Title:
Localization of Digital Content for use in Secondary Schools of Bangladesh.

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ABSTRACT

Localization of digital content (LDC) in Bangladesh is aimed at the production of graphical and video content adapted for the local curriculum and suitable for use in secondary schools. Teachers learnt how to make PowerPoint presentations into which they can incorporate video, audio and graphical content downloaded from the Internet. Empowering teachers to use internationally available video, audio and graphical content is a major target of LDC because exposing students to this sort of content allows the teacher to expand students' horizons and to improve their understanding of concepts and issues that are difficult to explain using words alone. The use of ICTs in the classroom makes it possible for teachers to enrich the learning experience in such a way that older technologies did not. The main purpose of the work was to identify how localization of digital content helps both teachers and students to make a joyful class and to create a learning friendly environment by using multimedia in classes. In this paper we observed that students are now more motivated to learn in the classes, their creativity and analytical capacity is enhanced, adaptation of participatory and student-centered activities are enhanced.

Key-Words: *Localization of Digital Content (LDC); ICT; Multimedia class*

1. INTRODUCTION

1.1 Brief Education Indicators for Bangladesh

Population of Bangladesh is 142.32 million with a literacy level of 58.3% (national), in rural at 71.5 % and in urban at 53.7 % (year : 2007), The net enrolment in government secondary[1] 47.34 % and in Primary[2] is 93.52 %, Primary level[3] 82674 schools, 16904546 children and 380957 teachers with the pupil to teacher ratio (PTR)[4] of 47:1, Secondary level[3] 19040 schools, 7465774 students and 218011 with the PTR of 34:1

1.2 ICT policy in Bangladesh

Key feature of ICT policy 2009: Education and Research[5]

- Assess skills of ICT professionals and meet gaps with targeted trainings
- Encourage closer collaboration between academia and industry
- Extend the reach of ICT literacy throughout the country by incorporating ICT courses in secondary education and technical and vocational education
- Enhance the quality and reach of education at all levels with a special focus on Mathematics, Science and English
- Ensure ICT Literacy for all in public service
- Boost use of ICT tools in all levels of education
- Ensure that all universities provide global standard ICT education

1.3 UNESCO ICT Competency Standards for Teachers

The ICT Competency Standards for Teachers (ICT-CST)[6] were designed by UNESCO to help educational policy-makers and curriculum developers identify the skills teachers need to harness technology in the service of education. The Competency Standards were developed in cooperation with Cisco, Intel and Microsoft, as well as the International Society for Technology in Education (ISTE). The ICT-CST constitutes a set of standards and resources that provide guidelines for planning teacher education programs and training offerings that will prepare teachers to play an essential role in producing technology capable students. The ICT-CST framework was created by crossing three approaches to ICT integration in education (Technology Literacy, Knowledge Deepening and Knowledge Creation) with the six components of the educational system (Policy & Vision, Curriculum & Assessment, Pedagogy, ICT, Organisation & Administration, and Teacher Professional Development).

1.4 Content Conversion/Localization

Content Conversion/Localization[7] involves the translation and localization of content created in a particular language targeting a specific set of learners to suit a different target audience. Content is localized taking into account the cultural impact, use of local dialects, content strategies and management systems. Content localization is much more than mere language translation. We handle content conversion in many languages including text, graphics & audio localization.

Most of the available electronic content remains accessible only to those who can read and write in English. Many teachers of Bangladesh who are working at secondary level are not much at ease in English and very few are proficient in the English language. The majority of the population can only understand local languages. It is becoming increasingly evident that any effort to ease the transfer of

technology and knowledge in rural and urban areas of Bangladesh must be accompanied by Localization of Digital Content (LDC).

1.5 ICT in Education of Bangladesh

ICT is often seen as being a "solution" to[8]:

- Delivering relevant quality instructional material
- Supporting student self directed learning (anywhere and anytime)
- Enhancing teachers" skills and knowledge
- Promoting international collaboration and networking

However, full ICT integration also involves a fundamental shift in teaching and learning styles from didactic to constructivist. ICT is not the "cheap" solution and unless it is properly implemented with support for teachers it will have only limited impact.

TQI-SEP, Bangladesh in collaboration with the Access to Information Project (A2I), Bangladesh has commenced a phase of its Continuous Professional Development training which seeks to provide secondary teachers with skills in developing digital content. Through this program, it is envisaged that ICT will become an important teaching aid for students in all subject areas in classrooms across Bangladesh.

