Exploring the Practice of Assessment Techniques of Information and Communication Technology (ICT) Subject in Secondary Schools in Dhaka City

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Abstract

ICT can make positive changes in society. As a result ICT subject has been made mandatory at the secondary level in our country to create skilled manpower so that the vision of Bangladesh can be achieved in time. This study focuses on to explore the practice of Assessment Techniques of Information and Communication Technology (ICT) Subject in Secondary level in Dhaka city. Qualitative approach has been used to conduct this study. Teachers and classrooms are selected purposively as well as the students are selected by using simple random sampling process from four secondary schools including government and non-government. Semi-structured interview schedule, observation checklist and questionnaire were used for collecting data. The findings pointed out that all of the secondary schools of the Dhaka city had ICT related assessment techniques but most of the schools do not practice all types of assessment techniques (such as class test, homework, report making, debate, activities (learning by doing), oral test, MCQ test, practical test etc.) of Information and Communication Technology subject according to the prescription of National Curriculum and Textbook Board. However, the teachers could not assess the students of ICT subject according to prescribed curriculum due to lack of teachers' training and infrastructure as well as duration of class and so on. Therefore, authority and the government needed to come forward to ensuring assessment techniques and the uses of those techniques to assess ICT subject.

1. Introduction

Within a very few years, Information and Communication Technology (ICT) has turned out to be an effective educational technology which promotes some dramatic changes in teaching and learning processes. Technologies allow students to work more productively than in the past, but the teacher's role in technology rich classrooms is more demanding than ever (Keengwe, Onchwari et al. 2008).

ICT as a subject discipline has been introduced in western countries since the early 1970s (Kennewell, et. al., 2003). After that, the National Education Policy of Bangladesh mandates ICT integration by 2010 in junior and secondary level institutions (The International Development Research Centre, 2008). As a result, ICT has been established as a discipline in 2010 at the secondary level in our country (National Education Policy, 2010). So it is very much needed to assess ICT content to the students effectively so that the students can achieve necessary knowledge, expertise and attitude from the content. So, for the active use of the senses, the students need some facilities that include computer lab, multimedia, internet, electricity, alternative power supply etc. with trained teachers for teaching ICT (Salam et al., 2012). The qualification of teacher is important in determining the extent with ICT related innovations which are adopted and implemented in different kinds of educational practices. Therefore, professional training and regular development of teachers' content and pedagogical knowledge is important for integration of technology into daily educational practice (Howie, et. al., 2005). The methods of teaching for ICT like other subjects play a great role in enhancing the efficiency of the learners (Elizabeth, 2004). The use of assessment techniques helps the students to make their conception clear about complicated and difficult idea, information, facts and principles (Singh, 2010).

The content of the ICT subject is composed of both theoretical as well as practical. So assessment process of ICT subject should be conducted by the both theoretical and practical process. Actually Assessment is the systematic collection, review and use of information about educational programs undertaken for the purpose of improving student learning and development. (Palomba & Banta,1999). So there should be available appropriate assessment techniques such as continuous assessment (Homework, group work, class test, debate etc.), summative assessment (including learning by doing/ practical work, written test and oral test also). The National Education Policy of Bangladesh mandates Information and Communication Technology (ICT) integration by 2010 in a lot of junior and secondary level institutions (The International Development

Research Centre, 2008). As a result, ICT has been established as a discipline in 2010 at the secondary level (National Education Policy, 2010). It is much needed to assess ICT contents to the students effectively. ICT is such kind of a subject that without a computer lab it is a furtive attempt to assess the contents of this subject. Hence, a computer lab is a crying need for learning by doing activities of ICT content for the better achievement of the students. The assessment techniques such as class test, group work, homework, peer work, practical test etc. play a pivotal supporting role for the assessment of ICT content to the students. At the same time, as a developing country, Bangladeshi secondary schools normally are facing a lot of challenges to avail the assessment techniques and their better uses in the teaching-learning activities in the classroom.

