, this particular study attempted to ascertain and positioning polytechnic education capabilities in developing middle level manpower in Ghana, based on critical assessment of polytechnic students on employability.

CONCLUSION

Widening higher education access with public income tax has gained a serious debate in economic discourse. Different theories have come out from such debates but this study is informed by one applicable theory the human capital philosophy debate with its double pillars of private and public rates of returns argument. Proponents of the Human Capital Theory have challenged public investment in higher education. Different studies have emerged to explain the intricacies of these debates over the years. Particularly, those who favor investment in basic education rather than higher education make arguments based on the social and private rate of returns. Psacharopoulos (1994) reveal that returns to investments in education are positive at the secondary level but decrease at the higher level of education and as such investments in primary education should be emphasized at the expense of higher education. In Ghana, Psacharopoulos (1994) found that private rates of returns to education in 1967 was 24.5% for primary education, 17.0% for secondary level and 37.0 for the tertiary level of education. At the same time, the social rate of returns for basic education was 18.0 and 13.0% for secondary education and 16.5% for the tertiary level. By 1991 private and social rates of returns at the Senior Secondary School (SSS) were highest compared to other levels of education (Psacharopoulos, 1994).

Recent data on Ghana by Canagarajah and Portner (2003) and the World Bank show that higher levels of education is associated with higher incomes and earnings. At the same time education above the basic level leads to higher income earnings, this reduces income poverty. Additionally, investigation by Canagarajah and Portner (2003) reveals that there appears to be low returns to having a primary education. In the same vein, a report of the World Bank found that significant positive returns are only found for senior secondary and tertiary graduates' in Ghana.

Moreover, referring to the Schumpeterian growth (Joel, 1990) of the human capital theory, a country with highly educated individuals would translate into training of more technologist, technicians, scientists, doctors, inventors and others. The level of a country's scientific and technological development is highly attributed to individuals level of higher education and investment of education. The ongoing global computerization and information dissemination is attributed to the higher level of education of researchers. In another study by Ashenfelter and Rouse (1998), indicated that the value of higher level of schooling increased from 6.2% in 1979 to 10% in 1993. They believe that the demand by employers in the near future for individuals with higher level of education would increase and this will trigger increase in the future monetary returns to education. For this polytechnic education should be expanded in Ghana to meet the future demand of employers and also increase individual future monetary earnings. Opportunities should be created to offer access to the district levels class in Ghana, to bridge the inequality gap because opportunities in the educational field constitute a particularly important resource.

This research has revealed that the district level class has limited access to polytechnic education. Expanding higher education to the district levels of Ghana will help equip the residents with knowledge and skills needed to get actively involved in developing their lives. Moreover, each district in Ghana has a unique natural resource that if the citizens are equip with polytechnic education, there will be interaction between the citizens and these resources by adding value to these raw materials for good use. Polytechnic education to the district class will ensure equity distribution and offer employability skills to the Ghanaians and enhance the life choices of the district level class. It will also remove the social boundaries and reduce rural urban migration as well as reduces the metropolitan social vises to bring cohesion between districts and the metropolises and also widen the tax base of contributors to enhance development. A renowned economist, Nicholas Barr of London School of Economics

argues that investment in education goes beyond the private rates of returns to include tax and production benefits to the society and the creation of social cohesion. Barr (2000) noted that if education increases a person's future earnings, it increases her future tax payment investment in education thus confers a dividend on future taxpayers.

REFERENCES

Addae-Mensah, I., 2000. Education in Ghana: A Tool for Social Mobility or Social Stratification? Ghana Academy of Arts and Sciences, Accra, Ghana.

Addae-Mensah, I., J.S. Djangmah and C.O. Agbenyega, 1973. Family Background and Educational Opportunities in Ghana: A Critical Look at the Secondary School Selection Mechanism-the Common Entrance Examination. Ghana Universities Press, Accra, Ghana.

Afeti, G., D. Baffour-Awuah and J. Budu-Smith, 2003. Baseline survey for the introduction of competency-based training in polytechnics. National Council for Tertiary Education (NCTE) and Japan International Cooperation Agency (JICA), Accra, Ghana.

Agodzo, S.K. and J. Songsore, 2005. Competency-based learning: The Case of Wa Polytechnic of Ghana. Proceeding of the Commonwealth Association of Polytechnics in Africa Conference, August 22-27, 2005, Accra, Ghana.

Archer's, M., 1978. Social Origins of Educational Systems London. Sage, London.

Ashenfelter, O. and C. Rouse, 1998. Income, schooling and ability: Evidence from a new sample of identical twins. Q. J. Econ., 113: 253-284.

Barr, N., 2000. Reforming pensions: Myths, truths and policy choices. IMF Working Paper WP/00/139, International Monetary Fund, Washington, DC., USA.

Becker G.S., 1994. Human Capital. Columbia University Press, New York.