Digital content developed for schools is, in fact, freely available on the Internet from sites such as www.curriki.org and www.oercommons.org. In addition to this, much of the material available on the popular "YouTube" site is suitable for schools and has, in fact, been developed by educationalists. However, the amount of digital content currently available in Bangle is very limited. There is an urgent need for localization of digital content and for making the same accessible to teachers in Bangladeshi secondary schools.

Accordingly the "Localization of Digital Content" project[9] was proposed to adapt digital content available on publicly accessible Intranet site to Bangla. The intent was only to convert existing text and audio to Bangla and to edit content in line with the local curriculum. However, in many cases, teachers and teacher educators exceeded this expectation by taking photographs and making videos themselves. As part of the project a total of 63 teachers were selected to trial use of content developed in partnership with teacher educators. The teachers undertook the same 12-day program as included in the "CPD-Digital Content" training program currently being rolled out across the country. As many teachers do not use a computer before, this course starts from the fundamentals of how to start a computer and proceeds onto how to make PowerPoint presentations incorporating images and videos for use in secondary school classrooms. Throughout the course, there is an emphasis on how multimedia can be used to develop student-centered, participatory lessons which challenge students to think and understand rather than learn by memorizing.

Following the course, teachers were further supported to put into practice what they had learnt by means of weekly mentoring and monitoring visits undertaken by Teacher Educators over a five month period. These visits were undertaken by 21 Teacher Educators working in teams of three (a total of seven teams) from six different Govt. Teachers' Training College of Bangladesh. Each team worked in a particular subject area to ensure that content was produced across the range of subjects taught in schools. The subject areas covered were Science, Maths, Social Science and Islamic Religion.

2. OBJECTIVES OF THE STUDY

2.1 General Objective

The main objective of the study was to promote the adoption of ICT as a teaching-learning tool in the secondary level classroom.

2.2 Specific Objectives

- To make digital content including graphics and videos available to teachers in Bangla.
- To improve the learning experience of students of Mathematics, Social Science, Islamic Religion and Science in Bangladesh.
- To arouse the interest of students of Mathematics, Social Science, Islamic Religion and Science in the use of Internet as a learning tool.
- To motivate student learning for secondary level.
- To provide teachers of Mathematics, Social Science, Islamic Religion and Science with a readily accessible online resource directly linked to the Bangladesh curriculum.
- To encourage teachers who have participated in the A2I (Access to Information) training programs with materials to use in class presentations.
- To make online resources available to teachers of Mathematics, Social Science, Islamic Religion and Science who are weak in English and might otherwise be discouraged from using the Internet as a teaching tool.

3. SIGNIFICANCE OF THE STUDY

This study will help to identify how localization of digital content helps both teacher and student. It will help to improve the class enjoyable and to make a friendly learning environment by using multimedia in the classes of Secondary level. Moreover this study will find whether the students are interested to use ICT as learning tools or not.

Findings of this study will help secondary teachers and teacher educators of Bangladesh identify if the localization of digital contents are effective learning tools for a class. As well as it will help the secondary teachers and teacher educators to determine the importance of developing good digital contents to improve overall satisfaction and performance of the secondary students. Researchers may get inspiration to conduct further research in this area of study.

4. REVIEW OF LITERATURE

In Bangladesh secondary school classroom teaching, the use of digital content or e-learning technology is increasing gradually. This digital content or e-learning technology can have a great influence on education (Brent, 2005). Technological advancement has been the major inspiration for change. More recently, the advent of the Internet has enabled tremendous innovation in the delivery of secondary education. As time goes by, more and more people gain access to the Internet, the cost of computer ownership decreases, and overall computer literacy increases. These trends provide educational institutions an ideal channel for the delivery of educational content. But LDCs like Bangladesh is very poor in this sector compared to developing and developed countries (Mahmud, 2010). E-learning provides the following benefits for the organizations as[10]:

- Online learning provides improved performance than those in face to face course.
- All the information is available internationally in digitized form and anyone can get it at minimum cost. The learning technology opens the window for better access of information by instructors and Students.
- Students can admit to any foreign university or college and begin their courses while at work and finish them at home.
- E-learning enables learners to develop skills for knowledge-based workers by using ICT in Education.

