International Journal of Vocational and Technical Education

Volume 8 Number 2 February 2016

Academic Journals

ABOUT IJVTES

The International Journal of Vocational and Technical Education is published monthly (one volume per year) by Academic Journals.

The International Journal of Vocational and Technical Education (**IJVTE**) Provides rapid Publication (monthly) of articles in all areas of the subject such as apprenticeship systems, Procedural knowledge, industrial training, entrepreneurship education, Memory vocabulary Learning strategies etc.

The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence. Papers will be published shortly after acceptance. All articles published in IJVTE are peer-reviewed.

Contact Us

Editorial Office: ijvte@academicjournals.org

Help Desk: helpdesk@academicjournals.org

Website: http://www.academicjournals.org/journal/IJVTE

Submit manuscript online http://ms.academicjournals.me/.

Editorial Board

International Journal of Vocational and Technical Education

Table of Contents: Volume 8 Number 2 February 2016

ARTICLE

academicJournals

Vol. 8(2), pp. 12-19, February 2016
DOI: 10.5897/IJVTE2015.0177
Article Number: E5A0B2057493
ISSN

http://www.academicjournals.org/IJVTE

International Journal of Vocational and Technical Education

Full Length Research Paper

Effectiveness of USING ICTs to promote teaching and learning in technical education: Case of Bangladesh

Rashedul Huq Shamim* and Abu Raihan

Department of Technical and Vocational Education (TVE), Islamic University of Technology (IUT), Board Bazar, Gazipur-1704, Bangladesh.

Received 15 April, 2015: Accepted 29 June, 2015

ICTs play a dynamic role in technical education during delivery of learning materials as learners can access knowledge and improve their skills from anywhere and anytime. The aim of the study is to identify the effectiveness of using ICTs to promote teaching and learning. Survey research design was adopted by the researchers for the study where the teachers of government polytechnic institutes of Bangladesh were considered as population. There have 45 government polytechnic institutes in Bangladesh and the size of the population is almost 1,500. Clustered sampling was used to select polytechnic institutes out of six administrative divisions. In Bangladesh, ICTs implication in technical education is very few. Thus, for the convenience of the study, a purposive random sampling was used for obtaining a sample of 120. A structured questionnaire is used for collecting data. The questionnaire was validated with experts' opinions. The data were tabulated in the form of frequency distribution, percentage and weighted average. Collected data were analysed by the method of inferential statistic and quantitative analysis exposed in a tabular and graphical forms. The research revealed that integration of ICTs in teaching and learning process will make teaching and learning very easy, interesting, and time saving than that of traditional way of teaching-learning. More than 60% of technical education teachers strongly agreed that ICTs are essential for enhancing the process of teaching-learning in the polytechnic institutions. This research has suggested considering the stimulating factors such as motivation and attractiveness to design ICT-based teaching-learning process in the polytechnic institute of Bangladesh.

Key words: ICT (Information and communication technology), teaching – learning (T-L), educational technology (ET), technical and vocational education (TVE) and competency standards for teachers (CST).

INTRODUCTION

The use of information and communication technologies in the educative process has been divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communication technology specifically for teaching/learning purposes, while ICTs in education involves the adoption of general components of information and communication technologies in the teaching-learning process. Different teachers use different tools to improve their teaching skills.

*Corresponding author. E-mail: osamaerfan@qec.edu.sa.

Accordingly, teachers from all disciplines have widely integrated Information and Communication Technology (ICT) to improve their teaching styles (Liu, 2011; Liu and Velasquezbryant, 2003; Hew and Brush, 2007; Donnelly et al., 2011). Therefore, the effective use of ICT significant contributes to emergence of reforms in teaching and learning processes in all sectors of education (Pulkkinen, 2007; Wood, 1995). Currently, ICT plays an important role in promoting new instructional methods for teaching and learning, such as: self-paced learning (Roberts, 2003), network learning (González, 2009) and online discussion (González, 2010). Moreover, effective use of ICT can facilitate student- cantered active learning (Ellis et al., 2008), engage students in collaborative learning as well as enhance their social interaction (Dodge et al., 2003).

