*Full Length Research Paper*

# ICT in vocational teaching/learning and research in Southeast Asian Countries: A case of Bangladesh

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This paper aims to emphasize the need of Information and Communication Technology (ICT) in teaching learning and research for the Technical and Vocational Education (TVE) in Bangladesh. ICT is one of the productive tools which is not effectively introduced till now in TVE system of Bangladesh. This paper discusses the status of ICT and its usage in the Technical and Vocational Institutes (Polytechnic Institutes) in Bangladesh. This study was conducted using questionnaires and documents analysis. The results of the study reveal that, the overall status of ICT in the Polytechnic Institutes of Bangladesh does not fulfill the present demand. The technologies provided by the Polytechnic Institutions are not properly utilized by the teachers. Both teachers and students do not have enough skills to use ICT for their learning purposes due to the poor quality of ICT infrastructure. The paper concludes that modern ICT tools and ICT supported teaching aids should be introduced. The use of ICT in education needs training and professional development for teachers and educators. Once teachers and students acquire ICT Skills, the use of ICT becomes an easier step.

**Key words:** ICT, TVE, polytechnic institute, teaching-learning situation, questionnaires.

## INTRODUCTION

Bangladesh has an Information and Communication Technology (ICT) policy formulated for Human Resource Development (HRD) that states that, 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 endorsed the need for widespread introduction of ICT training in public and private educational institutions, as a prerequisite for producing skilled ICT manpower (Ministry of Science and Information and Communication Technology, 2002). As such, ICT facilities should be introduced in all aspects of life and there should be available access of ICT in every field of work. ICT can be used in Polytechnic Institutes in Bangladesh to produce better educated people in Technical and Vocational

Education (TVE). An optimized ICT facility in TVE is required to support the curriculum that is compatible with global economy and its successful integration in the teaching learning situation leads to produce potential graduates as well as skilled workforce that can boost the nation's success. Bangladesh as a developing country lags far behind in the context of education, economy and obviously in technology.

A Polytechnic is characterized by a wide diversity of continuing education, including vocational training, which contributes to the maintenance, advancement and dissemination of knowledge and Expertise and promotes community learning (Tertiary Education Advisory Commission, 2001). The use of ICT in Polytechnic Institutes implies a potential tool that supports the advancements of TVE in the global economy. ICT is a powerful tool for pedagogical practices as well as hands on practices that provide learner-centered and knowledge-centered learning environments to increase innovativeness and creativity of teachers and students.

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However, the government of Bangladesh is unable to change the curricula quickly to keep up with technological changes. Polytechnics, in particular, were slow to integrate computers and instrumentation as integral parts of training in all fields (The World Bank, 2000). No doubt the use of ICT in the Polytechnic level will increase the students' awareness to develop an appropriate level of competence, make them more engaged with their own learning, and help them to achieve the desired outcomes.

This study is to find out the status of ICT and its usage in the teaching learning situation in the Government Polytechnic Institutes of Bangladesh. The key points were to examine the extent to which ICT is utilized in the polytechnic level and to find out how much the institutions are benefitted from the existing technology. The objectives of this study are to find out the present facilities of the ICT used in Polytechnic Institutes and to identify how much they are benefitted from the existing technology. It is observed from research that, ICT can help students to learn and teachers to teach more effectively. Findings suggest that, although ICT can improve learning, there are a number of issues that need to be considered to make a difference. There has been extensive research in computer-assisted instruction (CAI) and computer-based learning (CBL). Fletcher-Flynn and Gravatt's (1995) study into the effectiveness of CAI examined studies that took place between 1987 to 1992 and identified almost 400 reports of research that met these criteria. The impact of the use of computers was then combined statistically to identify the overall impact. A study by the British Education Technology Association (BECTA, 2000) found no link between level of resources for ICT and either reading or mathematics grades at key stage 1 in 1999. At key stage 2, there was a significant, but very weak association between ICT resources and students' attainment. This indicates that, ICT curriculum resourcing was at least 99.5% independent of student performance at key stage 2. In the USA, information about computer use from longitudinal study was analyzed (Weaver, 2000). This study found a very small link between computer use in the curriculum and improvement in students test scores. The weak link again indicates that, at this general level computer use makes very little difference to students' achievement. Simply having more computers does not make much difference.

