academicJournals

Vol. 6(4), pp. 43-50, November, 2014
DOI: 10.5897/IJVTE2014.0153
Article Number: 895B16148381

http://www.academicjournals.org/IJVTE

International Journal of Vocational and Technical Education

Full Length Research Paper

Relationship between occupational skills provided to Polytechnic Diploma Engineers by BTEB and requirement of industry in Bangladesh

S. M. Alamgir, Che Kum Clement and Mahbub Hasan*

Islamic University of Technology, Bangladesh.

Received 5 June, 2014; Accepted 10 September, 2014

The objective of this study was to find the relationship between the occupational skills provided to polytechnic diploma engineers by BTEB (Bangladesh Technical Education Board) and requirement of industries in Bangladesh. Questionnaires were sent to Managers and diploma graduates of industries around Dhaka and Gazipur, teachers of Dhaka polytechnic institute, officers of BTEB and DTE (Directorate of Technical Education) to find out the extent to which the industry-institution relationship varies. The result shows that polytechnic graduates do not satisfy some of the skills required by industries as the new and emerging technology related contents are not included in the curriculum. The study suggests some recommendations to minimize this gap between the existing curriculum of diploma engineering and industry requirement.

Key words: Occupational skills, polytechnic institutes, Diploma Engineering, Bangladesh.

INTRODUCTION

The demand of education for economic purposes due to the pressure of technological progress and modernization has been constantly on the rise in most countries during the 21st century. International comparisons have for some time highlighted the importance of increased productivity of human resources and hence to invest in education. The link between the rate of technical progress and the quality of human intervention has become increasingly evident as has the need for those active in the economy to be trained to use the new technologies to innovate. New skills are needed and educational institutions are required to meet the need by providing not only the minimum of schooling or vocational training, but also training for scientists, innovators and high level specialists (UNESCO, 1996). According to World Bank (1991), the reputation of TVE (Technical and Vocational Education) institutions is dependent on their ability to produce qualified young people who will be immediately operational in the work place.

In case of Bangladesh, the diploma engineering curriculum is too theory oriented that it is really tough for the students to acquire the adequate skills required by the industries (Haolader and Paul, 2013). Some research results (World Bank, 2000, 2007; ADB, 2008; Ministry Of Education, 2004) also identified many barriers of assuring quality in TVET sector.

*Corresponding author. E-mail: mahbub1109@gmail.com.

Technical Education is usual as a weapon to implement the hopes and aspirations of a nation for the development of a country. Economic development is largely dependent on its capability to use and develop modern technology. To do this suitably skilled manpower at different levels and in different varieties needs to be produced so as to help country's work activities. Technical Education in Bangladesh at present is organized in three tiers - degree level education in engineering and technology, technician level education (diploma in engineering/technology) and trade level training programme. The objectives are to produce required skilled manpower at different levels and fields to meet the need of industry and various service organizations operating within the country. Technical manpower is essential to industrial development. Adequacy of the supply of manpower depends upon their numbers, quality of skills attained and proper utilization. After the partition of what in 1947 there were meagre opportunities in the area, now constituting Bangladesh, and as a result, it became a necessity to strengthen and develop the technical education programme in different fields. The progress of development in technical education until 1960 was not very rapid. Only a few institutions, namely, Dhaka Polytechnic Institute, Institute of Textile Technology, Institute to of Leather Technology and Institute of Glass and Ceramic at technician/artisan levels were established.

Studies carried out by Choi (2001) in Korea showed that linkages between schools, vocational colleges, junior colleges and industry also revolved around the provision of workplace training for students. Perkinson (2006) indicated that in China collaboration between TVET and industry was also low and pointed out that in order to create a vision for a modern TVET system, there should be collaboration between the industry and TVET providers and the key challenge for policy makers in China being creation of stronger connection between providers and industry.

UNESCO (2006) pointed out that among the issues where TVET needed reform was on improving relevance and linkages to employers and other stakeholders and hence recommended that stakeholders should have more influence on VET and VET should focus more on partnerships. This includes increasing cooperation and voluntary participation based on perceived benefits and value.

In the context of Technical and Vocational Education and Training (TVET), partnership describes a coordination at the system level, and cooperation among various stakeholders and players which may include schools and enterprises at the institutional level. UNESCO (1999) cited that partnership may involve a wide range of actors including social partners, non-government institutions, community groups, or players in the private sector.

