

Full Length Research Paper

Linking tertiary institutions to industries: Evidence from the Vocational and Technical Education Department of the University of Cape Coast

Amu, Manasseh Edison Komla^{1*} and Christine Offei-Ansah²

Department of Vocational and Technical Education (VOTEC), Faculty of Education, University of Cape Coast, Ghana.

Accepted 7 July, 2011

Despite the various reforms and attempts to relate the school curricula to the world of work, very few studies have been carried out to investigate the constraints and challenges of industrial and institutional linkages. This paper investigates specifically the department of Vocational and Technical Education (VOTEC) of the University of Cape Coast and the inability of the department to link its students with industries, a requirement of the University Curricula to propel its graduates into the world of work. Based on data from 60 respondents from within the university and industry, this paper argues that even though there is awareness of the need for these linkages, the curricula does not adequately cover practices in the actual industries. The results have important policy implications for curriculum and training of students in the VOTEC department and other institutions that provide similar training.

Key words: Tertiary institutions, Industries, challenges, institutional linkages, vocational education, technical education.

INTRODUCTION

The argument for providing vocational education has brought about the idea of revisiting the links between school and industry (Alam, 2008). School administrators and policy makers continue to regard school based vocational education as important while some economists and sociologists want to see an industry-based vocational education (Alam, 2009). Policy makers have not considered phasing out school-based vocational education to make way for solely on- the-job training. As a result there is the need to take a look at the type of link that must exist between the school and the industry per se (Alam et al., 2009). According to Pautler (1990), the problems facing vocational and technical education are many. The institutions must have a partner to help find solutions and this can be accomplished only by developing linkages with industries so that they can survive and accomplish their intended goals of providing the skilled manpower needs of the country. The

implication of Pautler's assertion is that vocational education must be based upon exhaustive study of the industries, to determine the industrial training requirements in order for the vocational school content to be truly relevant (Antwi-Besiao, 2007). In studying industries to determine the industrial training required, it is important to identify the problems and challenges of such a move so that a more scientific and philosophical policy could be adopted to bring to light variables, phenomena, processes and relationships that have not been thoroughly researched and, as such, deserve more intensive investigation (Alam et al., 2009).

The Department of Vocational and Technical Education (VOTEC) of the University of Cape Coast runs a school based vocational programme. The department has not developed a strong link with industries including eliciting the views and expertise of people in the industry. While the ever changing trends in industries call for a review of programmes in order to better suit the demands of the industries, it is observed that students from the VOTEC department do not benefit from these industrial links. Thus, most students do not have sound knowledge of what goes on beyond the school environment and so are

*Corresponding author. E-mail: edisonamu@yahoo.com. Tel: 0233-244458655.

not aware of the requisite skills, knowledge and attitudes expected of them in the work place (Asare-Bediako, 2005). It is in view of this that the constraints and challenges of industrial institutional links must be explored, identified and the resulting benefits adopted. Today, public outcry and concerns with the content, administration, delivery and links as regards vocational education still make headlines in numerous newspapers and have become important issues of national discussions. In the midst of these discussions, Dr. Charles Brimpong-Yeboah, the Deputy Minister of Man Power, Youth and Development said among other things that the poor linkage between vocational institutions and industries has resulted in graduates from such institutions not being accorded the deserved recognition, thus contributing to delays in national development processes (Daily Graphic, 2005). Similarly, addressing participants at a workshop on vocational technical education, the former Western Regional Minister, Mr. Joseph Aidoo described the current TVET (Technical Vocational Education and Training) system as weak resulting in a serious mismatch between demand and supply for labour (Daily Graphic, 2004). The daily papers continue to devote their columns to vocational-technical education in which they bemoan the over-emphasis on liberal education as compared to vocational education. Akplu (2009) calls for a merge between classroom and industry training in TVET for efficiency. Adamtey (2009) also identified placing TVET students in industries as one of the challenges of TVET delivery in Ghana.