One important factor on the improvement of student's attainment when using ICT is because they enjoy using computers and spend more time working at or practicing the skills being studied and tested. One benefit of computers may also be the combination of such motivation and the increased practice at particular tasks. Computers can therefore help by increasing the amount of time student spend on particular activities, by increasing student's motivation and engagement and by providing appropriate level practice. In some specific areas, e.g., word-processing, there is cumulative evidence of the positive impact of ICT on learning. A systematic review

(Goldberg et al., 2003) concluded that "on average, students who use computers when learning to write are not only more engaged and motivated in their writing, but they produce written work that is of greater length and higher quality". ICTs provide many opportunities to be used in a variety of pedagogies. As a tool, ICTs can support didactic or facilitative approaches, collaboration and interaction across time and distance, enquiry or interrogation, open or closed research, lock step or mind-map. Online technologies support constructivist approaches, just as they make behaviourist approaches easier. The capacity of ICT to deliver information or to facilitate communication with massive students in quite individual ways opens up the possibility of tailoring pedagogy to the needs of a student in time and place without the limitations imposed by peer groups.

ICT includes all sorts of electronic devices including newer digital technology such as computers, internet, mobile equipments etc. which are now treated as the powerful tools for educational change and reform. When used appropriately, different ICT are said to help expand access to education, strengthen the relevance of education to the workplace, and raise educational quality by, among others, helping make teaching and learning into an appealing, active process connected to real life (Tinio, 2003). Significant research about the present status and use of ICT in Polytechnic Institutes of Bangladesh was rarely available. Nevertheless, considerable research study and papers were done in the overall progress of ICT, to improve the life style of the people, eliminate the poverty as well as the use of ICT in education in Bangladesh. A report by Asia-Pacific Development Information Programme (2004) revealed that connectivity, infrastructure, human capacity and knowledge creation and exchange appear nowadays as a daunting challenge for developing countries. It shows that in a recently published report by World Economic Forum on Networked Readiness Index Ranking, Bangladesh ranked 110 out of 115 countries (Chowdhury, 2007). To emphasize the wrong footing on Millennium Development Goals (MDG) in the context of Bangladesh, Raihan and Hasan (2005) present some valuable information regarding the current status and use of ICT in their paper. It is also mentioned that bringing connectivity and technology alone without making them relevant to the livelihood of the poor people is unrealistic. Choudhuri (2002) in his paper focused on the shortage of skilled IT personnel in Bangladesh and how the government took initiatives to overcome this problem. Moreover, the absence of adequate physical resources (e.g. computer hardware and software) and weakness in course contents in the training institutions will adversely affect the quality of output from the institutions.

An article in English daily newspaper 'The Daily Star', Bangladesh published on 8th January 2008, stated the importance of TVE in the present situation of Bangladesh under the headline 'Needed: A revolution in technical

**Table 1.** Rate of return of the questionnaires.

| Name of polytechnic institute | Total no. of selected teachers and administrators | Teachers' and administrators' response (%) | Total no. of selected students | Students' response (%) |
|---|---|---|---|---|
| Dhaka Polytechnic Institute | 120 | 25 | 20 | 50 |
| Chittagong Polytechnic Institute | 53 | 64 | 20 | 100 |
| Khulna Polytechnic Institute | 58 | 57 | 20 | 85 |
| Barishal Polytechnic Institute | 27 | 63 | 20 | 100 |
| Rangpur Polytechnic Institute | 33 | 76 | 20 | 100 |
| Mymensingh Polytechnic Institute | 45 | 53 | 20 | 100 |
| Total | 336 | 49 | 120 | 89 |

