

Challenges of using multimedia tools in teaching and learning process: a Bangladeshi college's example

Desafíos del uso de herramientas multimedia en el proceso de enseñanza y aprendizaje: el ejemplo de una universidad de Bangladesh

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ABSTRACT

The growing acceptance of multimedia-based education among students and its effectiveness are the reasons behind its popularity. Multimedia instruction in the classroom presents several challenges in addition to opportunities. Thus, the study aims to highlight the difficulties of using multimedia resources in the classroom and explore potential solutions. To evaluate the efficacy of multimedia technologies in the current teaching-learning process, the first focus of this study was on how to get data from the teachers and students of Patuakhali Government College (PGC). Second, a questionnaire was used to guide the conduct of six case studies and two focus group discussions (FGDs). In this study, the qualitative research method was employed. It is significant to note that, according to the opinions and data gathered for this study, most educators and students concur that teachers have no interest in implementing multimedia resources in the classroom. Factors such as slow internet connectivity, lack of adequate teacher training, inadequate digital classrooms and inconsistency in teacher-student ratio were identified in the study's findings. The results of case studies and focus group discussions (FGD) helped to identify the difficulties associated with employing multimedia tools in the classroom. Addressing all these challenges can effectively ensure an up-to-date education system in tune with the global educational landscape.

Keywords. Multimedia instruments, Information and Communication Technology (ICT), Skill development, Digital content, Teacher's reluctance

RESUMEN

La creciente aceptación de la educación basada en multimedia entre los estudiantes y su efectividad son las razones detrás de su popularidad. La instrucción multimedia en el aula presenta varias dificultades además de oportunidades. Por lo tanto, el estudio tiene como objetivo resaltar las dificultades de usar recursos multimedia en el aula y explorar soluciones potenciales. Para evaluar la eficacia de las tecnologías multimedia en el proceso actual de enseñanza-aprendizaje, el primer enfoque de este estudio se centró en cómo obtener datos de los profesores y estudiantes del Patuakhali Government College (PGC). En segundo lugar, se utilizó un cuestionario para guiar la realización de seis estudios de caso y dos discusiones en grupos focales (FGD). En este estudio, se empleó el método de investigación cualitativa. Es significativo señalar que, según las opiniones y datos recopilados para este estudio, la mayoría de los educadores y estudiantes coinciden en que los profesores no tienen interés en implementar recursos multimedia en el aula. Se identificaron factores como la conectividad lenta a Internet, la falta de capacitación adecuada para los docentes, las aulas digitales insuficientes y la inconsistencia en la relación profesor-alumno en los hallazgos del estudio. Los resultados de los estudios de caso y las discusiones en grupos focales (DGF) ayudaron a identificar las dificultades asociadas con el uso de herramientas multimedia en el aula. Abordar todos estos desafíos puede garantizar eficazmente un sistema educativo actualizado acorde con el panorama educativo global.

Palabras clave. *Instrumentos multimedia, Tecnologías de la Información y la Comunicación (TIC), Desarrollo de habilidades, Contenidos digitales, Desgana del profesorado*

INTRODUCTION

In Bangladesh, curriculum, assessment techniques, and teaching-learning strategies are all evolving in tandem with the global shifts in the educational landscape. A new concept in this shift in pedagogical methods is multimedia-based classes, considered participatory and student-centered teaching-learning approaches. The methodical, sequential, and planned course of action taken by both the teacher and the learner to accomplish teaching and learning goals has been referred to as the teaching-learning process. The Bangladesh government aims to achieve the index of the developed countries by 2041. That is why building digital Bangladesh and ensuring sustainable socio-economic development is very important to develop a skilled workforce, special emphasis has also been placed on Bangladesh's national education policy with regard to the acquisition of information and communication technology knowledge and skills and their application in classroom activities. A combination of multimedia projectors, laptops, internet modems and speakers has been arranged in the classroom, along with various materials currently used by the government for educational establishment. This class is called 'Multimedia Classroom'. The application of multimedia in the classroom has been made more acceptable by the use of ICT, which creates various teaching-learning materials such as CD/DVD, animation, and audio/video (Parvin, 2013). As ICT creates new possibilities in education, it faces new challenges. Such as, the demand for a qualified teacher against the number of students is currently the biggest challenge in ICT education. In the educational institutions, especially in rural areas, the labyrinth of computer labs is one of the barriers to ICT education. Many institutions are unable to use multimedia classrooms due to a lack of electricity and necessary classrooms. In addition, many of the teachers have been very reluctant to use this classroom. And many who have been trained have forgotten everything because they do not use it regularly. After the