Nowadays, TVET reforms are often designed to develop more comprehensive national training structures in an effort to increase public-private partnerships, to broaden the involvement of stakeholders and to make sure that training is of high quality, labour market relevant and serves the training needs of the population (InWEnt, 2005). TVET graduates turned out by the system lack the requisite skills, knowledge, attitudes or values to meet their needs. In effect, pre-mature competencies possessed by the new workforce are feared to affect productivity (Majumdar, 2008).

Over time, two different worlds have been built between Institute and Industry, [industry also often termed as Enterprise]. Each has activities going on in them. Under this circumstance, there exists relative differences in perspectives of education and industry. Education looks at the general development of students that will give them a wide range of opportunities and choices to prepare them after graduation while industries look for technicians and employees with specific skills who will fit directly into the system. Having this seemingly obvious discrepancy in their respective purposes, there is a need to create a platform where institutes and industry can meet eye to eye, share ideas and regularly interact. Forms of interaction can take place with the aim to understand and jointly plan pre-employment and in-service training.

The characteristics of the workplace as the supreme learning environment must be coordinated properly to ensure that there is a close correlation between the types of training that the workforce is being prepared for vis-à-vis the work environment, tasks and work systems. The institutions' objectives must meet the expectations that industries regard in the context of finding the best in the pool to help them achieve industry goals. The goals need to be looked into in respect to institutional thrusts and objectives, as illustrated below:

Mechanisms to involve industry representatives in formulating the curriculum and teaching and learning systems open productive platforms for industry-institute interaction. Collaboration, discussion and decision-making processes produce mutual agreements and understanding of the real conditions in the work place, the systemic functioning of industries and industry expectations. To some extent, such kind of interaction provides a highly effective mechanism to generate feedback based on employer demands to meet half-way in the design of academically-sound and industry-oriented curricula. The importance of education as a strategy in skilling the future workforce for industries is vital, as industry training is inextricably linked to industry practices (Fien et al., 2008).

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). 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

Table 1. Response categories of the instruments

Responses	Value	Lower limit	Upper limit
Always Required (AR)	4	3.5	4.49
Sometimes Required (SR)	3	2.5	3.49
Rarely required (RR)	2	1.5	2.49
Never Required (NR)	1	0.5	1.49

organized by employers who use some of the experienced supervisors of the actual industry as teachers. 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 behavior of some TVET providers.

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.

Objectives of the study

The major objective of this study was to investigate the relationship between occupational skills required in manufacturing industries and skills provided to diploma engineering by BTEB. The specific objectives of this study areto (a) find out occupational skills provided to diploma engineers by BTEB (b) find out occupational skills required in manufacturing industries (c) compare occupational skills required in manufacturing industries with those skills acquired by diploma engineers of polytechnic graduates (d) identify how to improve professional competence of diploma engineers of polytechnic institutes.

Significance

This study is one of the attempts that can be made to identify the problems associated with the unemployment syndrome among graduates of BTEB. The findings of this study would assist students, teachers and graduates of polytechnic institutes to become aware of the opportunities available in the world of work. This could influence the occupational choice of the students. The information provided by the study will be utilized by instructors or educational planners to update curriculum in relevant occupational areas. This will also enhance students to acquire quality skills which will better prepare BTEB graduates for employment in industries.

METHODS

A survey research design was used in this study to elicit opinion from respondents. The study was conducted in Tejgaon, Tongi and Gazipur industrial zones in Bangladesh. The population for this study comprisedall the 10 technical instructors of mechanical engineering department, Dhaka polytechnic institute, all of the seven managers from seven manufacturing/production/servicing automotive industries and all 45 employed graduates of polytechnic institutes who were serving in the related field in the industries. Therefore, total population for this study was 62. The population of the study was considered as the sample. Structured questionnaires were used to collect data from the subjects (or respondents). A four point scale was developed for respondents to express their views to each part of the questionnaire. The instrument was subjected to face validity by two senior professors of Technical and Vocational Education department of IUT. A pilot study was carried out by administering the validated instrument to two industries in Tejgaon. The respondents made some suggestions and further modification were made, where necessary, on the instrument. The analysis of data was accomplished by using means and standard deviations. The mean of each item was interpreted in relation to the real limits of the values assigned to the response categories of the instruments (Table 1).