Developed and developing countries, are undertaking the important and complex task of restructuring the education and training systems to meet the development requirements in the context of changing environment. Technical and Vocational Education and Training (TVET) systems are expected to produce a new breed of competent workforce who can compete and excel in a rapidly changing environment and improve the country's economy. TVET makes the single largest contribution in developing human resources in this age of technology. One can measure the technological development of a nation by looking at its TVE system. A well-knit TVE system, geared to the national needs and responsive to the global needs, can cause quantum leap towards development and provide its population the competitive edge over other nations. Teacher trainers and curriculum developers in Bangladesh, Bhutan, Cambodia, Lao, Myanmar, Nepal and Viet Nam need to improve management and delivery of Technical and Vocational Education & Training (TVET) through the use of ICT.

Technology can be applied for different uses, however, and not always for an academic purpose. For example, students might use ICT to prepare class materials or for personal use (Ward and Parr, 2010).
The goal of the ICT Competency Standards for Teachers (CST) project is to improve teachers' practice. However, the Standards do not merely focus on ICT skills. By combining ICT skills with emergent views in pedagogy, curriculum, and school organization, the Standards are designed for the professional development of teachers who want to use ICT skills and resources to improve their teaching, collaborate with colleagues, and perhaps ultimately become innovative leaders in their institutions.

Asian Development Bank (2008) press statement said that the Asian Development Bank (ADB) is helping thousands of unemployed and underemployed Bangladeshi adults attain better wage and employment prospects by improving the country's technical skills training system. ADB has approved a $ 50 million loan for the Ministry of Education of Bangladesh to make its technical and Vocational Education and Training (TVET) program market-oriented, short-term and relevant especially for the poor who were not able to finish the eighth grade. All things are now set to flourish the TVE sector of Bangladesh with the blessing of ICT. Asia-Pacific Development Information Programme (2007) research emphasizes the use of ICT in promoting social and economic development and change within Asia. The research aims to reinstate human development at the core of ICT strategies and deployment. The central focus in this study is thus on human development, including the attainment of greater substantive freedoms in human life and society (APDIP 2007). Important learning outcomes include not only learners' mastery of basic factual information, but also the organization, integration, and application of task-relevant knowledge to novel situations (Chipman et al., 2013).

At the same time UNESCO, UNDP, Asian south pacific Bureau of Adult Education and some other international organization has done very impressive work in the field of ICT to improve the overall life style of the people of South Asian Pacific region including Bangladesh (Ali, 2003). The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audiocassettes and CD ROMs etc have been used in education for different purposes (Bhattacharya and Sharma 2007).

EU commission (2005) represents the current and possible use of information and communication Technology in initial Vocational Education and Training carried out by Ram boll Management for the European commission, DG Education and culture in 2004. The incorporation of technology into teaching requires a financial investment, which is justified by the fact that ICT favours and affords more efficient and effective learning outcomes by and for students and can improve performance, including academic results (Lei 2010). Bangladesh has an ICT policy formulated for human resource development (HRD) that states the country must prepare itself to compete effectively in the global ICT market. As the demand for skilled manpower in ICT is growing worldwide, the country needs to produce a large number of ICT professionals. Specifically, policy statements endorse the need for widespread introduction of ICT training in public and private educational institutions as a prerequisite for producing skilled ICT manpower.

A dependable information system is essential for efficient management and operation of the public and private sectors. But there is shortage of locally generated information needed for efficient performance of these sectors. In order to meet the objectives, ICT use in every sector shall have to be accelerated in terms of information generation, utilization and applications.

Considering the gravity and importance of ICT Honourable Prime Minister of Bangladesh has already declared ICT as the thrust sector. Over the last few years, many nations have taken advantage of the opportunities afforded by ICT within a policy framework, laid down guidelines and preceded with formulation of a national ICT strategy as a part of the overall national development plan. Bangladesh intends to use ICT as the key-driving element for socioeconomic development. This Policy aims at building an ICT-driven nation comprising knowledge based society by the year 2015.

Hoque (2007) mentions that government of Bangladesh has been striving to achieve higher living standard for the people of Bangladesh through planned development of ICT. After the introduction of ICT, the world is becoming smaller in the sense of communication and may now be called as a Global Village. As we are living in the global village our aim is to provide the maximum facilities to each employee, user and visitor through ICT. Hence the National ICT policy 2002 of Bangladesh states that "The Government of Bangladesh shall implement ICT systems to provide nation-wide coverage and access by any citizen to government databases and administrative systems which can be used to extend public services to the remotest corner". The internet facilities are not widely available in most places of the Bangladesh. Internet is one of the main technologies which can help to use the ICT efficiently. To get benefit from ICT the educational policy make must ensure the availability of Internet in every Institution both micro and macro level.