Becker, G.S., 1962. Investment in human capital: A theoretic analysis. J. Political Econ., 70: 9-49.

Bidwell, C.E., 1995. Schools, Faculties and Equality of Educational Opportunity. In: Educational Advancement and Distributive Justice: Between Equality and Equity, Kahane, R. (Ed.). The Magnes Press, Jerusalem, Israel, pp: 99-116.

Boakye-Agyeman, N.A., 2006. Polytechnic education in Ghana: The case of the HND estate management programme in Ghana. Proceedings of the 5th FIG Regional Conference, March 8-11, 2006, Accra, Ghana, pp: 1-10.

Bokor, S.K., 2005. The role of technical education in Africa's economic development: Are the polytechnics still important? Proceedings of the Commonwealth Association of Polytechnics in Africa Seminar, August 22-27, 2005, Accra, Ghana.

Boudon, R., 1974. Education, Opportunity and Social Inequality: Changing Prospects in Western Society. John Wiley and Sons Inc., New York, USA., ISBN-13: 9780471091059, Pages: 220.

Canagarajah, S. and C. Portner, 2003. Evolution of Poverty and Welfare in Ghana in the 1990s: Capital. In: The Handbook of Economics of Education, Hanushek, E. and F. Welch (Eds.). Elsevier, Amsterdam, North-Holland, pp: 459-509.

Coleman, J.S., 1968. The concept of educational equality. Harv. Educational Rev., 38: 7-23.

Coleman, J.S., 1995. Social Change and the Loss of Social Capital: Implications for Children. In: Educational Advancement and Distributive Justice: Between Equality and Equity, Kahane, R. (Ed.). The Magnes Press, Jerusalem, pp: 17-31.

Collins, R., 1979. The Credential Society: An Historical Sociology of Education and Stratification. 3rd Edn., Academic Press, New York, USA., ISBN-13: 9780121813604, Pages: 222.

Edwards, W., G. Whitty and T. Edwards, 1995. Social Justice and Education in a New Era: Rhetoric and Reality. In: Educational Advancement and Distributive Justice: Between Equality and Equity, Kahane, R. (Ed.). The Magnes Press, Jerusalem, pp: 32-46.

Effah, P., 2003. Ghana. In: African Higher Education: An International Reference Handbook, Teferra, D. and P. Altbach, (Eds.). Indiana, IUP..

Fabian, L. and R. Topel, 2006. The Social Value of Education and Human Capital. In: The Handbook of Economics of Education, Hanushek, E. and F. Welch (Eds.). Elsevier, Amsterdam, North-Holland, pp: 459-509.

Hewlett, 2005. Most polytechnics in Africa are turning into universities, is this a healthy development? Proceedings of the Commonwealth Association of Polytechnics in Africa Seminar, August 22-27, 2005, Accra, Ghana.

Ismail, R., Z. Mahbar and R.H.M. Zin, 1996. The role of proton inpromoting firme's linkages. Malaysian J. Small Medium Enterpr. Rev., 38: 7-23.

Joel, M., 1990. The Lever of Riches: Technological Creativity and Economic Progress. Oxford University Press, New York.

Lagasse, P., 2001. The Columbia Encyclopedia. 6th Edn., Columbia University Press, New York, USA.

NCTE, 2006. Statistical digest of universities and IPS 2005/2006. NCTE Ghana Records, Accra, Ghana.

NCTE, 2008. National council for tertiary education statistical digest. NCTE, Accra, Ghana.

Nsiah-Gyabaah, K., 2005. The missing ingredients in technical and vocational education in meeting the needs of society and promoting socio-economic development in Ghana. Proceedings of the 2005 Commonwealth Association of Polytechnics in Africa CAPA Seminar, August, 22-27, 2005. Accra, Ghana.

Owusu-Agyeman, Y., 2006. Government access-policies on polytechnic education in Ghana: The relevance for cape-coast polytechnic. M.Sc. Thesis, Faculty of Behavioural Science, University of Twente, The Netherlands.

PNDCL, 1992. Government of Ghana 1991 white paper on reforms to the tertiary education system. Provisional National Defense Council (PNDCL), Government of Ghana (GoG), Accra, Ghana.

Popkewitz, T.S., 1991. A Political Sociology of Educational Reform: Power/Knowledge in Teaching, Teacher Education and Research. Teachers College Press, New York, USA., ISBN-13: 9780807730904, Pages: 289.

Psacharopoulos, G., 1994. Returns to investment in education: A global update. World Dev., 22: 1325-1343.

Rahman, A., 2006. Physically-based rendering and algebraic manipulation of volume models. Ph.D. Thesis, University of Wales Swansea, Washington, DC., USA.

Schultz, T., 1961. Investment in human capital. Am. Econ. Rev., 51: 1-17.

UNESCO, 2007. Global Education Digest. Comparing Education Statistics Around the World. UNESCO, Paris.