So it is very much needed to have the availability of assessment techniques for the assessment of the contents of ICT subject as like as other subjects for the better understanding of the students. This study will be conducted to know about the availability of techniques and the uses of those techniques in secondary level in Dhaka City for assessing ICT contents. Not only that, the challenges which the schools are facing to avail and use the techniques will be explored by this study.

2. Rationale of the study

The availability of assessment techniques related to ICT subject such as formative assessment (home work, group work, making report, debate, study tour, learning by doing, oral test) and summative assessment (study tour, question pattern of summative assessment, marks distribution, practical assessment) will have to ensure for the ICT students for their better learning. The launching of the subject is not only the responsibility of the authority but they have to ensure proper assessment for the ICT students. This study will be helpful to know about the actual situation of the availability of assessment techniques, their uses for the assessment of ICT students for the better learning of the target group. Not only that this study may disclose the challenges of availing as well as using the assessment technique in secondary level in Dhaka city. It is expected that this study will help the concerning authority to take necessary steps for the development of the existing situation. The result of this study also may be helpful for others to do further research on this area.

Research questions

1. What are the assessment techniques teachers use to assess ICT subject in secondary level schools?
2. What are the challenges secondary schools teachers facing to use the techniques?

3. Literature Review

The Governments in each of the countries in the South Asia region are now keen and committed on exploring the uses of ICTs for school education. Therefore, Government policies lately reflect their realization of the importance of integrating ICT use and the promotion of quality education enabled through ICTs. The creation of educational networks offer substantial economies of scale and scope, when attempting to improve the quality of education and seek to standardize quality across the system. UNESCO defines Information and communications technology as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information" (Blurton, 2005, cited in Juel, 2015)

The term 'Information and Communication Technologies' refers to technologies that transmit, process, store, create, display share or exchange information by electronic means. This broad definition of ICT includes such technologies as radio, television , video , DVD , telephone (both fixed line and mobile phone

) satellite systems and computer and network hardware and software as well as the equipment and services associated with technologies such as video conferences, email and blogs (UNESCO,2007) However, truly using technology in the classroom requires a re-think of the traditional roles of teachers and learners and also will require changes in how students are taught and assessed.(Reil and Becker, 2000).

The growth of information and communication technologies (ICT) has dramatically reshaped teaching and learning processes in higher education (Pulkkinen, 2007; Wood, 1995). ICT for education is more critical today than ever before since its growing power and capabilities are triggering a change in the learning environments available for education (Pajo & Wallace, 2001). The use of ICT offers powerful learning environments and can transform the learning and teaching process so that students can deal with knowledge in an active, self-directed and constructive way (Volman & Van Eck, 2001; de Corte et al., 2003). At present ICT is considered as an important means to promote new methods of instruction (teaching and learning). It should be used to develop students' skills for cooperation, communication, problem solving and lifelong learning (Plomp et al., 1996; Voogt, 2003). Although computers and technology are prevalent throughout our society (Cuban, 2001, cited in Ramjan Ali), developing countries are far from reaping their benefits because of certain barriers.

ICT (Information and Communication Technology) education is mainly the efforts of our society to teach its current and rising citizen valuable knowledge and skills. These knowledge and skills are about computing and communication devices, software that operates those, applications that run on them and systems that are built with them. ICT education can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration. ICT education is making dynamic changes in society. Tinio (2002) states the potentials of ICT education as follows: ICT education greatly facilitates the acquisition and absorption of knowledge, offering other developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor.

Even though ICT education plays significant roles in representing equalization strategy for developing countries, the reality of the digital divide- the gap between those who have access to, and control technology and those who do not, make a huge difference in the use of ICTs. This means, that the introduction and integration of ICTs at different levels and various types of education is the most challenging undertaking. Failure to meet the challenges would mean a further widening of the knowledge gap and deepening of existing economic and social inequalities among the developed and the developing countries. It highlights the benefits of ICT education, existing promises, and the limitations and challenges of integration to education systems (Juel, 2015).

Information and Communication Technology is considered as the most supportive factor for the development of a nation in today's world (National ICT Policy, 2009). The National ICT Policy-2009 recommended expanding the reach of ICT literacy throughout the country by integrating ICT courses in primary and secondary education. It also advocated ensuring that all universities offer global standard ICT education and initiate Postgraduate Programs in ICT education to encourage research and innovation.