Ministry of Science and Technology has been renamed on April 2002 as "Ministry of Science and Information and Communication Technology "BTRC (Bangladesh Telephone Regulatory Commission) was set up in Jan, 2002. The application of ICT offers multiple learning pathways and widespread access to TVE, breaking down barriers for learning and teaching connected to distance and location, so vocational educators can easily have opportunities to update and upgrade their knowledge and skills (UNESCO, 2002). Over the last 10 years UNESCO has helped developing TVE in the Asia and Pacific Region, mainly through its International Centre for Technical and Vocational Education and Training (UNEVOC, 2003), encompassing system and policy development, research, and information, communication and networking (Sanyal, 2001). The mobile devices such as clickers or Smartphone can be used to enhance the experience in the classroom by providing the possibility for professors to get feedback (Tremblay, 2010).

UNESCO (2006) reports that the use of ICT in education and training has been a priority in most European countries during the last decade, but progress has been uneven. Most schools in most countries, however, are in the early phase of ICT adoption, characterized by patchy uncoordinated provision and use, some enhancement of the learning process, some development of e-learning, but no profound improvement in learning and teaching. This study is intended to find out the effectiveness of using ICT in T-L process in Polytechnic of Bangladesh. It will also help policymakers in the country to define a framework for the appropriate and effective use of ICT in the educational system by first providing a brief overview of the potential benefits of ICT use in education and the ways by which different ICT have been used in education. Second, it addresses the four broad issues in the use of ICT in education—effectiveness, cost, equity, and sustainability.

Purpose of the study: The technical educational institutions in the big cities of Bangladesh have the facilities and implications of ICTs in the process of teaching and learning. As ICTs malfunction in many sectors of developing countries because of a lot of inherent problems like economy, proper guidance, proper motivation, availabilities of IT, electricity and so on, to use ICTs in a proper way and to get its actual benefits is a real challenge for Bangladesh. Thus, the purpose of the study was to acquire the effectiveness of using ICTs to stimulate teaching and learning in technical education of Bangladesh (Table 1).

Research questions: Three research questions were considered to suit the requirements of the study. These are: (i) what are the features/factors responsible for the use of ICTs in technical education?, (ii) what are the types (positive/negative) of impact of ICTs in the process of teaching and learning?, (iii) what are the current innovations in the process of teaching and learning through ICTs in Bangladesh?. The specific objectives of the study are to indicate the different factors that stimulate the use of ICTs in education to promote teaching and learning, determine the impact of ICTs in T-L process,identify the innovations of T-L process by using ICTs.

METHODOLOGY

This research was undertaken to find out the effectiveness of using ICTs in teaching-learning process. In this study, the populations are teachers of the Government polytechnic institutes of Bangladesh. The size of the population is 1500 (approximately). There are 45 government polytechnic institutes in Bangladesh. In this research clustered sampling was used to select polytechnic institutes out of six administrative divisions of Bangladesh. It is worth mentioning here that the ICT implication in technical educations is very few in Bangladesh. The sample size was 120 (8% of the representative population).

A structured questionnaire is used for collecting data from the respective teachers. The questionnaires were validated with the experts' opinions. The questionnaire had mainly the questions regarding the opinions of the respondents on different aspects of ICTs used in their institutions which were to be answered on five point rating scale. Collected data was analysed by using following statistical methods and techniques of analysis. The data were tabulated in the form of frequency distribution, percentage and

Table 1. Opinions of the teachers' that stimulate to use of ICTs in T-L. Number of Responses (N) = 106.