The aforementioned public concerns including many others that are discussed in the media and have become topics for seminars and workshops are indicative of the need to undertake research that will address the issues of vocational-technical education in general and specifically the issue of vocational and technical education and its linkages to all industries (Alam et al., 2010). The purpose of the study was to find out the perceived challenges of industrial/institutional linkages with specific reference to the VOTEC department, the benefits of such a linkage and how to more effectively link the VOTEC department to industries. The essence of vocational education is to develop the cognitive, affective and psychomotor skills of the individual for social, economic vocational and interpersonal development. Thus, for education to be relevant, it must satisfy the needs of the economy and the people as well. It is in the interest of this that vocational and technical education is established in addition to general education (Alam et al., 2010). Popularly referred to as VOTEC or TVET, it is a comprehensive term, which covers all school based as well as out of school education and training programmes; thus, both formal or non-formal, designed to prepare individuals with competencies for specific occupations for productive activities in the various sectors of productive social and economic life. TVET or VOTEC is aimed at developing and preparing individuals towards specific

occupations in the various productive and services sectors of the economy. It helps people acquire practical skills and competent manpower in areas such as food processing, hospitality and tourism, building construction, information technology and electronic technology. These competencies help in the production of quality goods and services to meet international standards (Budu-Smith, 2009). In Ghana, a lot of concerns have been raised about the organization, content and delivery of TVET education. Hence, the need for a research that identifies its constraints and challenges.

Public concerns and attempts at school/industrial linkages

Public concerns about the failure of the Ghanaian educational system to satisfy and match the growing contemporary needs of the industry has been a long standing and an ongoing issue highlighted by many. The Daily Graphic publication of November 28th, 2005 carried a rather surprising headline; *"A banker's damning verdict: Universities have failed us"*. In that report, the managing director of HFC Bank, Mr. Asare Akuffo was quoted as saying despite the roles played by the universities in the past. Today, a frank assessment of the contribution of the universities to society may at best be described as mediocre. Mr. Akuffo insisted that notwithstanding the fact that the universities played major roles in the national development in the past, the nation's universities have failed in their roles to transform the fortunes of the country. He bemoaned the link between the universities and national development (Budu-Smith, 2009). Similarly, in an editorial of Friday September 10th, 2004, about technical and vocational education, the Daily Graphic not only bemoaned the nature of our educational system in relation to vocational education but also said *"unfortunately our educational system has tended to focus more on liberal arts and relegated technical and vocational education to the background, the periphery as if they are supplemental to liberal education"*.

Some educationists and government officials also made separate statements regarding vocational technical education and industry. They noted that the link between vocational and technical education systems and the link with industry was weak resulting in serious mismatches between supply and demand for skills. The government was however, developing a new vision to promote appropriate technical and vocational education and training in the country to give this aspect of education the right push and orientation, the absence of which has resulted in graduates from such institutions not being accorded the deserved recognition and thus, contributing to the delay in the national development process.

Elsewhere, Anamuah-Mensah et al. (2005) intimated that the problems with educational systems linkage to industry are not only peculiar to Ghana, and they

asserted that some European countries have also complained about the educational system and the world of work. In the UK, these concerns were brought to public prominence by the Prime Minister, James Callaghan (1976) in his famous Ruskin college speech and ensuring "Great Debate", which crystallized the rumbling discontent felt by government, state organizations, employers, trade unions and parents over the perceived mismatch between educational outcomes and the needs of the world of work. Essentially, Callaghan raised national awareness and demanded greater relevance in the curriculum to combat the anti-industrial culture common among pupils (Anamuah-Mensah et al., 2005). This presupposes that indeed, there is universality of the problem although they may be at different points. On this scale, Africa currently runs in parallel to the more developed regions of the world.