The government of our country declared to make Digital Bangladesh and middle income country by 2021. Recently, the government has taken a number of initiatives to make our country digital (Arinto and Akhter, 2009). One of the most significant initiatives is that, ICT education has been included at secondary level

((National Education Policy, 2010). Not only ICT subject has been made compulsory at secondary level. The National Education Policy-2010 has set up two aims and objectives of the ICT subject. These are:

- To produce competent manpower of international standard, trained and educated in information technology to perform efficiently in relevant fields.
- Information technology will not be limited to computer science only, rather mobile phones, radio, television data collection and processing of information are also to be included and emphasis will be given on its multi-angular necessity (National Education Policy, 2010).

According to Harien, et al, (1997) in education assessment is the process of gathering, interpreting, recording and using information about pupil's response to an educational task. McTighe and Ferrara (1998, as cited in Kim , 2005) , considering the term assessment from the Latin root assidere, refer to the meaning of assessment as ' sitting beside ', which includes informal method , such as observing , questioning and asking students what to do in order to understand and describe what students know and can do. Cizeck (1997, as cited in Kim, 2005) suggests four roles related to the new assessment:

- must be applicable to existing, emerging and future conditions, formats and contexts.
- to convey an attitude that is embraced by educators.
- should serve; as opposed to drive instruction would be preferable.
- should provide a link to educational process that seeks the welfare of each student.

Considering these conditions, Airasian (1994, as cited in Matthews, 2007) suggests that assessment should be include the full range of information teachers gather in their classroom. According to Brown, McTighe and Ferra (1998, as cited in Kim , 2005) assessment can be defined as – Any systematic basis for making inference about characteristics of people , usually based on various sources of evidence ; the global process of synthesizing information about individual in order to understand and describe them better.

So we can say that assessment is the improvement of student's quality. Educational assessment is an integral part of the quest for improved education and seeks to determine how well students are learning. It provides feedback to students, educators, parents, policy makers and the public about the effectiveness of educational service." (James P. Naomi C and Robert G 2001)

Bransford, Brown, and Cooking, (1999) found "Assessment and feedback are crucial for helping people to learn." Assessment should mirror good instruction that happen continuously as part of instruction and provide information about the levels of understanding that students are reaching. An assessment system not only affects the learning and teaching but it also society as a whole. According to McNamora (2000) the impact of assessment can be complex and unpredictable. The National curriculum 2012 adopted an integrated model of assessment system, which includes continuous assessment; terminal examinations and public examinations. Assessment involves learning, teaching and schooling and not a discrete activity (NCTB 2012).

ICT related debate, homework, group work, peer work, report making, class test, MCQ test, oral test, practical test etc are the techniques to assess ICT curriculum. The use of assessment techniques helps the students to make their conception clear. The methods of teaching for ICT like other subjects play a great role in enhancing the efficiency of the learners (Elizabeth, 2004).

4. Methodology

This study has been conducted by following the qualitative approach. Qualitative data have been collected by questionnaire from the students, by the interview schedule from the teachers as well as by the observation checklist. 02 government and 02 non-government secondary schools (Grade 9-10) have been selected

conveniently from Dhaka city to collect qualitative data for exploring the practice of assessment technique of ICT subject. For classroom observation, 5 classes have been observed from each school in this way 20 classes have been observed. The students have been selected purposively, the teachers have been chosen purposively and the classrooms have been taken purposively.

After collecting data by using different data collection tools, triangulation has been used as a system of increasing the validity of collected data through cross-checking. The collected data through the observation checklist have been cross-checked by the questionnaires and the interview schedule according to the triangulation system. At the same time, the collected data through the questionnaires and the interview schedule has also been cross-checked by the observation checklist. As a result of using triangulation, validity and reliability of data collected from different sources have been improved a lot.