- Reduce learning cost by paying less per credit hour.
- Continuing working at home by remains in one.
- Self-education opportunities for students.
- Provides different academic collaboration.

Patra,C.C, Alam M. Z., M., Sobhan M. A., (2009), expressed that ICT may be played vital role to build e-learning infrastructure, so government should take the necessary steps to develop proper ICT infrastructure. It will allow teachers to gather sufficient subject knowledge, study about teaching methodologies and professional development for long life learning. Through E-education teachers can share knowledge with other which enhances teaching styles. ICT with appropriate support in their class room helps to create structured teaching and better school management. ICT can improve the quality of education and teaching efficiency through proper training and Programs relevant to the needs to education system. It will allow teachers to gather sufficient subject knowledge, study about teaching methodologies and professional development for long life learning. Through E-education teachers can share knowledge with one another which enhances teaching styles. ICT with appropriate support in their class room helps to create structured teaching and better school management.

Use of technology in education and educational institutions increasing rapidly so that it is important for educational institutions to equip teacher- students with technological skills that are essential for coping in the wider community. These skills are most effectively gained by learning with technology, rather than about technology (Albon & Trinidad, 2002; Trinidad, MacNish, Aldridge, Fraser & Wood, 2001). Through the use of the e-learning environment, there is greater opportunity to establish a collaborative teaching and learning community (Bates, 2005; Bonk, Wisher & Lee, 2004).

Using mobile technology for in- service teachers in rural areas under Teaching Quality Improvement project in Secondary Education (TQI-SEP) is pioneer. TQI-SEP training curriculum was revised from a two-week, face-to-face workshop to a six-week distance-mode training course based on printed materials and practical application of training content with peers, incorporating activities that utilize the features of the mobile phone (ADB Final Report, 2007).

5. METHODOLOGY

The study was conducted December, 2010 to July, 2011 with the help of financial and administrative support of government of Bangladesh. The methodology of the study included sampling, development of data collection instruments, data collection and data analysis procedures. The research team visited the schools for several times and collected data and 04 (four) review meetings were held where the researchers and participating teachers participated.

5.1 Selection of Schools

21 (twenty one) schools were selected from six district for this purpose. During the selection, focus was given to include at least 4 (four) girls school, urban and rural schools so that rural-urban and male-female schools are present in the sample. Table 1 gives overviews of the schools and teachers' sample.

***Table1**: Sampling of Schools from different districts.*

S.L	Name of the Districts	Number of the School	Number of the Teachers
01	Comilla	3	3
			3
			3
02	Dhaka	6	3

S.L	Name of the Districts	Number of the School	Number of the Teachers
			3
			3
			3
			3
			3
03	Khulna	3	3
			3
			3
04	Mymensingh	3	3
			3
			3
05	Rajshahi	3	3
			3
			3
06	Sylhet	3	3
			3
			3
Total	06	21	63

5.2 Selection of Teachers

We selected 03 (three) teachers from each school in this regard. Thus 63 (sixty three) teachers were listed from 21 (twenty one) schools. Among them there were 15 (fifteen) female teachers.

5.3 Selection of Students

15-20 students from each school were randomly selected from grade 6, 7 and 8 for assessing achievements and outcomes of Multimedia class. While selecting student's gender equity was maintained and attention was given to those students who were inattentive in general classes.

5.4 The research instruments

02 (two) research questionnaires were developed for the study. These are

- Classroom Observation Checklist
- Student Survey

6. DATA COLLECTION AND ANALYSIS

21 Teacher Educators of different Govt. Teachers' Training College of Bangladesh were engaged for conducting lessons' observation, interviews and survey in the respective schools in the respective districts.

Data was collected through observation of lessons and semi-structured interviews with student surveys. A total of 311 lessons were observed (Table 2) and semi-structured interviews were recorded with 53 of the 63 participating teachers. A total of 414 students completed the student survey at the end of the project (Table 2).

Table 2: *Sampling of Data Collection*

Districts	Observations	Students Surveyed	Teachers Interviewed
Camilla	30	54	9
Dhaka	37	83	12
Khulna	63	140	9
Mymensingh	54	45	9
Rajshahi	61	56	9
Sleet	66	36	5
TOTAL	311	414	53

Few of the students had previous exposure to computers with 35% of those surveyed claiming to have used a computer outside school and 17% stating that they had accessed the Internet.