education'. In that article, the growth trend of TVE sector was graphically shown to reflect that an immediate attention should be given if the country wants to flourish and get benefit from this sector (Molla, 2008). Roknuzzaman (2006) described the current state of internet access and its usage in Rajshahi University, the second largest pubic university in Bangladesh. Although the university community has derived some benefits from internet access, the study revealed that, nearly half of the responsible authorities of the various sectors are not satisfied with the existing facilities owing to several constraints. Ali (2003) in his paper, presents the overall country background in terms of ICT achievement including the introduction and status of ICT education in primary and junior secondary, secondary and higher secondary, diploma, undergraduate and post-graduate levels, and career-oriented professional ICT training across the country. It was revealed that, ICT achievement in the education sector is still now in the beginning stages. Bangladesh as a developing country needs more technical hands for the development of country's economy. To improve the technical education, it needs to introduce more ICT based education system in Polytechnic Institute of Bangladesh, in order to produce better technical manpower. An optimized ICT facility in TVE is required to support the curriculum that compatible with global economy and its successful integration in the teaching learning situation leads to produce potential graduates as well as skilled workforce that can boost the nation's success.

**RESEARCH METHODOLOGY**

For the present research, 6 out of 43 Government Polytechnic Institutes were considered as samples. These institutes were chosen according to the geographical location where ICT was most available, from the divisional cities as well as technologically developed towns of the country. Data were collected from the teachers and students of the institutes who were available during data collection period and from those who returned the questionnaires. Principals, Vice Principals and Head of the departments of the Polytechnics were considered as administrators in this study. Several questionnaires were developed for gathering information and evidences from the teachers, administrators and students of Polytechnic Institutes. The main focus was given to the teachers' side and then to the students' and administrators' sides. The validity of the questionnaires was confirmed through experts' opinions and by pilot study on a small group of teachers and students of Mymensingh Polytechnic Institute. Each item of the questionnaires was analyzed and modified after pilot trial. Students, teachers and administrators were selected randomly from each Polytechnic. The rate of return of the questionnaires is shown in Table 1, that is, 49% from the teachers and administrators and 89% from students.

Table 2 illustrates the present ICT status which does not yet fulfill the institutional demand, as each of the institutes has more than thousands of students in addition to teachers and staffs. The number of computer, as the main indicator of ICT is limited in those institutions. Only the Khulna Polytechnic has 120 computers, whereas other polytechnics have an average of only 60 computers. Another main indicator of ICT is the internet, which is also limited for use by teachers and students. The multimedia projector, scanner, printer are not available for teachers and students. The Local Area Network (LAN) which is very essential for the educational institution nowadays is Not Available (NA) in any Polytechnic. Based on frequency of response, percentages of responses in different aspects were calculated and analyzed to reach a meaningful conclusion. The weighted average (*WA*) based on 5 point scale has been considered for some items in the questionnaires. Interpretations of weighted average values are shown in Table 3.

**FINDINGS AND DISCUSSION**

According to the respondents, the impacts of ICT on learning and teaching in Polytechnic Institutes have been observed. It indicates that, ICT can make a difference to students' learning and substantial gains in students' attainable are achievable where the use of ICT is planned, structured and integrated effectively. Teachers' and students' interaction and their knowledge on ICT can only be the way to improve the teaching and learning in any institution using ICT. The use of ICT in different Polytechnic Institutes is not satisfactory because ICT facilities are not yet available in many institutions. Even some Polytechnic Institutes which have ICT facilities available are of shortage of ICT expert teachers and are facing major problems. Major findings of this study are discussed which are described as follows.