5. Analysis and interpretation of data

5.1 Present practice of assessment techniques of ICT subject

Oral Question Answer is a most used classroom assessment technique in ICT subject. There is a clear direction on Oral Question Answer of ICT curriculum 2012.By this technique teachers ask questions and students say the answer. It plays an important role in assessment. In this regard all of the secondary schools teachers said that they had took oral test as practical part. According to classroom and schools observation, all of the ICT teachers (Four out of four) take oral test by question answer method in classroom and the part of ICT practical examination.

Group work is one of the most important media of students' conversation in a large classroom. Group work encourages students' active participations and discussion skills on a topic during the teaching-learning process .In this study two out of four participant teachers described that they give group work to students and rest other two teacher abstained himself from it.

More than a mere verbal or performance skill, debate embodies the ideals of reasoned argument, tolerance for divergent points of view and rigorous self-examination. In this study all of the secondary schools teachers said that no debate was held in schools as part of the ICT assessment technique. Though the prescribed curriculum 2012 of ICT suggested for organizing 'Debate' regarding ICT related controversial issues the school authority did not do that. So here to say that no students got opportunities to take part in ICT related controversial issue.

Making report task is one of the important parts of assessment techniques of ICT. But all of the secondary schools teachers said that they do not give "Report Making" task to ICT students for assessing. One of the teachers T_A asserted, *"Though there is a clear notification to supply making report task to ICT students, actually it is somewhat difficult to deliver the task".* All of the secondary schools students (Twenty out of twenty) stated that they had been given "Making report" task as part of the ICT assessment. During classroom observation session, it was observed five classes of teacher T_B who provide report making task in one class and rest four classes he did not provide any report making task to ICT students. It was noticed that teacher T_C and T_D did not provide any report making task at all in 5 observed classes. On the other hand, teacher T_A he was found insincere regarding Making report task.

Study tour should always have a major educational element, but the impact of study tour can extend much further. The importance of study tour includes giving students the chance to build closer bonds with their classmates, experience new environments and enjoy a day away from the classroom. In our study all of the

secondary schools teachers said that no study tour was held in schools as part of the ICT assessment technique. All of the participant students (Twenty out of twenty) forborne themselves from ticking "Study Tour". That means all of the secondary schools did not organize ICT related Study tour in their schools as part of the ICT assessment.

Learning by doing is basically psychomotor based. Major part of the ICT content is related to learning by doing task. In this regard it was tried to know that whether concerned teachers practice the techniques in assessing the ICT students or not. All the participant teachers stated that they provide some opportunities to students "Learning by doing" to students. But one of the teachers T_C asserted, *"There are very few opportunities for students to engage with the learning by doing task for the lack of computer laboratory".* In contrary, all of the participant students said that they have not been given any learning by doing task in classroom or outside of classroom by their concerned ICT teacher. During classroom observation session, we never noticed them using learning by doing method in classroom as the part of the assessment techniques. They always used the information directly from the text. Students didn't get any chance to take part in learning by doing for their better learning/psychomotor skill. Sebrana, et. al. (2012) supported that few schools used their computer laboratory for the students' learning through learning by doing process in every week.

Home work is another important assessment technique of the ICT subject. In our study all the participant teachers shared their opinion as they gave home work to students. All of the participant students (Twenty out of twenty) agreed that they had been given "Homework". That means all of the secondary schools teachers gave home work to the students for assessing ICT subject. While observing the classroom, we found that most of the class teacher gave homework to students about the relevant topic before starting /after finishing the teaching learning activities in the classroom.

Class test is important for the continuous development of the ICT students. In this regard all the participant teachers stated that they take class test. But we found various responses regarding its question pattern. For example one of the participants Teacher T_C described as follows: *"I take one class test in a weak and I make it as a written question".* On the other hand one of the participant teachers T_C ascribed as below, *"I take class test by MCQ test".* All of the secondary schools students stated that class teacher took Class test and they also described that class test was made by written question. While observing the classroom it was found most of the ICT teachers take class test. But there are some variations in taking class test two teachers take class test as written technique and rest two teachers take class test as oral and MCQ test.