As can be seen in Figures 1 – 3 below, the technical ability of observed school teachers showed a clear improvement with greater use of animations and video content over time and more extensive use of Bangla labels in images and Bangla audio in video content.

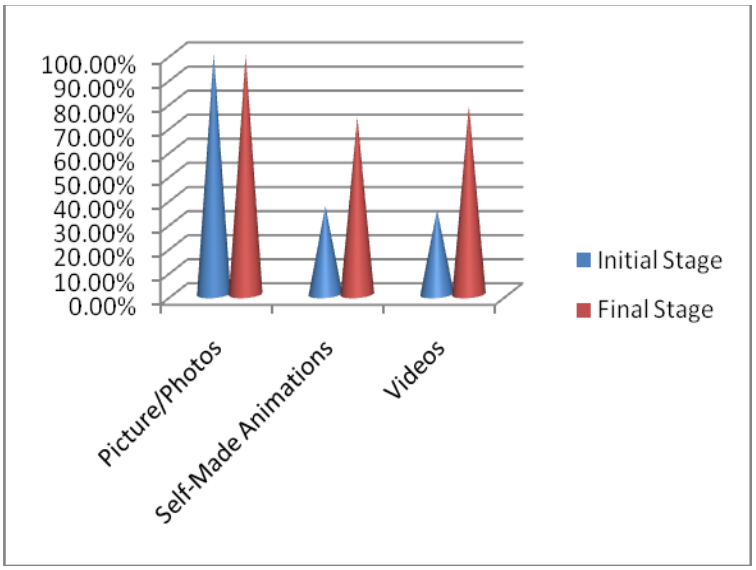

Figure 1: *PowerPoint components (Picture/Photos, self-made animation and videos) used in observed lessons*

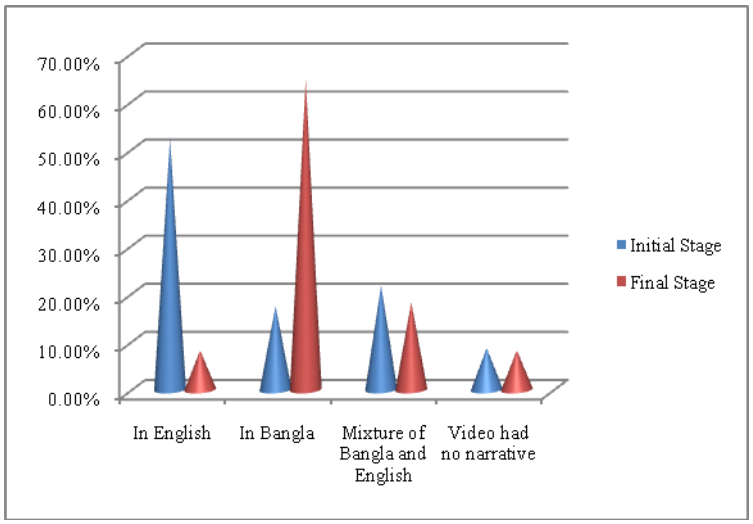

Figure 2: Language of videos content used in observed lessons

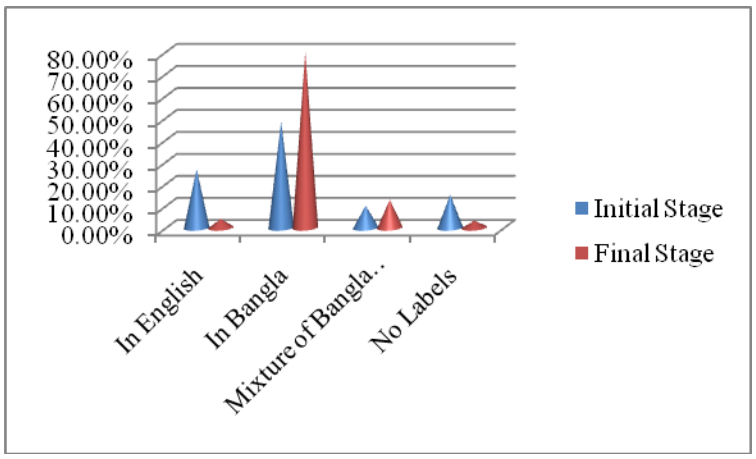

Figure3: *Label of Images that used in Multimedia presentation.*

Question were *Where did the teacher get the images from? And Where did the teacher get the video from?* From that questions, we can conclude that at initial stage teachers were dependant with TTCs for images (38.33%) and videos (21.74%) which were used in multimedia classes but gradually they were able to collect a huge number of images (from Others site- 47.2%, NING- 12%) and videos (from Youtube- 54.55%, NING- 14.55%)) from other site.