S/N	Description	5	4	3	2	1	W.A.	Remarks
01	ICT is very much helpful for Improving the techniques of T-L process in TVE	75(71%)	27(25%)	3(3%)	1(1%)	0(0%)	4.66	Strongly Agree
02	Using ICT, Teaching-Learning will be easier, interesting & time saving.	48(45.3%)	53(50%)	4(3.8%)	1(0.9%)	0(0%)	4.40	Agree
03	Students will be more motivated to learn if ICT tools are used in TVE.	60(56%)	40(38%)	6(6%)	0(0%)	0(0%)	4.50	Agree
04	ICT tools are too complicated to use in T- L process.	10(9.4%)	26(24.5%)	12(11.3%)	35(33.1%)	23(21.7%)	2.67	Undecided

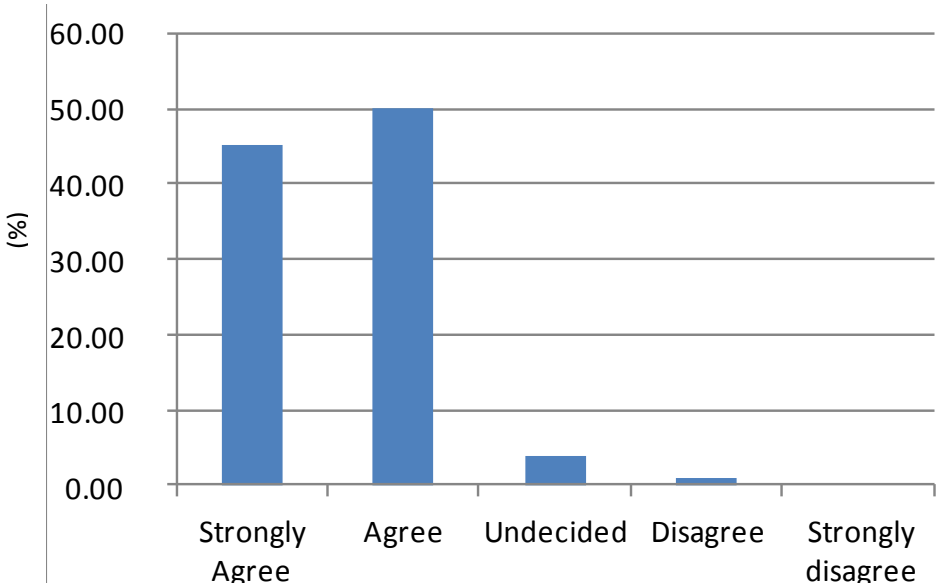

Figure 1. Using ICT, Teaching-Learning will be easier, interesting & time saving.

weighted average. Weighted average indicates the importance given the respondents to each item or statement.

FINDINGS

The response regarding "ICT is very helpful for improving the techniques of T-L process in TVE" is Strongly Agreed (WA= 4.66), which indicates that the response is significant. The responses regarding "Using ICT, Teaching- Learning will be easier, interesting and time saving" is Agreed (WA= 4.40); that indicates the response is significant. The response regarding "Students will be more motivated to learn if ICT tools are used in TVE" is Strongly Agreed (WA= 4.50); it indicates that the response is significant (Figure 1).

The response regarding "ICT is very much needed for development of TVE" is Strongly Agreed (WA= 4.56), indicating that the response is significant. The response regarding "Government has enough policy to improve the present condition of ICT in TVE" is Agreed (WA= 3.52), which indicates that the response is significant. The responses regarding "There is lack of understanding about the knowledge of ICT among the TVE teachers' in Bangladesh" is Agreed (WA= 4.32), which indicates that the response is significant. The response regarding "TVE teachers do not have sufficient

Table 2. Opinion's of the teachers' to determine the impact of using ICTs in T-L process.

S/N	Description	5	4	3	2	1	W.A.	Remarks
01	ICT is very much needed for development of TVE.	62(58.5%)	41(38.7%)	3(2.8%)	0(0%)	0(0%)	4.56	Strongly Agree
02	Government has enough policy to improve the present condition of ICT in TVE.	18(16.9%)	34(32.1%)	41(38.7%)	11(10.4%)	2(1.9%)	3.52	Agree

Table 3. Opinion's of the teachers regarding innovations by using ICTs in TVE.