Summative assessment is crucial for student's promotion and ranking in class. All the participant teachers stated that there were conducted two terminal examination in their school for assessing students. Students of the secondary schools also assured that two terminal exams are hold in the school in an academic year. On the same way while observing the selected schools it was found all of the secondary schools academic year are divided into two terminal exams in the name of half terminal and terminal exam. Marks distribution of ICT subject of terminal exam and public exam will be made according to instruction of making question paper of ICT curriculum i.e. total 50 marks in ICT subject which are divided into two parts 25 marks are allotted in theoretical part and rest 25 marks are allotted in practical part. All of the secondary schools teachers said that they had made only 25 MCQ test for assessing ICT students in terminal exam. They also stated that there was no written creative question in the theoretical part of the ICT assessment.

NCTB suggests for conducting practical test of ICT subject by 25 marks with delivering activities, report making, oral test etc. It was found various responses regarding instruction of practical assessment two teachers out of four participants revealed that they follow instruction what ICT Curriculum advised to schools for conducting practical exam. T_D asserted below, *"ICT curriculum advises to conduct practical assessment by oral test, report making, data collection and processing in laboratory and preparing MCQ test".* Most of the participant students (Fifteen out of twenty) wrote down that they had been given "Report making", "Designing", "Practicing", "Viva voce", "power point", "writing" etc. of the ICT practical assessment. But few participant students stated that they had been given power point, MS word as part of the ICT practical assessment. While observing the selected school all of the secondary schools didn't follow completely the instruction of the practical assessment which is suggested by ICT Curriculum.

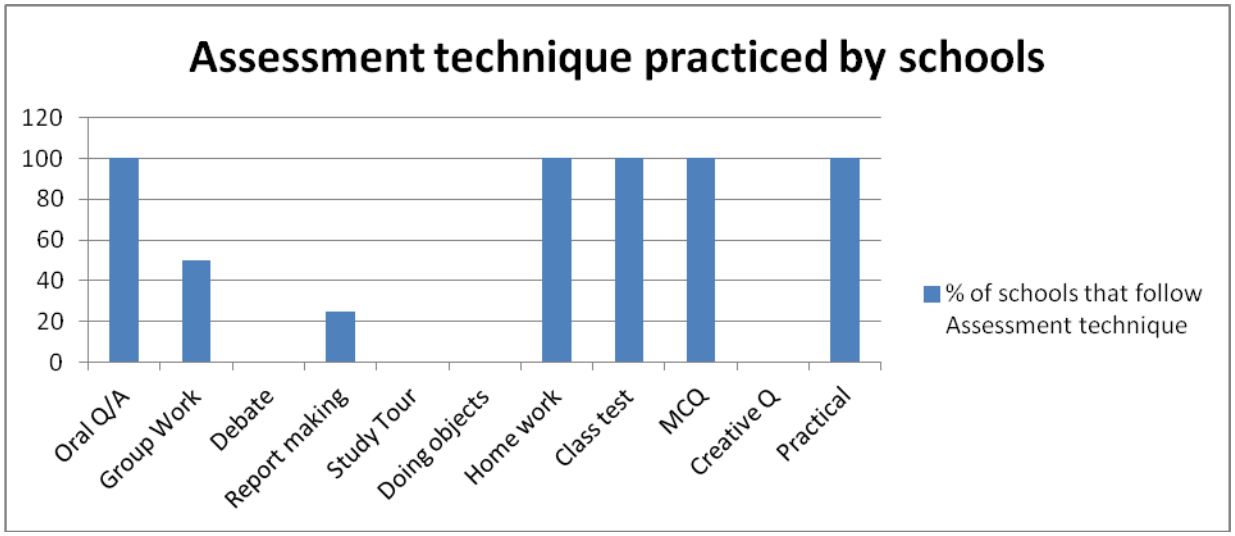

Figure 1: Assessment technique practiced by schools

5.2 Challenges to practice assessment techniques of ICT subject

5.2.1 Shortage of ICT trained teachers

Teachers play an important role in conducting the teaching-learning and assessment process. Trucano (2005) supported that in order to teach the students properly the teachers always needed continuing training and relevant professional development. Most of the participant (75%) teachers expressed that they have ICT related training. However, according to Salam, et. al. (2012) most of the secondary school teachers had not adequate professional training.