Perceived causes

Having noticed that there are problems with this link in their educational system, some educationists, industrialists and experts have been anticipating what the cause of the problem might be. It must be noted that most of the focus has historically been on education provision, access and participation especially on formal education but with little attention paid to the majority of pupils who fail to overcome the examinations hurdle or those in industry or business who will employ these school leavers (Antwi-Boasiako, 2007). Kent and Mushi (1995) also noted that studies into the aspirations of pupils, parents and teachers highlight credentials and academic elitism, yet there is the need to consult employers as well. Anamuah-Mensah (1995) reports that in most countries there is a considerable gap between what is learnt in the classroom and the real life context of pupils' present and the future world. This peculiar problem is particularly true of the less developed countries where the needs of those not progressing beyond the compulsory stages of primary and junior secondary education are subservient to the perceived academic needs of those progressing further, particularly by the small percentage proceeding to university.

Another aspect of the problem as noted by Anamuah-Mensah et al. (2005) is that teachers have limited experience of "life outside the classroom" and no access to resource materials through which to emphasize relevance. Part of this problem also lies in the extent to which most curricula are examination-driven as a consequence of which most curricula are examination-driven, so that teachers adopt a highly didactic "chalk and talk" approach to cover the curriculum and meet the expectations of students, headteachers, parents and politicians who judge educational success merely in terms of results. Ghana's attempts to close the gap between sciences taught in school and those used in industries has led to the development of science and

technology in action in Ghana (The STAGE Project) and through the resource materials, created by this initiative, Ghanaian scientist are now able to teach their subject in a way which better reflects the needs of society. A close link, therefore, has been forged between teachers and industrialists all of which has prompted the establishment of the schools and community centre and technology or SACOST at the University of Education, Winneba for example.

Single versus dual administration

According to Miller (1995), early leaders of the vocational education movement viewed vocational education as part of the public system of education in America. However, controversies have raged as to whether vocational education should be part of the public system (school based system) or as a separated system of education (industry based system). This argument is considered important because experts believe that the prospects, challenges and (sometimes stigmas) associated with vocational technical education could be linked to the way it is administrated; hence, the need to exhaust or to answer the argument.

Leighbody (1972) provides a view of why this is true. He claims that it is not important for vocational education and other types of education, whether called general or liberal, to be identified separately and treated as different kinds of education for different groups of people, and that the impact of vocational education on individuals, the school and the community is greatest when vocational education is provided in the comprehensive school setting. In pursuance of the aforementioned controversy, the demerits and merits of vocational education as a dual system (school based system) and as a single system (industry based system) are presented as follows.

Industry based training

According to Asare-Bediako (2005), industry based training is one organized by industries for prospective and existing employees of the said industry. Such schools are usually attached to the industry and organized by employers who use some of the experienced supervisors of the actual industry as teachers. This type of training is similar to the ones advocated by Snedden (1920) and Prosser (1925). The industry based training is financed, organized and delivered by public entities and is said to be private sector training. The government may only come in when it comes to the regulatory aspects of the training, for example to check the indiscriminate behaviour of some TVET providers.

School based training

According to Asare-Bediako (2005), school based training

is organized by individuals who are educationists from government organizations who organize teachers to teach various vocational subjects in schools similar to the private vocational institutions. According to the national commission on vocational education on research, (N.C.V.E.R) (1998) the main characteristics of the school based system is that the structure and content of the curriculum is organized by the school in relation to general education. They organize their own infrastructure and provide training materials which may include machines, equipment and tools for the purpose of training the individual as the mindset to make them creative, it also equips students with the relevant entrepreneurial skills that are taught in schools. School-based programmes also help in the increase of women in TVET. According to Oloruntegbe et al. (2010), it helps in educational articulation throughout the school system.

Demerits of school based programme

According to Miller (1985), the school based programme is known to have some demerits which include the fact that most of the teachers in a school based system do not have “hands on” experience of what actually transpires in the industry and so do not relate the classroom experience to the work place effectively. Furthermore, according to Pautler’s (1990) view, expertise and ever changing technological trends are not usually and effectively incorporated into the curriculum; thus, students pass and then have to be re-taught what actually goes on in the industry.

Mechanism for linking up with industry

In view of the fact that the need for linkages has been identified and stressed, some experts have advocated a number of formal and informal mechanisms which enable training providers to link up with industry. Formal linkages have direct impact on what happens in the classroom by specifying what must be delivered. Informal mechanisms are often those arrangements established to enable the implementation of certain policies and legislation.