**Table 2.** Overall ICT status of six polytechnics.

| ICT equipment | Dhaka Polytechnic | Chittagong Polytechnic | Khulna Polytechnic | Barishal Polytechnic | Rangpur Polytechnic | Mymensingh Polytechnic |
|---|---|---|---|---|---|---|
| OHP | 10 | 4 | 5 | 4 | 5 | 4 |
| Computer | 70 | 60 | 120 | 50 | 65 | 50 |
| Multimedia projector | 5 | 5 | 2 | 2 | 3 | 5 |
| Printer | 15 | 20 | 15 | 12 | 13 | 15 |
| Computer lab | 1 | 1 | 1 | 1 | 1 | 1 |
| Scanner | 2 | 3 | 07 | 1 | 2 | 1 |
| Digital camera | 1 | 1 | 1 | 1 | 1 | 1 |
| Projector | 1 | 4 | 2 | 1 | 1 | 1 |
| Television | 25 | 12 | 22 | 6 | 10 | 7 |
| VCR/VCD | 4 | 4 | 3 | 3 | 2 | 2 |
| Internet | Limited use | Limited use | Limited use | Limited use | Limited use | Limited use |
| LAN | Limited use | NA | NA | NA | NA | NA |

**Table 3.** Interpretation of the weighted average.

| Weighted average (*WA*) | Responses |
|---|---|
| *WA* > 4.5 | Very high |
| 4.5 > *WA* > 3.5 | High |
| 3.5 > *WA* > 2.5 | Moderate/Average |
| 2.5 > *WA* > 1.5 | Low |
| 1.5 > *WA* | Very low |

**Table 4.** Availability of computer, internet facilities for the teachers and students based on teachers and students opinion.

| Name of the polytechnic | ICT Facilities for teachers | | ICT Facilities for students | |
|---|---|---|---|---|
| | Percentage of teachers using computer only (%) | Percentage of teachers using both computer and internet (%) | Percentage of student using computer only (%) | Percentage of students using both computer and internet (%) |
| Dhaka Polytechnic | 83 | 50 | 80 | 10 |
| Chittagong Polytechnic | 80 | 72 | 100 | 65 |
| Khulna Polytechnic | 81 | 56 | 88 | 41 |
| Barishal Polytechnic | 79 | 36 | 85 | 30 |
| Rangpur Polytechnic | 75 | 30 | 95 | 15 |
| Mymensingh Polytechnic | 90 | 40 | 95 | 25 |

## Access to computer and internet

ICT based technical education depends on the availability of computer, internet facilities and the use of computers in research works. It is observed that in any improvement in students' learning is facilitated through introducing more ICT facilities, as well as increasing the number ICT expert teachers. Table 4 reveals that more than 80% of the teachers in Dhaka, Chittagong, Rangpur and Khulna Polytechnics have easy access to the computers but in Mymensingh and Barishal Polytechnics, it is less than 80% of the teachers that are getting the facilities for using the computer. In case of internet, it reveals that, only in three polytechnics are more than 50% of the teachers getting the chance of using internet, whereas in the other three, 30 to 40% of the teachers are getting those facilities. So it is clear that the teachers have the easy access to computers but internet is not available for all the teachers. Same scenario is observed in the case of students and students in all the 6 polytechnics and have enough scope to use computers but in case of using the internet, it reveals that very low percentage of the students
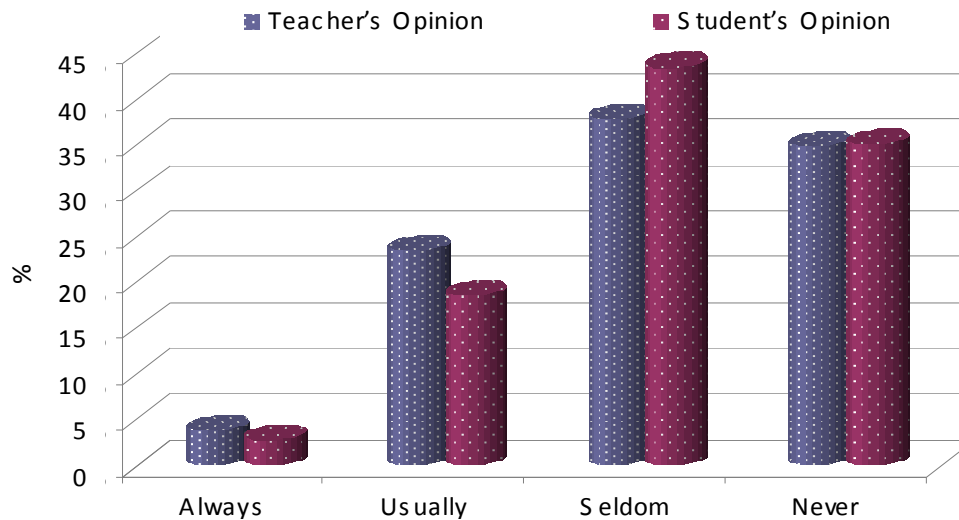
**Figure 1.** Percentage of the availability of modern teaching aids.