In order to accept or reject each item of the questionnaire, a decision rule based on real limits of number was used. Accept, if mean calculated value is 2.5 and above, and reject, if mean is 2.49 or below.

The data presented in Table 2 reveal that managers agreed that all the occupational skills identified are always required by manufacturing industries except for items 4, 5, 8, 12, 13, 16, 17, 18 and 25 which are sometimes required by the industries. However, the overall mean shows that all the occupational skills identified in the manufacturing industries are always required.

Table 3 indicates that both technical instructors and graduate employees agreed that all the technical skills identifies are always acquired in Polytechnic institutes, except for items 122, 22, 23, 24 and 25 which are never acquired in the polytechnic institutes. While, item 22 show that maintenance skills are rarely acquired in the polytechnic institutes. However, the overall mean of 3.38 shows that all the technical skills are sometimes acquired in the polytechnic institutes. The data analysis on Table 4 shows that, respondents strongly agreed (overall mean 3.59) that industries and polytechnic institutes should jointly engage in skills acquisition training through drawing up training programme (curriculum) for polytechnic institutes as a remedy for the deficiencies in skills acquired in polytechnic institutes.

Table 2. The occupational skills required in manufacturing industries.

Skills required in industries	Responses						
	AR	SR	RR	NR	X	SD	Significant
Measuring Skills							
1. Reading the Micrometer	6	0	0	0	4.0	0	AR
2. Reading the Dial Indicator	3	3	0	0	3.5	0.5	AR
3. Using the feeler Gauge	4	2	0	0	3.67	.047	AR
A Bench work skills							
4. Filing	0	6	0	0	3.0	0	SR
5. Riveting	3	2	0	0	3.33	0.75	SR
6. Tool grinding	4	2	0	0	3.67	0.47	AR
Machine Skills							
7. Lathe machine operation	5	1	0	0	3.33	0.37	AR
8. Threading operation	2	4	0	0	3.33	0.47	SR
9. Drilling mill operation	6	0	0	0	4.0	0	AR
10. Milling machine operation	3	3	0	0	3.5	0.5	AR
11. Shaping machine operation	3	0	0	0	3.5	0.5	AR
12. Maintaining equipment/machine in workshop	6	0	0	0	4.0	0	AR
Welding Skills							
13. handling of Electrode holder in Arc welding operation	2	4	0	0	3.33	0.45	SR
14. setting of valves on blow pipe in gas welding operation	2	4	0	0	3.33	0.47	SR
15. Leftward and rightward welding techniques	6	0	0	0	4.0	0	AR
Forging Skills							
16. Annealing process in forging	1	5	0	0	3.17	0.37	SR
17. Heating process in forging	1	5	0	0	3.17	0.37	SR
18. Normalizing process in forging	1	5	0	0	3.17	0.37	SR
Skills in Metal Fabrication							
19. Forming a fabrication work	3	3	0	0	3.50	0.50	AR
20. Folding in fabrication work	5	1	0	0	3.83	0.51	AR
21. Normalizing in fabrication work	4	2	0	0	3.67	0.47	AR
New and emerging Skills							
22. Computerized Lathe machine operation	4	0	0	2	3.0	1.14	SR
23. Read and Draw the mechanical drawing	6	0	0	0	4.0	0	AR
24. Read the different view of drawing an Auto CAD	5	1	0	0	3.9	0.51	AR
25. Estimating about on drawing	6	0	0	0	4.0	0	AR
26. Ability to make sound decision	2	3	3	0	2.5	0.5	SR
27. Able to express in English Language	6	0	0	0	4.0	0	AR
28. PLC/Inverter operation in mechanical machines	6	0	0	0	4.0	0	AR
29. Computer use for technical report	4	2	0	0	3.67	0.47	AR
30. Computerized lathe/Milling/Grinding machine	1	5	0	0	3.17	0.37	
Overall Mean		**3.54**					

N=8.

FINDINGS

Based on the above data analysis, the following findings could be achieved: Manufacturing industries with mechanical engineering unit always required the following occupational skills: i) Measuring-reading of micrometer, ii) Bench work-filing, riveting, iii) Machining-Lathe machine operation iv) Welding-power handling of

Table 3. The technical skills acquired by graduates of polytechnics.