Legislation

In Ghana, according to Asare-Bediako (2005), there is no legal framework for co-coordination of the activities of the government ministries, private organizations and agencies that participate in the provision of TVET; however, the council for Technical Vocational Education and Training is in charge of regulating all the activities TVET provides. They use other sub-sectors such as the National Accreditation Board, Ghana National Qualification Authority and Training Quality Assurance

Board to ensure that TVET policies are adhered to.

Supervised work experience

This refers to practical attachment in which whilst in school, the student is given the opportunity to experience what is taught at the work place. According to Miller (1985), supervised work experience is one of the principles of vocational education and it can create a closer link between the school and the industry, which is beneficial to both the school and the industry. Anamuah-Mensah et al. (2005) stated that the main benefits to the student are in terms of acquisition of useful work, skills and experiences and also the students will be aware of what life is like in the world of work. It is also beneficial to teachers in that it helps by giving them the industrial and professional development, which will manifest in their efforts in improving teaching and learning and relevance to the future of students and related enhancements in students’ motivation and performance. Miller (1995) has much the same point of view as Pautler (1990). Miller feels that successful vocational education requires the combining of two elements:

1. Practice and thinking about the practice; and
2. Doing and thinking about the doing.

His view is that in vocational education, practice and theory must go hand in hand; the more intimately they are related to each other, the more the school will contribute to the learner’s immediate success in the school and make the person a master of his field. In schools, supervised work experience is provided through vocational coordination and liaison officers who are charged with the responsibility of developing the network links with enterprise for the purpose of placing students in industry. Some schools and industries form partnerships to provide specific training for some students. This becomes part of the academic requirements of such schools.

Relevance of school industrial linkages

According to Asare-Bediako (2005), “relevance describes the extent to which objectives of a given training programme corresponds to the objectives, needs and priorities beyond the training system, notably growth and enhanced welfare of the individual and the nation as a whole” (p.32). In short, it is about how to link education and the world of work and how to make it functional for national development. Relevancy has been a long-term concern. Out of that “relevance is the role that vocational educators have both recognized and attempted to fill for three-quarters of a century”. He continues that, “scientific and technological advances together with the demands of

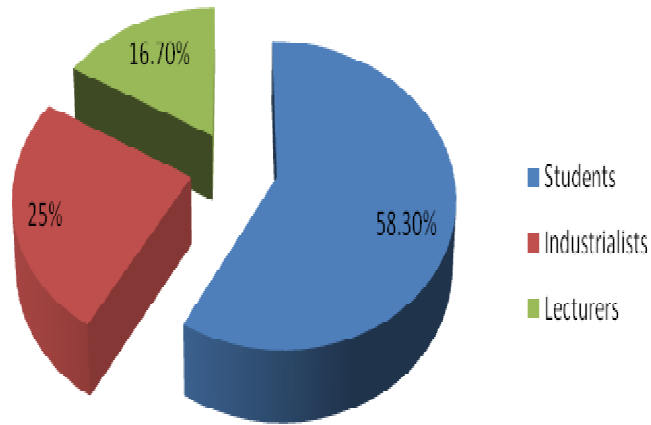


Figure 1. Status of respondents.

today's student require relevancy in vocational education regardless of age, sex or ability of the students" (p. 45). Miller (1985) states that it is important that neither the potential influence of vocational education on creating relevant public education nor the relevancy of vocational curriculum itself will occur in isolation: they are most likely to occur in isolation, they are most likely to occur in comprehensive settings. The two elements must work together as part of a single system in education. Macmahon (1975) recognizes that the relevance of programmes is either the greatest weakness in vocational education or the greatest strength in vocational education. The struggle to achieve and maintain relevance in vocational education is basic to many of the decisions that are reached in planning and implementing such education programmes.

Strategy to ensure relevance in public programmes

In view of the fact that maintaining relevance in vocational education is an unending task, some experts have advocated a strategy which is that there should be an ongoing needs assessment of the individual, the society and the economy. According to Asare-Bediako (2005) this is because meeting the demands for skilled training efficiency requires that policy makers identify and institute programmes that can respond to the ever-changing employment opportunities and skills demanded.