equipment is damaged, they are left with no funds to repair. Most educational institutions do not have a specified multimedia classroom routine. Despite the government of Bangladesh emphasizing the application of ICT in the field of education, there are still some limitations in its effective use and promotion (Khan, Hasan, & Clement, 2012). My current workplace/college has a multimedia classroom. Nevertheless, because of the large number of students, I cannot always use multimedia as I wish. In my college, the slow pace of internet connection is also one of the barriers to using multimedia. It also takes time to conduct classes using various multimedia instruments. As a result, it is not possible to complete the syllabus at the right time.

Statement of the problem

The use of information technology in education is essential to ensure the quality of education. Bangladesh has also integrated information technology into the education sector in line with the developed countries during the globalization period. ICT is considered as a workplace innovation and teachers use ICT in the classroom to promote this innovation (Player-Koro, 2012). Like other teaching materials in-class activities, technology has also been used as an educational tool, which is helping the needs of teachers and students. As ICT creates new possibilities in education, it faces new challenges. Since the price of ICT content is not yet in the public capacity, not everyone in the country can purchase ICT products, so not everyone can use ICT equally. Again, for various reasons, multimedia tools are often worn out due to the high cost of repair. In addition, many teachers are inefficient in using multimedia tools. Teachers should focus more on how to help students develop skills using existing technologies than how well technology is integrated into the curriculum (Lambert & Cuper, 2008). In the current global context, there is no alternative to incorporating ICT in the field of education. Educators must acquire new roles and skills to integrate digital technologies into their classrooms (Bigne et al, 2019).

Research Questions

The following questions will be explored in this study:

1. What are the major constraints of using multimedia instruments in the classroom?
2. What is the extent to which students use multimedia tools in learning at PGC?
3. What is the role of multimedia tools to make the teaching process interesting in the case study college?

Research objectives

The following are the study's objectives:

1. To point out the challenges that exists in using multimedia tools in the classroom.
2. To investigate how multimedia tools promote students' technological skills and creativity in the teaching-learning process.
3. To explore potential remedies for the issues regarding multimedia classes.

Significance of Research

In order to facilitate students' learning activities in a simplified way by combining ICT with the traditional method of teaching, the teacher must be proficient in conducting multimedia classes. The use of computer-based technologies such as visual presentations, simulations, access to course materials and the use of worldwide resources in college education play a role in creating a student-friendly environment in the classroom (Debevec, Shih, & Kashyap, 2006). Also students

can be easily evaluated using ICT, so the time and money spent on conducting the exam and producing the results is very low. This study highlights the barriers to using multimedia tools. As a result, it will empower teachers, students and people of all levels of the country to use multimedia tools. Multimedia tools in the classroom can capture students' attention and make it easier to understand a particular topic (Fayanto et al., 2019). Hopefully, this research paper will be useful for teachers, students, educators and policy makers who are involved with the introduction of ICT in education in Bangladesh.

This research work was conducted in one of the largest government colleges in Bangladesh. The reason for choosing this college is because of the limited budget and limited time period, there are a total of 108 teachers working in 21 departments in this college and they are serving about 15000 students. This can be exploited for longer sample-based research.