**Table 5.** Preparing teaching materials with the help of ICT tools (multiple answers were accepted from the respondents).

| ICT tool | Percentage of teachers using ICT tools |
|---|---|
| OHP | 28 |
| Computer | 65 |
| Multimedia | 21 |
| Internet | 24 |

can use internet.

## Availability of modern ICT teaching learning aids

In the presenting and representing of information in different ways, modern ICT teaching learning aids are the powerful tools. This can be through different forms like text and pictures or tables and graphs or by enabling changes to be shown dynamically such as in mathematical modeling or by helping visualization of complex processes in science. Availability of modern ICT teaching learning aids in any institutes can be able to improve students understanding. It is shown in Figure 1 that, only a few teachers (4%) say that the modern teachings aids are available in the teaching learning situation. 23% of the teachers say that, they usually find the modern teaching aids and 38% of the teachers seldom found the modern teaching aids whereas 35% of the teachers never found the modern teaching aids in their institution. So, it is clear that majority of the teachers do not find the modern teaching aids for their teaching learning purposes.

In case of students, it is shown in Figure 1 that very few students (3%) say that modern teaching aids are available for them. 19% of the students say that they usually find the modern teaching aids and 44% of the students seldom find modern teaching aids whereas 35% of the students never find the modern teaching aids in their institution. From Table 5, it reveals that most of the teachers (65%) use the computer for preparing their teaching materials which is good whereas only 28% of the teachers take help from OHP for their teaching materials and only 21% of the teachers use multimedia for their teaching purposes. Internet, one of the important indicators of ICT is used by only 24% of the teachers. So from Table 5, it is clear that the existing technologies, facilitated by the institutions are not properly utilized and ultimately the institutions are not benefitted from these technologies.

## Area of using computer

In every field of education, the uses of computer are gradually increasing for improving teaching and learning. For the better technical education in Bangladesh, it is necessary to develop the infrastructure of the Polytechnic Institutes by introducing more ICT facilities in teaching, learning and research fields. It is shown in Figure 2 that,
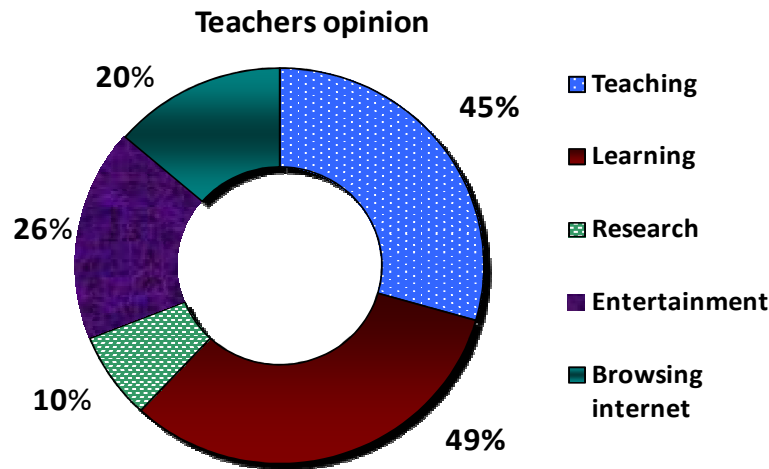
**Teachers opinion**