Skills required in industries		Responses						
		AR	SR	RR	NR	X	SD	Significant
Measuring Skills								
1.	Reading the Micrometer	47	4	2	0	3.85	0.45	AA
2.	Reading the Dial Indicator	43	7	3	0	3.75	0.55	AA
3.	Using the feeler Gauge	37	13	3	0	3.64	0.59	AA
A Bench work skills								
4.	Filing	49	4	0	0	3.92	0.26	AA
5.	Riveting	46	7	0	0	3.87	0.34	AA
6.	Tool grinding	43	0	0	0	4.00	0.00	AA
Machine Skills								
7.	Lathe machine operation	53	0	0	0	4.0	0	AA
8.	Threading operation	53	0	0	0	4.0	0	AA
9.	Drilling mill operation	53	0	0	0	4.0	0	AA
10.	Milling machine operation	50	3	0	0	3.94	0.23	AA
11.	Shaping machine operation	44	19	0	0	3.64	0.48	AA
12.	Maintaining equipment/machine in workshop	6	10	14	23	1.98	1.04	RA
Welding Skills								
13.	handling of Electrode holder in Arc welding operation	51	2	0	0	3.96	0.19	AA
14.	setting of valves on blow pipe in gas welding operation	53	0	0	0	4.0	0	AA
15.	Leftward and rightward welding techniques	53	0	0	0	4.0	0	AA
Forging Skills								
16.	Annealing process in forging	47	6	0	0	3.89	0.32	AA
17.	Heating process in forging	46	7	0	0	3.87	0.34	AA
18.	Normalizing process in forging	44	7	2	0	3.79	0.49	AA
Skills in Metal Fabrication								
19.	Forming a fabrication work	50	3	0	0	3.94	0.23	AA
20.	Folding in fabrication work	51	2	0	0	3.96	0.19	AA
21.	Normalizing in fabrication work	52	1	0	0	3.98	0.14	AA
New and emerging Skills								
22.	Computerized Lathe machine operation	0	0	0	53	1.0	0	NA
23.	Read and Draw the mechanical drawing	0	0	6	47	1.11	0.32	NA
24.	Read the different view of drawing an Auto CAD	0	3	11	39	1.32	0.58	NA
25.	Estimating about on drawing	0	0	0	53	1.00	0	NA
26.	Ability to make sound decision	50	3	0	0	3.94	0.23	AA
27.	Able to express in English Language	53	0	0	0	4.0	0	AA
28.	PLC/Inverter operation in mechanical machines	53	0	0	0	4.00	0	AA
29.	Computer use for technical report	50	0	0	0	3.94	0	AA
30.	Computerized lathe/Milling/Grinding machine	46	7	0	0	3.87	0.34	AA
	Overall Mean			3.54				

N=53.

electrode holder v) Forging-annealing, heating process vi) Skills in new and emerging occupations-setting in printing operation. Graduates of polytechnic institutes never acquired skills in i) maintaining equipment/machine in workshop ii) computerized Lathe machine operation iii) Repairing of Lathe machine iv) Setting in printing

Table 4. Suggested remedies for deficiencies in skills acquired in polytechnics.

Industries for polytechnics jointly engaged in skill acquisition training through:	Responses						
	AR	SR	RR	NR	X	SD	Significant
Measuring Skills							
1. Drawing up training programme (curriculum) for polytechnic institutes	36	23	0	0	3.61	0.49	SA
2. Setting up standards of proficiency to be met by trainees	42	17	0	0	3.72	0.45	SA
3. Organizing seminars, workshops and conference	28	31	0	0	3.47	0.50	A
4. Placement of students on part-time work	47	12	0	0	3.80	0.40	SA
5. Supervision of students on training	36	22	1	0	3.59	0.52	SA
6. Provision or supply of training equipment	43	14	2	0	3.69	0.53	SA
7. Forming industrial advisory committees	34	25	0	0	3.58	0.49	SA
8. Forming occupational committees	27	30	2	0	3.42	0.56	A
9. Provision of Vocational Guidance to trainees	40	18	1	0	3.66	0.51	SA
10. Supplying financial assistance schools	34	24	1	0	3.56	0.53	SA
11. Organizing plant or field trips for trainees and counselors	33	20	5	1	3.44	0.72	A
12. Encouraging teachers to engage in industrial attachment	40	17	2	0	3.64	0.55	SA
13. Provision of in-service training for employees	40	18	1	0	3.66	0.51	SA
14. Cross-training/term teaching	36	18	5	0	3.53	0.65	SA
15. Encouraging professionals on part-time basis	39	15	5	0	3.58	0.64	SA
16. Setting up short courses for updating skills	51	8	0	0	3.86	0.34	SA
17. Establishing industrial coordinating units	32	27	0	0	3.54	0.50	SA
18. Sharing of training facilities	33	26	0	0	3.56	0.50	SA
19. Using work study/internship pattern	32	27	0	0	3.54	0.50	SA
20. Using day release scheme pattern	22	35	2	0	3.34	0.54	A
Overall Mean					**3.59**		