S/N	Description	5	4	3	2	1	W.A.	Remarks
01	ICT is very much needed for development of TVE.	62(58.5%)	41(38.7%)	3(2.8%)	0(0%)	0(0%)	4.56	Strongly Agree
02	Government has enough policy to improve the present condition of ICT in TVE.	18(16.9%)	34(32.1%)	41(38.7%)	11(10.4%)	2(1.9%)	3.52	Agree
03	There is lack of understanding about the knowledge of ICT among the TVE Teachers' in Bangladesh.	52(49.1%)	45(42.5%)	2(1.9%)	5(4.7%)	2(1.9%)	4.32	Agree
04	TVE teachers don't have sufficient skills for using ICT.	25(23.8%)	47(44.3%)	9(8.5%)	15(14.2%)	10(9.4%)	3.58	Agree

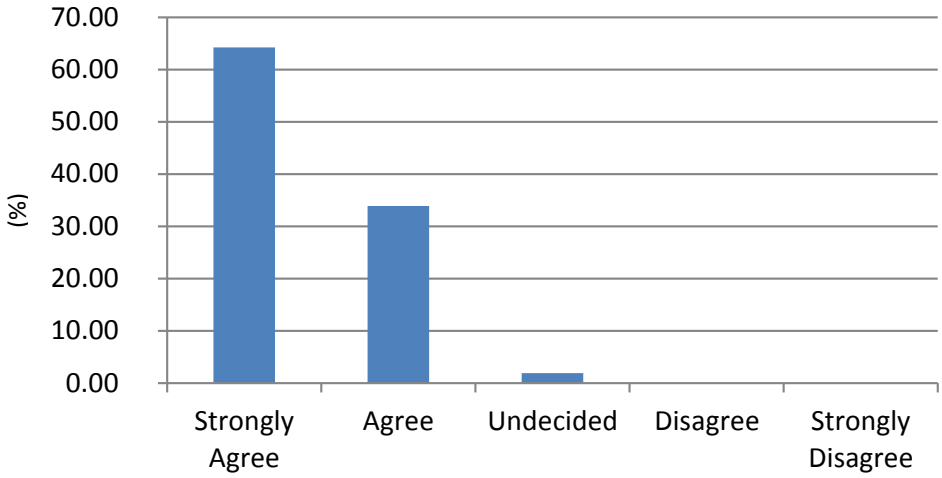

Figure 2. ICT is very much important in Teaching–Learning process.

skills for using ICT" is Agreed (WA= 3.58), which indicates that the response is significant (Tables 2-3; Figure 2).Most of the respondents (92.45%) thought that training on ICT contributes to enhancing their

Table 4. Opinion's on the needs of ICT training.

Statement	Teachers opinion	Percentage
Need of ICTs training	98	92.45

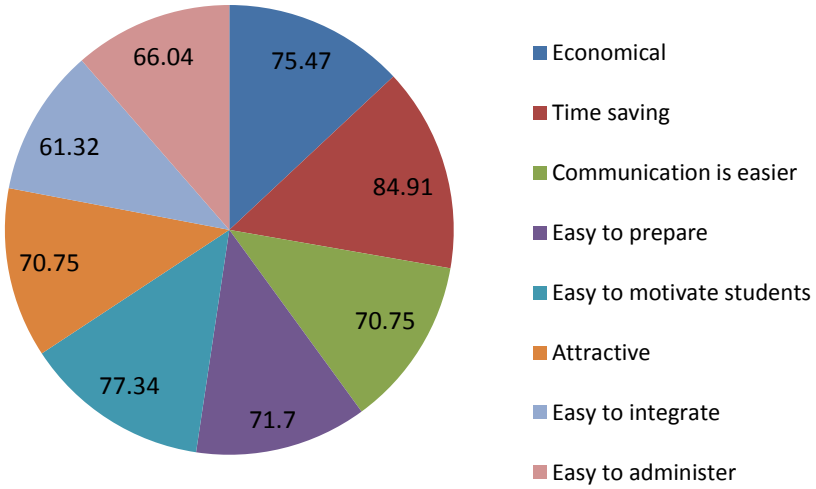

Figure 3. Opinion's on the factors stimulating to use of ICT in teaching-learning.

Table 5. Opinion's on the factors stimulate to use of ICTs.

Factors	Teachers Opinion	Percentage
Economical	80	75.47
Time saving	90	84.91
Communication is easier	75	70.75
Easy to prepare	76	71.70
Easy to motivate students	82	77.34
Attractive	75	70.75
Easy to integrate	65	61.32
Easy to administer	70	66.04

performance in teaching-learning and quality education (Table 4).