5.2.2 Duration of ICT class

Time schedule is a very pivotal factor for teaching any subject fruitfully in the classroom. If there is not enough time to take a class, the teachers cannot complete the lesson perfectly. They have to come to an end of the lesson rapidly. Juel (2015) supported that most of the schools spend 40 minutes during the ICT class. Some schools spend 45 minutes in that class. And any school does not take the ICT class for 50 minutes. It is found that most of the secondary schools teachers (75%) agreed that they conducted ICT class within 50 minutes in a day. But during classroom observation session, it is noticed that most of the classes (15 classes out of 20) were conducted by 40 minutes and rest classes were conducted by 45 minutes. Because of this fact the students do not afford to comprehend the lesson successfully that is found our observation.

5.2.3 Lack of facilities for ICT teaching learning and assessment

Since ICT education is a technical subject discipline, computer laboratory and multimedia projector are crying need for learning by doing activities of ICT contents. There should have available computers (per students one computer) in the laboratory so that every students can practice different activities provided by their teachers. Although there was computer laboratory in each school, the number of computers was not enough comparing to the number of students. As a result, most of the schools could not be able to provide one computer to every students for doing practice various activities. Salam, et. al. (2012) proved that 55% students noticed that 1/3 students could use one computer for their learning activities in the laboratory.

5.2.4 Shortage of computer/multimedia projector in classroom

The facilities such as laptop, multimedia projector, overhead projector, internet, electricity etc. play a pivotal supporting role for the delivery and assessment of ICT contents to the students. But during school observation session, we noticed that no secondary schools have Computer/Multimedia projector in classroom for assessing ICT students. Salam, et. al. (2012) also supported that due to lack of ICT related infrastructure in the classrooms, the teacher had to face a lot of challenges to teach the ICT contents in the classrooms appropriately.

5.2.5 Appropriateness of present assessment technique of ICT subject

Most of the participant teachers (75%) stated that present ICT assessment technique is not coherent with the ICT content. ICT content is related with both of the theoretical and practical. But in the current assessment techniques there are very few opportunities to assess theoretical part of the subject. There are only 50 marks are allotted in the ICT summative assessment that is very poor. Most of them said that ICT marks distribution should be allotted among 100. They also think that creative question is crying need for the assessment of the ICT theoretical part of the content.

6. Recommendations

According to the findings, the study reveals some necessary recommendations. As Practical test is vital to ensure effective assessment of ICT subject, practical test must be comprised of activities, report making, oral test etc. ICT students can utilize different skills, knowledge and experiences through these sorts of practical activities. Moreover, "learning by doing task" is obligatory for the fulfillment of the effective ICT assessment. School authority should ensure ICT infrastructure (computer or laptop and multimedia projector) for conducting assessment activities joyful, easy and comprehensive. Besides, Schools authority should ensure ICT related debate as well as ICT related study tour as part of the assessment of the ICT subject to motivate the teachers and the students. Furthermore, duration and frequency of ICT class should be practiced in such a manner to fulfill the effectiveness ICT assessment. Additionally, emphasis should be given to conduct class test for continuous development of the ICT students.

7. Conclusion

The government of Bangladesh had introduced ICT education as a subject in recent years. Because of this fact, the secondary schools in Dhaka city were not completely ready to assess this subject to the students properly. There was lack of assessment techniques in each and every secondary school for the assessment of the students of ICT subject. Moreover, some of the teachers were not using the techniques (available in the schools) in the assessment practice regularly. At the same time, a few teachers tried to use their self-technique to assess students in the assessment practice. In addition, the government was not paying much attention for using proper assessment technique in ICT subject. That's why the schools were not able to

assess ICT subject successfully. Therefore, it was needed to come forward the concerned authority of the school as well as the government for using assessment technique of the new subject to the students properly. With a view to ensure the cost effectiveness and the feasibility of the study, the researcher restricted the study area in Dhaka city. So, further study might be done throughout the whole country in order to find out the real situation of all over Bangladesh.

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