Meeting the need of the individual

It is often argued by educationists that individuals should be developed in three ways, that is the mind, the heart and the physical body. These are all the individual needs and these are what the vocational educationist does. However, whichever vocational programme the individual pursues must be suited to the needs, interests, aspirations

and characteristics of the individual so as to sustain the person's interest in the programme.

Meeting the needs of the society

A society can develop only through the knowledge and skill of the individual. Hence, when the individual is well trained and well paid, it is then the individual can develop. Some of the needs of the greater society include the development of an all-labour force that is capable and self-sufficient in meeting manpower needs. According to Asare-Bediako (2005), vocational education must be positioned to provide expertise that will develop the community and must organize its courses in such a way that the gap between manual and non-manual labour is closed.

Meeting the needs of the economy

Providing for the needs of the actual industry has been central in the development of vocational education. While there are various reasons for developing vocational education, it is the work place with its needs and demands that dominates the development. According to Asare-Bediako (2005) vocational education should recognize the constantly increasing demands upon industries for more and better goals as well as the diminishing supply of well trained workers.

METHODOLOGY

Field research was adopted to investigate the constraints and challenges of industrial and institutional linkages and how the VOTEC department of the University of Cape Coast can be effectively linked to actual industries. This study used data from a sample of industrialists, students and lecturers. The paper also incorporates how industrial linkages come about and the challenges in the industrial linkages. The linkage is measured by the number of industries who think this is feasible or otherwise. A sample of 60 respondents made up of 35 students, 15 industrialists and 10 lecturers in and around the VOTEC department was used Figure 1. The quota sampling method was used in this study.

Primary data was collected through questionnaire administration. The questionnaire included both closed and open ended types of items. Structured questions were used in order to elicit as much information as possible in an unconstrained manner. Every question was relevant to one or more aspects of the study. Descriptive Statistics were employed in the presentation and analysis of the empirical results.

RESULTS AND DISCUSSION

The findings of the study were discussed in relation to how industrial and institutional linkages come about, the roles of both industry and institution in establishing such a link and the challenges of industrial institution linkages. Several challenges have been identified as hindering the

Table 1. Challenges in industrial institutional linkages.

Challenges	Yes		No		Total	
	f	%	f	%	f	%
Lack of legislation	48	80.0	12	20.0	60	100.0
Lack of administrative structures	55	91.7	5	8.3	60	100.0
Inability of stakeholders to influence curricular	52	86.7	8	13.3	60	100.0
Lack of resources	56	93.3	4	6.7	60	100.0
Lack of information sharing between VOTEC and industries	57	95	3	5	60	100.0
Population of VOTEC in relation to available industries	36	63.3	22	36.7	60	100.0

ability of the VOTEC department to link its trainees with industries. These challenges are listed in Table 1, the main challenges identified as hindering the VOTEC department's ability to link the academic work of the department to real industries are:

1. Lack of information sharing between the department and industry;
2. The unavailability of resources such as a means of transport (to convey students to and from the industrial sites) to carry out such a linkage;
3. The lack of administrative structures in the form of industrial liaison offers to ensure that the department establishes links within industries where students can be trained.

Other factors identified as hindrances to the VOTEC department linking the students of the department to industries are:

1. The absence of a legislation to compel the industries to be active partners in the training of graduates;
2. The population of the students of VOTEC as measured against the available industries within and around the Cape Coast Municipality; and
3. Students' negative attitude towards the industrial attachment programme is also another challenge that the department faces in their attempt to link the academic programmes of the department to industry.

How to link VOTEC to industry effectively

Various ways of linking the department to industry have been identified. Prominent among these are the fact that the department needs to provide adequate resources in the form of means of transportation to ensure that the department is able to transport students to and from industrial sites during normal school hours. This view point is shared by a large majority (78.2%) of the respondents with a small percentage of them not taking that stance. Similarly, a large percentage (86.5%) and (77%) of the respondents, respectively, are of the view that excursions and field trips to industrial sites will be

effective means of establishing links between the VOTEC department and industry to help in equipping graduates with useable skills for the world of work. Respondents have also identified invitations from local industries to participate in the training of the students as another major way of linking the department to the industrial world. The participation can take the form of seminars and workshops. This premise is also held by a large number of the respondents of this study (73.5% of responses).