Teachers were to make their lessons more student-centered and interactive, the pedagogy observed in lessons improved dramatically over the course of time. While there was a tendency for teachers to use multimedia tools to entertain their students, they quickly became adept at using images and videos to explain concepts and provoke discussion instead. As we can see from figures 4-5 that videos and images were used in classes as an energizer. We can also see that to explain a concept and to stimulate a discussion gradually increased in observed multimedia classes.

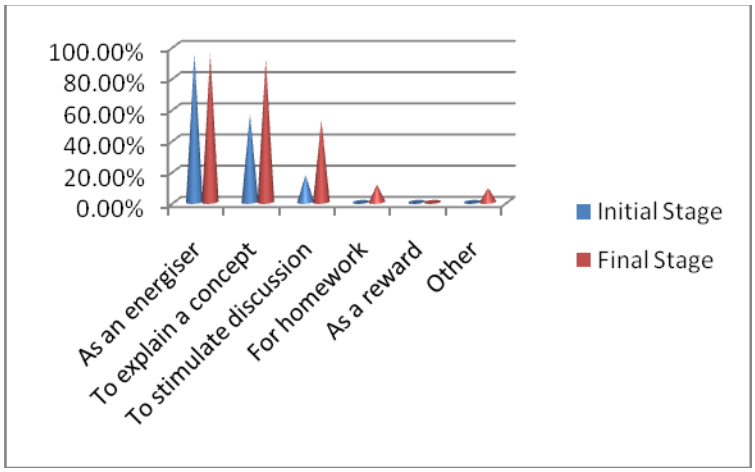

Figure 4 *: Purpose video used in Multimedia Classes.*

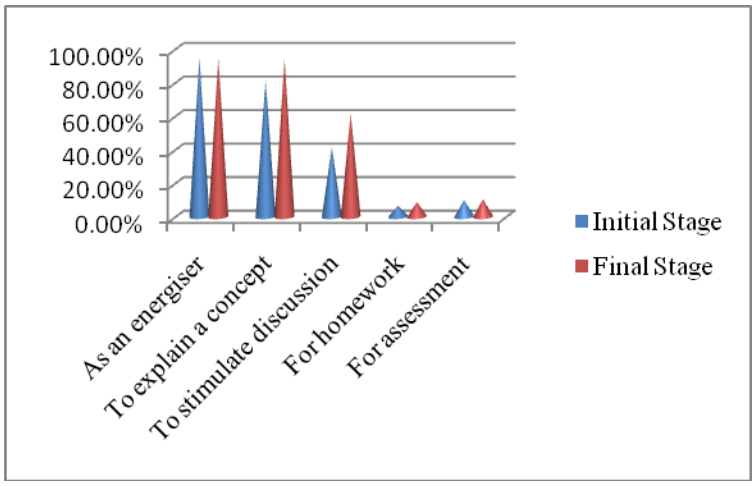

Figure 5 *: Purpose of Images used in Multimedia Classes.*

From figure 6 we can see that in multimedia class's teachers directed activities lessen and students-cantered activities is increased. For that from figure 7 we can see that student's interest in the observed lesson was noticeable and remarkable. From figure 8 we see that at beginning teachers used closed questions for assessments of students understanding but finally they were likely to seek feedback from students and used both closed and open questions in the multimedia classes.

Majority students claimed that it is easier to understand what is being taught when they can see images rather than just words written on a blackboard or spoken by the teacher. In Figure 9, we see that 99.74 % students like multimedia lessons because they can understand things easier when they see the pictures in multimedia classes and in figure 10, 97.4 % of students are more interested to see videos and photos in multimedia classes than a normal class because using pictures and videos, the teachers could relate the theory to the real world of their students' own experience as well as introducing them, in concrete rather than abstract terms, to the world beyond their everyday experience.