N=59.

operation v) Using industrial sewing machine. Graduates of polytechnic institutes acquired skills in mechanical engineering in the following tasks: i) Measuring-reading of micrometer, ii) Bench work-filing, riveting, iii) Machining-Lathe machine operation iv) Welding-power handling of electrode holder v) Forging-annealing, heating process vi) Skills in Metal fabrication-forming, soldering etc.

There are deficiencies in the skills acquired in polytechnic institutes. The traditional skills acquired in polytechnic institutes are required by manufacturing industries for manual jobs. Industries and Polytechnic Institutes should jointly engage in skill acquisition training through drawing up training programme for polytechnic institutes to remedy the deficiencies in skills acquired in polytechnic institutes. There is no significant difference in the mean rating of managers and technical instructors on computerized lathe machine operation, maintaining equipment/machine in workshop, repairing of lathe machine, setting in printing operation and using industrial sewing machine.

DISCUSSION

The first research question was to identify the occupational skills required in manufacturing industries. In relation to this question, some findings were revealed from the results of the data analyzed. Managers considered the following traditional sills as always required: Reading the micrometer, reading the dial indicator, using the feeler gauge, tool grinding, Lathe machine operation, drilling machine operation, milling machine operation, shaping operation, maintaining equipment/machine in workshop, left and rightward welding techniques, forming, folding, and soldering in fabrication work, repairing of lathe machine and setting in printing operation.

The respondents also considered the following skills as sometimes required in the manufacturing industries: filling, riveting, threading operation, computerized lathe machine operation, proper handling of electrode holder in arc welding operation, accurate setting o valves on blow pipe in oxy-acetylene welding operation, annealing, heating and normalizing in forging and using industrial sewing machine.

The second research question in this study sought to identify the skills required in Polytechnic Institutes. To this question, technical instructors and graduate employees rated for following traditional skills as being always acquired in polytechnic institutes: reading the micrometer, reading dial indicator, using feeler gauge, filing, riveting,

tool grinding, lathe machine operation, threading operation, milling machine operation, maintaining equipment/ machine in workshop proper handling of electrode holder in arc welding operation, accurate setting of valves on blow pipe in oxy-acetylene welding operation, annealing, heating an normalizing process in forging, forming,, folding and soldering in metal fabrication. The respondents further considered skills in new and emerging occupations as never acquired in the polytechnic institutes. Such skills are: Computerized lathe machine operation, repairing of lathe machine, setting in printing operation and using industrial sewing machine. From this discussion, it can be implied that the traditional skills acquired in polytechnic institute are required by manufacturing industries for menial jobs.

The third research question in this study sought to identify the remedy to the deficiencies, if any in skills acquired in polytechnic institutes. As it can be seen from the mean scores of each item in section C of the survey instrument all the respondents (Technical Instructors, Managers and Graduate employees) covertly acknowledged that there are deficiencies in the skills acquired in polytechnic institutes the respondents agreed that the deficiencies include the lack of co-operative industrial participation and adequate contribution to polytechnic institutes which should have come through joint sharing of training facilities, encouragement of technical instructors to participate in industrial attachment and supervision of students on training.