The findings of the study show that a large majority of respondents (98.3%) are of the view that liaison officers can help link industries and institutions and in addition, a large percentage of these respondents are also of the view that field trips, seminars, and excursions will also serve as a very useful way of linking the VOTEC department to industries, to facilitate the training of graduate in specialized skills. Attachment (31.7%), legislation (28.3) and placement (15%) were also identified by the respondents as effective means of linking the activities of the department to those of the industries. To sum up, the respondents identified as means that can be used to link training institutions and industries ideas like allowing trainees to have field work or building an attachment with industries while they are still undergoing training, passing legislation to compel industries to accept trainees in their establishments and attachments. The respondents also suggested that the training institutions redesign the syllabi to make room for the trainees to experience the world of work while still undergoing training.

Benefits of industrial institutional linkages to VOTEC

The respondents were undivided on how beneficial industrial institutional linkages are to the training of VOTEC students to meet the demands of the world of work. On the specific benefits of this linkages, 61.7% of the respondents observed that this benefit comes mostly from giving the trainee work experience which will help them cope with the demands of industrial work after school. This is in line with Asare-Bediako's (2005) assertion that industrial basic training is more likely to be relevant than the school's basic training. To Asare-Bediako

Table 2. Respondents view on the benefits of linking VOTEC department to industry.

Benefit	%
Gain more practical experience before hand	61.7
Make it easier for trainees to get work after school	42.3
Help trainees get well paid jobs after school	40.4
Employers get well trained labour force	39.9
High productivity in industry	32.1

(2005), this is so because industries are more likely to know the manpower needs of the nation. The findings also show that this linkage can lead to a better collaboration between VOTEC and local industries. This will eventually lead to a cycle of multiple benefits to the department. It was also observed that the linkage between the department and industries can facilitate the placement of graduate into work after school and, in some cases, monetary benefit for the individual students and even the department itself in the long term.

Ultimately, a majority of the respondents were of the view that work experience leads to a higher probability of getting employment, and so the individual student benefits most from linking VOTEC to industry. During their employment, the employer (industry) also benefits from the services of the employee. Linking VOTEC to industry is therefore, mutually beneficial to both VOTEC (the department and students) and industries. Table 2 shows the possible benefits, if a linkage is established between the Department and industry.

RECOMMENDATIONS

Institutions should have liaison offices and employ people who are well versed in public relations and industrial practices to help create meaningful links. Seminars, field trips and excursions should be incorporated into the academic curriculum, so that it will help expose students to real working environments while still undergoing academic training. Schools and local industries should collaborate to organize seminars and workshops where they will share information on the changing trends in industrial practices and how these changes can be incorporated into the curriculum of the schools.

At the national level, institutions that have oversight responsibility on technical and vocational education should be charged with putting up structures and policies that will facilitate industrial-institutional links. Human and non-human resource constraints facing VOTEC education should be addressed by the various stakeholders involved in VOTEC's education including the government. It is also recommended that in the course of the development of curricula for the department, the local industry must be involved for industry to have input into

the curricula regarding their training.