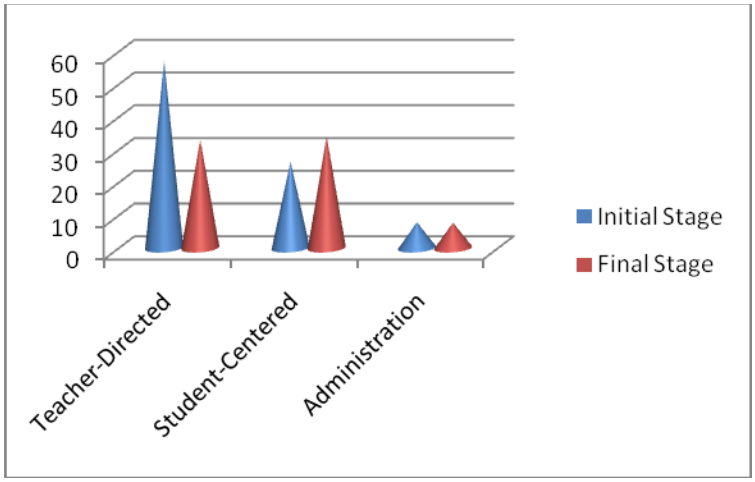

Figure 6 *: An estimation of how the lesson time was used (Types of activities engaged in during observed lessons)*

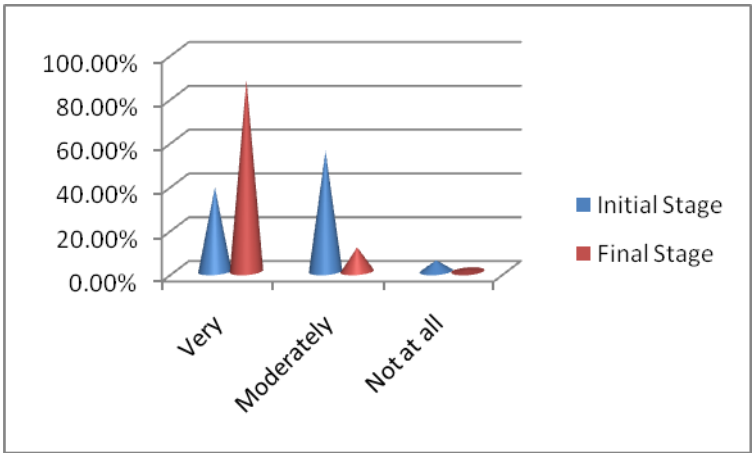

Figure 7 *: Students interest the in the observed lesson.*

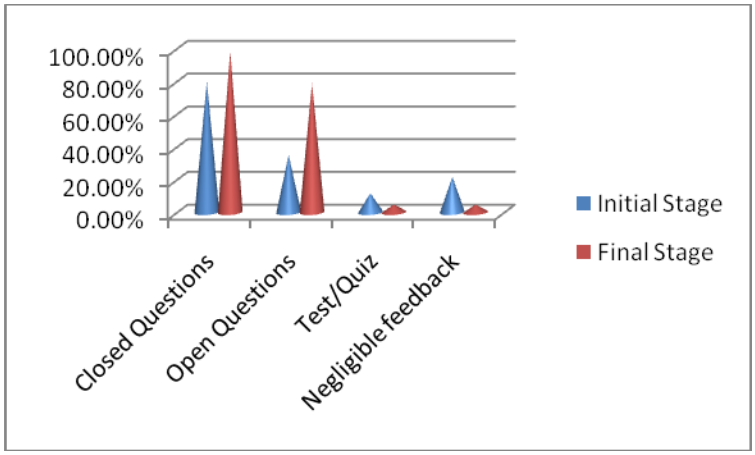

Figure 8 *: Teacher's assessment of student understanding.*

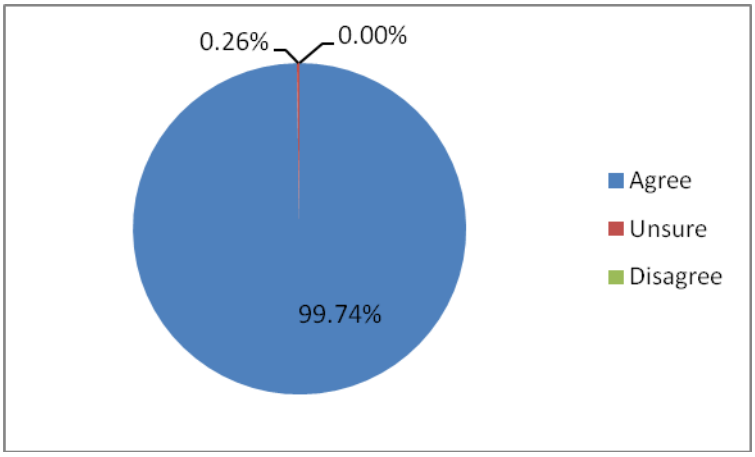

Figure 9 *: Likeliness of multimedia lessons of students when they see the pictures in the multimedia classes.*