**Figure 2.** Area of using computer.

**Table 6.** Utility and satisfaction level of the existing teaching aids.

| Variable | Percentage of teachers' satisfaction (%) | Percentage of teachers' dissatisfaction (%) |
|---|---|---|
| Utility of existing teaching aids | 27 | 73 |
| Satisfaction status on present teaching aids | 26 | 74 |

majority of the teachers use the computer for teaching (45%) and learning (49%) purposes which are satisfactory; but only 10% of the teachers use the computer for research purposes which are unsatisfactory at this stage. A considerable portion of the teachers use the computer for entertainment (26%) and spend their time on browsing internet (20%).

**Utility and satisfaction level of the existing teaching aids**

Proper utilization of the teaching aids improves the job satisfaction of the teachers. It is possible to improve the technical education in any Polytechnic Institute, by ensuring the proper utilization of the ICT based teaching aids. It is shown in Table 6 that, most of the teachers (approximately 73%) say that, the present teaching aids are not properly utilized by the teachers and only 27% of the teachers say that, the present teaching aids are properly utilized by the teachers. So from Table 6, it is clear that the existing technologies provided by the institutions are not properly utilized by the teachers. In terms of satisfaction level, it reveals that most of the teachers (approximately 74%) are not satisfied with the present teaching aids and only 26% of the teachers think that they are satisfied with the present teaching aids. Hence, it can be concluded that the existing technologies

provided by the institutions do not satisfy the teachers and ultimately they are not motivated to utilize them properly.

It is shown in Table 7 that, the administrators are not sure about the teachers whether they are using the existing teaching aids properly or not. However, more than fifty percent (53 %) administrators say that, the teachers do not properly utilize the teaching aids and the rest of the administrators say that the teachers properly utilize the teaching aids. It also reveals that based on the administrators (approximately 87%) comments, the teachers need to improve their skill on ICT for the effective teaching learning process. On the other hand, only a few (13%) of the administrator say that their teachers are skilled enough to use the ICT tools and ICT supported materials for making the teaching effective in the class room situation.

**Need of training on ICT**

ICT presents a range of tools that can be used by teachers to present and demonstrate as part of their teaching, as well as something for students as part of an activity as individuals or in groups. These technological tools can be explicitly designed for use in educational contexts such as mathematics teaching program or an overhead projecting calculator or they can also be used

**Table 7.** Utilization of the existing aids and skill improvement on ICT.

| Administrators opinion | Percentage of administrators' satisfaction (%) | Percentage of administrators' dissatisfaction (%) |
|---|---|---|
| Aids properly used by the teacher | 47 | 53 |
| Need to improve the skill of the teachers to make effective teaching | 87 | 13 |

## Teachers Opinion
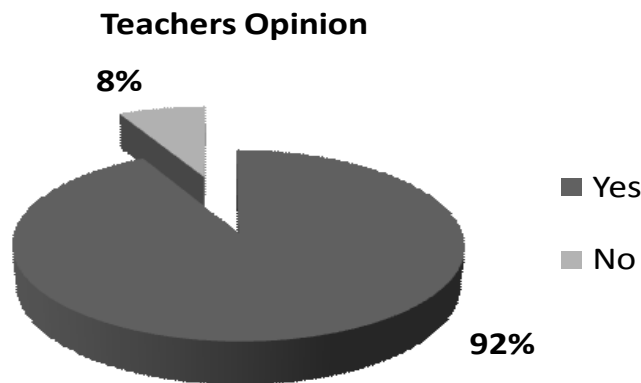


**Figure 3.** Opinion about the need of training on ICT.

equipment or software in other contexts, such as computers with data projectors or word-processor and spreadsheets. The choice of when and how to use such technologies in teaching and learning, is complex. The evidence above all, clearly indicates that it is how ICT is used that makes the difference. So it is concluded that, for proper technical education in any Polytechnic Institute, teachers need training on ICT. It is shown in Figure 3 that, most of the teachers (approximately 92%) think that proper training on ICT will contribute to enhancing their performance for effective teaching and to ensure the quality education as well; because of that, more than 92% of the teachers think that they are very much in need of training on ICT and only a few (8%) of the teachers say that they do not need ICT training as they are satisfied with their present condition and they are confident enough to handle the newest ICT tools for effective teaching.