The result reveals that every factor stimulates ICTs use for effective and efficient teaching-learning. That means all factors tabulated in the table have greater role for influencing use of ICTs in technical education institutes of Bangladesh. However, most of the teachers opined that it is time saving, easy to motivate students, economical. The technical teachers opined that classroom communication is easy through ICTs, easy to prepare, attractive and have a great impact on use of ICT in technical education. The teachers opined that ICTs are easy to administer, easy to integrate and have a great impact on use of ICTs in technical education (Figure 3; Table 5). Teachers are very much stimulated to host new technology such as ICTs in teaching and learning process which will improve the quality of technical education system in polytechnic institutions.

The research revealed that most of the teachers have knowledge about using ICTs in teaching and learning. Majority of the respondents were in favour of arrangement of adequate ICTs for classroom teaching. Also, the respondents were in favour of using ICTs as they are very much helpful for improving the process of teaching- learning. It was found that the classroom environment is friendly by using ICTs. Most of the respondents opined that if ICTs are used in technical education, students will be more connected to learn with each other. Moreover, ICTs save students time to understand engineering problem. Most of the

respondents agreed that using ICT in teaching-learning will be easier and interesting. According to the research findings more than 50% of technical education teachers agreed that their teaching and learning process will be easier, interesting, and time saving than that of conventional way of teaching-learning. More than 60% of TVE teachers strongly agreed that ICT is very much important for the process of teaching-learning. Most of the respondents have given their opinion on inspiration of quality of teaching and learning through ICTs. Most of the respondents strongly agreed that ICTs are indispensable in instructional design in technical education. ICTs can improve the efficiency of teaching of the technical education teachers. Most of the respondents were in favour of replacing traditional teaching system by ICT-based system. Majority of the respondents opined that ICT is indeed for growth of technical education. Most of the respondents were in favour of refining the government policy to improve the present condition of ICTs in technical education. Most of the respondents think that training on ICTs contributes to enhancing their performance in teaching and learning. The study revealed that technical education teachers required training on effective use of ICTs in classroom. Majority of the respondents opined that ICTs stimulate teaching-learning process. ICTs have the greater role of influencing teaching-learning process in technical education of Bangladesh. The research revealed that time saving (14.68%), motivation (13.37%), and attractiveness of ICTs (12.23%) stimulate its use in teaching and learning process in Bangladesh.

CONCLUSION

The barrier of the teaching learning activities lack ICT skills of instructional staffs (teachers), inappropriate instructional materials to meet the objectives of teaching and learning, inadequate motivational techniques to increase the interest to learn. Also lack of training of the teachers on ICT is a major barrier to improve the quality of the technical education. Updating of these skills may improve the quality of the technical education. In particular ICTs have impacted on technical educational practice to date in quite small ways but its impact will grow considerably in years to come and that ICT will become a strong agent for change among many educational practices. Extra-polating current activities and practices, the continued use and development of ICTs within education will have a strong impact on ICT and teaching learning process; quality and accessibility of education; learning motivation, learning environment and ICT usage and academic performance. The adoption and use of ICTs in technical education have a positive impact on teaching- learning, and research. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching and improved academic achievement of students.

From the research findings as outlined and the discussion on stimulating factors resulting from the evidence of gathered data, the researcher formulated recommendations for future actions to achieve greater impact in both areas of teaching and learning in the polytechnic institutions of Bangladesh. ICT facilities should be provided to the polytechnic institutes. Teachers should play a vital role to give their attention for using information and communication technology in teaching-learning. Government should provide enough budgets to ensure the requirement of ICT tools and machineries for each classroom. Every teacher should have at least one computer with internet connection. Government should take proper policy to train the teachers for their respective field as well as in ICTs. Policies in this area should include measures raising the confidence levels of the teachers (by giving appropriate in-service and initial teacher training in ICT) and also by rewarding them for the use of ICT. The educational technologies are changing like speed of lightening. Depending on the future demand, government should take appropriate action to integrate ICTs in every polytechnic institution of Bangladesh.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCES

Ali M (2003). Education case study, ASPBAE research on information and communication technology (Bangladesh), Asian South Pacific Bureau of Adult Education (ASPBAE), Dhaka Ahsania Mission-2003.

APDIP (2007). ICT skill Development in the Asia – Pacific Region Part two: Bridging the gap between demand and supply, UNDP.

Asian Development Bank (2008). ADB: New release- Bangladesh Vocational Education System Improvements to Increase Job Prospects, Philippines, Asia-Pacific Development Information Programmed 2005.