The respondents generally agreed that the major remedy to the deficiencies in skills acquired in polytechnic institutes is to establish a mutual relationship between manufacturing industries and polytechnic institutes by jointly involving them to draw up training programme for polytechnic institutes, encouraging technical instructors to participate in industrial attachment, encouraging professionals on part time basis, sharing of training facilities an using work study/internship pattern for training. The major implication of this study emanate from the finding that technical instructors, industrialists an education planners would jointly organize a plan technical training programmes to correct the deficiencies in skills acquired in polytechnic institutes. The end result would be a production of graduates with saleable and employable skills.

Industrialist would have causes to smile since the cost of organizing in-plant training would be able to prepare a hitch free student industrial work study with assistance of industrial training fund and polytechnic institutes since they would all be involved in drawing up curriculum. Trainees undergoing student industrial work study would be able to acquire new skills from the industries.

CONCLUSION AND RECOMMENDATION

Based on the findings of this study, the following recommendation can be drawn. The technical education board, in collaboration with experts from industries and government organization should review the current curriculum for polytechnic institutes programmes in line with the new skills emerging from industries. Remedies for the deficiencies in skills acquired in polytechnic institutes, industries should jointly engage in skill acquisition through sharing of training facilities, encouraging technical instructors to observe industrial attachment for a period not less than six months every three years. They should encourage professionals in industries to teach in polytechnic institutes on part-time basis, placement of students on part-time work.

A similar study should be carried out in order to establish the reliability of the findings of the present study. In order to advance the frontiers of knowledge and applicability, a similar study should be replicated in other occupational areas to identify the skills required in industries and those required in polytechnic institutes and other technical and vocational institutions. Similar studies should be carried out in a particular task/job in related technical field with larger samples.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCES

ADB (2008). Bangladesh Vocational Education System Improvements to Increase Job Prospects,2008. Retrieved from http://www.imove-germany.de/nachricht-detail-98.html

Asare-Bediako E (2005). Introduction to vocational and technical education.

Choi J, Misko J, Phan O, Kang JK (2001). Linkage between vocational education and training providers and industry. Kensington Park: NCVER.

Haolader FA, Paul DK (2013). The present status of polytechnic curriculum and student assessment approach in Bangladesh, January, Asian J. Manage. Sci. Educ. 2:1. http://www.ajmse.leena-luna.co.jp/AJMSEPDFs/Vol.2(1)/AJMSE2013(2.1-12).pdf

Fien J, Maclean R, Park M-G (2008). Work, Learning and Sustainable Development: Opportunities and Challenges. "Australia: The Role of Partnerships, Industry Skills Councils and Training Packages" Springer. Chapter 20.

InWent (2005). Financing Technical and Vocational Education and Training. ISBN: 3-937235-63-9. Bonn.

Majumdar S (2008). "Emerging Trends, Issues and Challenges in TVET in the Asia & Pacific region and CPSC Response" Proceedings of the International Round Table on Changing World of Work: The return of TVET to the International Development Agenda organized by UNESCO-UNEVOC in collaboration with InWent (Germany) & CPSC, August 27-28, 2008, Bonn, Germany.

Miller MD (1985). Principles and philosophy of vocational education. Columbus: National Centre for Research into Vocational education

Ministry of Education, (2004). Development of Education - National Report of Bangladesh. Tech. rep.

Putler Jr. AJ (1990). Vocational education in the 1990s: Major issues.Michigan: Prakken Publishing, Inc.

Perkinson R (2006, May). The continuum towards a modern TVET system. Paper presented at the TVET conference, Beijing, China.

UNESCO (2006). Closing Remarks on the IVETA International Conference, Moscow, Russian Federation, 21-23 August 2006. Supplement to UNESCO-UNEVOC bulletin, 12, 1-2. Retrieved March 16, 2012 from www.unevoc.unesco.org/bulletin.

UNESCO (1999). New Trends in Technical and Vocational Education Series: “Getting the stakeholders involved; Partnership at work in three countries from Africa, Asia and Eastern Europe.” ISBN: 92-803-1181-6. Paris.

UNESCO (1996). Learning: The Treasure Within. France: UNESCO.

World Bank, (2007). Learning for Job Opportunities: An Assessment of the Vocational Education and Training in Bangladesh, World Bank: Washington. Bangladesh Development Series Paper p.16.

World Bank (1991). Vocational and Technical Education and Training. A World Bank Policy Paper. Washington, DC: World Bank.