Compared with other developed countries from the point of utilizing instructional technologies such as distance education and computer assisted education for teacher training, it is seen that Bangladesh is still at very early stages. In the USA at teacher education level, from the date of 1957, teacher-training institutions addressed professional development need for technology through in-service training programs. Since 1985, in-service training programs have been provided to develop teachers' skills in using computer and computer assisted teaching methods. This new application was called "Formator Teacher" training and used a "train the trainer" approach.

The aim of this program was to train in-service teachers as computer teachers (Salih, 2009). In a great extent, the developed countries (Germany, UK, USA, and Japan) overcame the provisional problems of computing, and developed an infrastructure for computing in schools, and now they are much concerned with how to utilize those hardware and software to support teaching and learning. Despite the clear need to prepare teachers for level of expertise (that is pedagogical applications of new information technologies in teaching and learning), in only a very few countries (e.g. UK, USA) such training is a compulsory part of pre-service teacher education programs.

## Impact of ICT on polytechnic students' life

In the present paper, it is observed that the use of ICT in technical education improves the students' performance as well as students' attainments. It is shown in Figure 4 that, almost half of the students (approximately 49%) think that, ICT has the greater impact on personal growth and development in their student life. 35% of the students also think that ICT has a remarkable effect on creating awareness about the latest information in their life to make them smart, competent and elegant in this modern age and a few of the students (16%) think that, they use ICT for finding information related to their job in the world market.
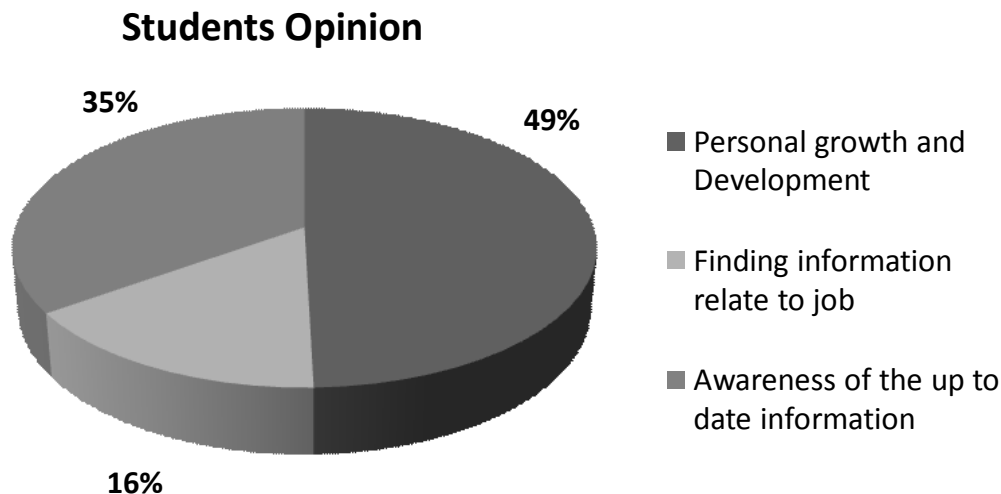
## Students Opinion