REFERENCES

- "A banker's damning verdict: Universities have failed us." (2005, November 28), Daily Graphic (No. 149597) p. 13.
- Adamtey SK (2009). Vocational/Technical education in Ghana: Problems and remedies. *Int. J. Home Econ. Res.*, 1: 189-197.
- Anamua-Mensah J. Towee P (1995). Bringing industry into the science classroom: Problems, concerns and prospects associated with a paradigm shift. *Proceedings of the 7th IOSTE symposium in Netherlands.*
- Akplu HF (2009). The dilemmas and challenges of technical and vocational education and training (TVET) of the 21st century. *Int. J. Home Econ. Res.*, 1: 1-11.
- Alam GM (2009) The role of science and technology education at network age population for sustainable development of Bangladesh through human resource advancement, *Sci. Res. Essays*, 4(11): 1260.
- Alam GM, Hoque KE, Khalifa MTB, Siraj SB, Ghani MFBA (2009). The role of agriculture education and training on agriculture economics and national development of Bangladesh. *Afri. J. Agric. Res.*, 4(12): 1334-1350.
- Alam GM, Khalifa MTB, Shahjamal MM (2009). Return from education system in Bangladesh: an investigation on comparative flashback scenario. *Afri. J. Bus. Manag.*, 3(10): 567-575.
- Alam GM (2008). The Role of Technical and Vocational Education in National Development of Bangladesh. *Asia Pac. J. Coop. Educ.*, 9(1): 25-44.
- Alam GM, Hoque KE, Oloruntegbe KO (2010). Quest for a better operation system in Education: Privatization, Teacher Educationalization or Voucherization: glimpsing from consumer and product perspectives. *Afri. J. Bus. Manag.*, 4(6): 1202-1214.
- Alam GM, Hoque KE, Rout GK, Priyadarshani N (2010). Who gains from EFA State Business of Education or Private Higher Education Business in Developing Nation: A study to understand the policy impact in Bangladesh? *Afri. J. Bus. Manag.*, 4(5): 770-789.
- Antwi-Besiao B (2007). Technical/Vocational education and training (TVET) and national development. Speech delivered by the executive secretary of NABPTEX at the opening ceremony of the 1st biennial conference of the Home Economics research association of Ghana (HERAG).
- Asare-Bediako E (2005). Introduction to vocational and technical education. Unpublished.
- Budu-Smith J (2009). Technical vocational education and training and national development: The need for Ghana to give it attention. *Int. J. Home Econ. Res.*, 1: 12-32.
- Burns RW, Brook GD (1970). Curriculum design in the changing world. Englewood, N.Y.: Educational Technology Publishers.
- Callaghan J (1976). Are we aiming in the right direction...? *The Times Educational Supplement.*
- Cross AA (1975). Goals and roles of vocational education. Washington DC: Am. Voc. Assoc.
- Dewey J (1916). *Democracy of education.* New York: Macmillan.

- Gunawardena C (1991). Linking education to the world of work in Sri Lanka. *Educ.Rev.*, (43):79-88.
- Leighbody GB (1972). *Vocational education in American schools*. Chicago: Am. Tech. Soc.
- Kent DW, Mushi PSD (1995). *The education and training of artisans in the informal sector in Tanzania*. London: Overseas Development Administration.
- Kent DW, Towse P (1998). *Partnership in action: Towards a common goal. Monitoring and tutoring*.
- MacMahon MGG (1985). *Secondary vocational and technical education*. Washington DC: Am. Voc. Assoc.
- Miller MD (1985). *Principles and philosophy of vocational education*. Columbus: National Centre for Research into Vocational education.
- Miller MD, Budke WE (1972). *Completing the bridge: Job placement and students follow up*. Washington DC: Am. Voc. Assoc.
- New vision to promote vocational education. (2005, August 17) *Daily Graphic* (No. 149509), p.11.
- Oloruntegbe OK, Akinsete AM, Ayeni EO, Odutuyiand MO, Alam GM (2010). Rethinking development and sustainability of African economy: The roles of science education *Afri. J. Bus. Manag.*, 4(6): 811-819.
- Prosser CA (1925). *Vocational education in a democracy*. New York: The Century Company.
- Putler Jr. AJ (1990). *Vocational education in the 1990s: Major issues*. Michigan: Prakken Publishing, Inc.
- Snedden D (1920). *Vocational education*. New Jersey: Macmillan Company.
- Snedden D (1910). *The problem of vocational education*. Boston: Houghton Mufflin Company.
- Stengthen technical vocational education (2005, September 18). *Daily Graphic* (No. 149232), p. 23.
- Technical vocational education (2004, September 10). *Daily Graphic* (No. 149226), p. 7.