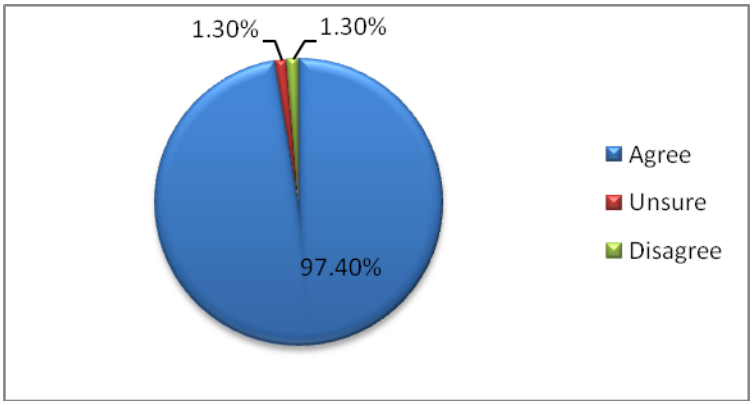

Figure 10 *: Likeliness of multimedia lessons of students because of more interesting videos and photos than to have a normal lesson.*

In figures 11, we see 92.19 % of students were disagree with the statement "*the teacher goes through the content too fast"* in multimedia classes and in response of another questions 84.64 % and 90.89 % of students were disagree with the statements "*multimedia lessons are a waste of time and we should stick to the textbook*" and "*It is very difficult to see the screen in multimedia lessons*" respectively in multimedia classes.

Not only were multimedia lessons easier to understand, the learning was also more permanent. In figure 12, we see that 96.35 % students claimed that they remembered the content of multimedia lessons better than that of normal lessons. For that in figure 13, 92.19 % of students agreed with "*we should have multimedia lessons for all subjects*."

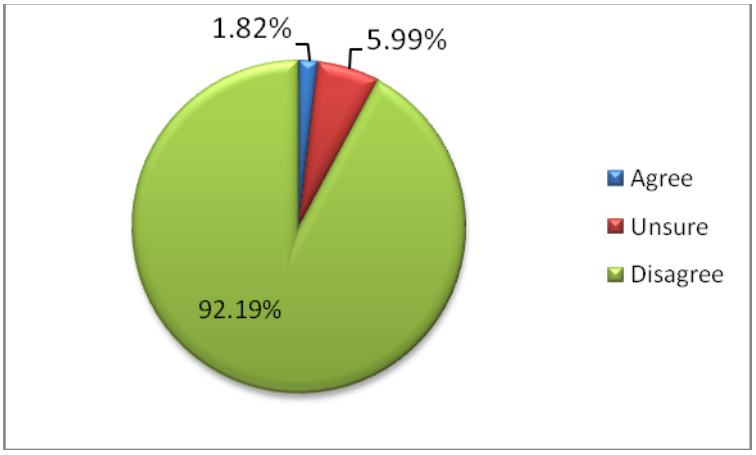

Figure 11 *: Dislike of multimedia lessons of students because the teacher goes through the content too fast.*

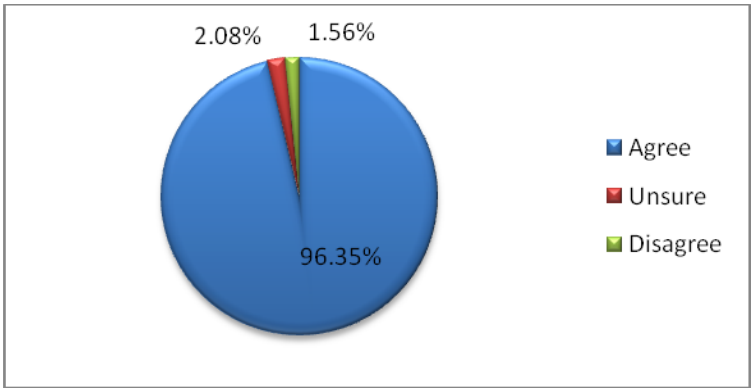

Figure 12 *: Students memory in the multimedia lessons better than memory in the normal lessons.*