**35%**

**49%**

**16%**

■ Personal growth and Development

■ Finding information relate to job

■ Awareness of the up to date information

**Figure 4.** Students' opinion about the effect of ICT in their life.

**Table 8.** Present condition of the institution in terms of ICT service.

| Institutions' status | Present ICT service | Percentage of teachers' opinion (%) | WA for Teachers | Percentage of administrators' opinion (%) | WA for administrators' | Percentage of students' opinion (%) | WA for students |
|---|---|---|---|---|---|---|---|
| The availability of ICT staff with technical skill who support you | Very well | 6.2 | | 9.7 | | - | |
| | Well | 19.4 | | 19.4 | | - | |
| | Moderate | 24.8 | 2.6 | 45.2 | 3.1 | - | - |
| | Poor | 27.6 | | 22.5 | | - | |
| | Very poor | 22 | | 3.2 | | - | |
| The quality of ICT service receive your institution up to now | Very well | 10.0 | | 3.2 | | 28.0 | |
| | Well | 11.6 | | 12.5 | | 13.1 | |
| | Moderate | 20.2 | 2.5 | 50.0 | 2.8 | 39.3 | 3.3 |
| | Poor | 31.0 | | 34.3 | | 3.7 | |
| | Very poor | 27.2 | | 0.0 | | 15.9 | |
| How well do you think that ICT meets the needs of your institution? | Very well | 18.7 | | 18.7 | | 18.7 | |
| | Well | 22.7 | | 50.0 | | 33.6 | |
| | Moderate | 33.6 | 3.2 | 31.3 | 3.9 | 33.6 | 3.5 |
| | Poor | 13.3 | | 0.0 | | 8.4 | |
| | Very poor | 11.7 | | 0.0 | | 5.7 | |

**The availability of ICT staffs and the quality of ICT services**

It is found from Table 8 that, both the teachers and administrators have given their modest opinion about the availability of ICT staffs. The weighted average is 2.6 for the teachers and 3.1 for the administrators which are revealed that, the teachers and the administrators are neither satisfied nor dissatisfied about the availability of ICT staffs. Regarding the overall ICT services that received up to now, the students, the administrators are neither happy nor unhappy as their weighted average shows the moderate value of 2.8 and 3.3 respectively. The teachers are unhappy and not satisfied about the total ICT services received till now and their weighted average is found 2.5. It also reveals that, the administrators and students agree that the ICT can meet the institutional needs well, as their weighted averages are 3.9 and 3.5, respectively; but the teachers (WA = 3.2) are still in doubt whether the ICT can meet their

institutional demands or not.

## Conclusions

ICT is undeniably instrumental in promoting teaching and research activities in vocational education, as well as higher education in developing countries like Bangladesh. It could solve problems pertaining to quality, equity, and access to vocational education. ICT could also promote resource sharing and therefore improve efficiency and productivity while at the same time open up access to global resource of knowledge and information. This study revealed that, though computers and internet are the main indicators of ICT, but its use in Polytechnic Institutes are very limited. Multimedia projector, scanner, and printer are not available for teachers and students for the teaching and learning purposes. Without good ICT infrastructure, the teachers in the polytechnics do not teach efficiently and effectively, and students do not improve their skills and attainments from the classroom practices.

The study indicates that, the existing technologies provided by the Polytechnic Institutions are not properly utilized by the teachers and ultimately the institutions are not benefitted from these technologies. The teachers are not satisfied with the existing technology provided by the institutions and ultimately they are not motivated to utilize those teaching learning materials properly in the class-room situation. ICT can give teachers access to great conceptualisers – inside and outside their own ranks to assist them in planning and programming cognitive development. Best of all, the interactive capacity of ICT provides more opportunities for students to engage as creators and manipulators in the learning process. For ICT based education, all institutions must ensure the availability and easy access to internet and computers for all the teachers and students. Along with that, other sections of the institution like administration, registrar section, accounts section, etc. must use the ICT to enhance the total educational process.

All the classrooms and labs (AUTOCAD lab, Computer lab, CAD lab, Control lab etc.) should be well equipped with latest teaching aids. Local Area Network (LAN) must be established to improve the data communication, result processing, admission and registration of the students. Proper financial support by the government can ensure the use of ICT tools and teaching aids for each classroom. Also, training programs on ICT can help the teachers and staff to do their jobs more efficiently. Training programs on ICT should be more specific to the particular needs and fit to students' course and subject specific needs, and institutional related works.

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