Bhattacharya I, Sharma K (2007). 'India in the knowledge economy – an electronic paradigm', Inter. J. Educ. Manage. 21(6):543- 568.

Chipman SF, Segal JW, Glaser R (2013). Thinking and learning skills: Vol. 2: Research and open questions Routledge.

Dodge D, Colker L, Heroman C (2003). The creative curriculum for pre- school, Washington. DC: Teaching Strategies.

Donnelly, D, McGarr O, O'Reilly J (2011), 'A framework for teachers' integration of ICT into their classroom practice', Comput. Educ. 57(2):1469-1483.
Ellis RA, Goodyear P, Calvo RA, Prosser M (2008). 'Engineering students' conceptions of and approaches to learning through discussions in face-to-face and online contexts', Learning and Instruction. 18(3):267-282.
EU Commission. (2005). the use of ICT for learning and teaching in initial Vocational Education and Training Final Report to the, EU Commission, Dg Education & culture- November 2005.
González C (2009). 'Conceptions of, and approaches to, teaching online: a study of lecturers teaching postgraduate distance courses', Higher Educ. 57(3): 299-314.
González C (2010). 'What do university teachers think eLearning is good for in their teaching?', Stud. Higher Educ. 35(1):61-78. [2011/09/06].
Hew KF, Brush T (2007). 'Integrating technology into K-12 teaching and learning: current knowledge gaps and recommendations for future research', Etr&D-Educational.
Hoque (2007). Mentions that government of Bangladesh has been striving to achieve higher living standard for the people of Bangladesh through planned development of ICT.
Lei J (2010). Quantity versus quality: A new approach to examine the relationship between technology use and student outcomes. Br. J. Educ. Technol. 41(3):455-472.
Liu L, Velasquezbryant N (2003). 'An Information Technology Integration System and Its Life Cycle --What Is Missing?', Computers in the Schools, 20(1):91-104. [May Liu, S-H 2011, 'Factors related to pedagogical beliefs of teachers and technology integration'.
Ministry of Science and Information & Communication Technology. (2002). Government of the People's Republic of Bangladesh 2002. Phenomenographic perspective', Instructional Sci. 31(1):127150.
Pulkkinen J (2007). Cultural lobalization and integration of ICT in education. In: K. Kumpulainen (Ed.), Educational technology: Opportunities and challenges. Oulu, Finland: University of Oulu pp. 13-23.
Roberts G (2003). 'Teaching using the Web: Conceptions and approaches from a Technology Research and Development, 55(3):223-252.
Sanyal BC (2001). 'New functions of higher education and ICT to achieve education for all', Paper prepared for the Expert Roundtable on University and Technology-for-Literacy and Education Partnership in Developing Countries, International Institute for Educational Planning, UNESCO, September 10 to 12, Paris.
Sharma R (2003). 'Barriers in Using Technology for Education in Developing Countries', IEEE0-7803-7724-9103.Singapore schools', Comput. Educ. 41(1):49-63.
Technical & Vocational Education and Training (UNEVOC) (2003). New Project on ICT Use in Technical and Vocational Education. UNESCO, Bangkok-2003.
Tremblay E (2010). "Educating the Mobile Generation – using personal cell phones as audience response systems in post-secondary science teaching. J. Comput. Mathematics and Science Teaching, 2010, 29(2):217-227. Chesapeake, VA: AACE.". Retrieved 2012-12-29.
UNESCO (2002). ICT in Education, UNESCO Bangkok. Retrieved on January 2015 from http://www.unescobkk.org/education/ict/ict-in education-projects/teaching-and-learning/technical-and-vocational- education/project-description/
UNESCO (2006). The ICT impact Report a review of studies of ICT impact on schools in Europe, UNESCO 11 December 2006.
Ward L, Parr JM (2010). Revisiting and reframing use: Implications for the integration of ICT. Comput. Educ. 54(1):113-122.
Wood D (1995). 'Theory, training, and technology: Part I', Education Train. 37(1):12-16. 29, 2011].

International Journal of Vocational and Technical Education

Related Journals Published by Academic Journals

- African Journal of History and Culture
- Journal of Media and Communication Studies
- Journal of African Studies and Development
- Journal of Fine and Studio Art
- Journal of Languages and Culture
- Journal of Music and Dance

academicJournals