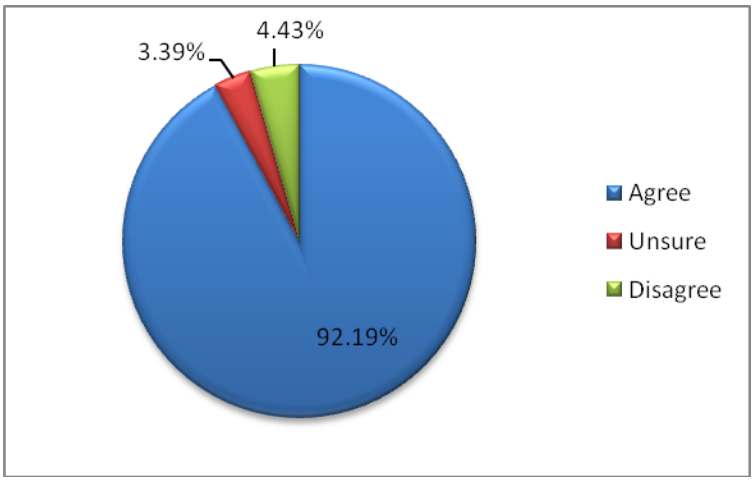

Figure 13 *: Should have multimedia lessons for all subjects.*

Of course, the multimedia lessons were not perfect. As anticipated, pedagogy was an issue with 26% of students agreeing that: "*The teacher talks to us more in normal lessons than in multimedia lessons"* and 33% agreeing that: "*We do more activities like group work in normal lessons than in multimedia lessons" .* Although lessons gradually became more student-centered and participatory over the course of time (Figure 6), group work continued to be infrequently used right through until the end. In part this was due to the limitations of the room size and in part to limitations of time. Although 22.66% of students agreed with the statement: "*Group work in multimedia lessons is a waste of time because we could answer the questions just as easily by ourselves",* this is probably not something unique to multimedia lessons. Finally, teachers gradually started to ask more open questions (Figure 8) of their students and fewer closed questions.

Students complained about time wasted in setting up the equipment for each and every lesson. This is a major problem with normal class times in most schools ranging from 30-40 minutes. 9% of students also endorsed the statement : "*The teacher wastes a lot of time in multimedia lessons setting up the equipment".* To solve this schools have to agree to allocate one room specially for multimedia lessons which could be fitted with curtains for light control and security bars to protect the equipment. It is very exciting and interesting that about 92 % of students were agree to have multimedia classes for all subjects (figure 13).

7. FINDINGS OF THE RESEARCH

- Teachers are empowered to produce powerful and relevant PowerPoint presentations for classes.
- Students are motivated to learn in Mathematics, Social Science, Islamic Religion and Science classes.
- Student creativity and analytical capacity are enhanced.
- Adoptions of participatory and student-centered method are enhanced in Mathematics, Social Science, Islamic Religion and Science classrooms.
- Teachers' readiness to adopt ICTs as teaching-learning tools is developed.
- Students are now able to expose to the Internet and the use of ICT as a learning aid.

8. RECOMMENDATIONS

Based on the findings there are some recommendations are stated below for future:

- It is highly recommended from the findings to the secondary teachers of Bangladesh to make digital content easier as some students cannot access to it easily.
- It is also recommended that secondary teachers are needed to more focus on participatory method while using the digital content as a learning tool in the class.
- Besides this as LDC make the students satisfied about their course contents so that the Ministry of Education can provide the 'CPD digital content' training program for the secondary school teachers of Bangladesh.

- It is necessary to provide uninterrupted internet connectivity as much as possible to the secondary school of Bangladesh.

- For keeping continuous power supply where electricity is not available, facility of solar electricity should be provided by the government at low cost.

- To implement the LDC in secondary schools, the physical facilities like laptop, desktop computer, audio-video equipments, instant power supply, multimedia projectors, and screen should be increased.

- More emphasis should be given on recurring training to enhance the skills of teachers on ICT.

- The availability of Teachers' guide (TG) both manual and online version for each school should be ensured by the National Curriculum and Textbook Board (NCTB) of Bangladesh.

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