LITERATURE REVIEW

Digital technologies are spreading rapidly in developing countries like Bangladesh (Heeks, 2010). Using multimedia in educational environments facilitates effective classroom management for teachers in both developed and developing countries. The government of Bangladesh has already started activities to ensure the successful implementation of ICT in educational institutions and to ensure the supply of necessary materials to ensure 100% digital content-based education. According to Karim (2010), the main objective of this program is to ensure optimal use of technology in building world-class skills in all areas of education, especially English, Science and Mathematics, through effective use of new digital devices and multimedia content. In Bangladesh, 7.5 million students, 2 million teachers, and 24382 secondary to higher level educational institutions are taking advantage of various multimedia-based education projects (Rahman, 2018). Multimedia technology has been identified as a necessary tool for the development of students in Bangladesh's national education policy 2010. Sarkar (2018) figured out that several reasons impede the establishment of a multimedia-based education system in Bangladesh, despite the government's best efforts. First of all, inadequate multimedia equipment, infidelity, insufficiency of technical support, etc. are examples of first-order barriers. Second-tier hurdles encompass several factors, such as the school's organizational culture, teachers' enthusiasm for using multimedia equipment, and their confidence level in technology. Thirdly, one of the challenges facing the creation of a multimedia-based education system is the dearth of instructors with the necessary skills to produce digital content and the lack of sincerity in raising the proportion of qualified teachers in the institute's internal administration. Khan, Hasan, and Clement (2012) state that one of the reasons teachers do not employ technology in classroom management is a lack of funding to purchase the tools (hardware and software) required for digital classrooms. Students are accustomed to learning through technology in the twenty-first century. However, due to internal and external barriers, most government college teachers in Bangladesh have not yet participated in the broad implementation of multimedia-based courses, which are essential for high-quality education. Moreover, little research has been done on multimedia-based education's challenges in Bangladeshi government colleges.

Teachers' attitudes and beliefs regarding Multimedia Tools

Niederhauser et al (1999) have noted that teaching in a participatory manner using multimedia tools is essential to conceptual change. Multimedia classrooms are also depicted by Niederhauser et al. (1999) as student-centered learning environments where students are urged to consider their own abilities to think critically and solve problems. While digital classrooms and content are new in Bangladesh, it has already been introduced in developed countries. The key to

teaching in this manner is to teach students in a participatory manner in the classroom, where the teacher only plays the facilitator role. But in Bangladesh, in reality, classroom observation shows that the teachers are more inclined to conduct classroom teaching using traditional teaching methods, pushing students to memorization (Shohel & Power, 2010). Rahman (2018) found that while the use of technology in the classroom has improved the distance between teachers and students, the cost consequences of multimedia technologies discourage educators from adopting them. He also emphasized how time-consuming it is to create multimedia course content. In PGC, it has been found that teachers who are technologically less efficient but have a positive attitude towards ICT can learn the skills needed to apply ICT with little effort. More research on this topic is needed for the Bangladeshi context to remove these obstacles to the use of multimedia tools in the classroom.

Lack of ICT based infrastructure

In comparison to traditional teaching methods, multimedia teaching improves students' comprehension and knowledge of the subject and elevates the quality of the lesson, as demonstrated by Dai & Fan (2012). ICT infrastructure development is heavily reliant on a continuous power supply (Khan, Hasan, & Clement, 2012); however, in Bangladesh, it is almost impossible to guarantee a continuous power supply in every educational institution (Shohel & Power, 2010). High-speed Internet connection is another prerequisite for using multimedia tools in teaching and learning. Press (1999) claims that similar to many developing nations, Bangladesh suffers from issues related to Internet connectivity, such as inadequate networking equipment, a dearth of skilled human resources, and poor telecommunications infrastructure. Other ICT implementing tools like computers, printers, multimedia projectors, scanners, etc. are also not available in all educational institutions. The inadequacy of these ICT-based infrastructures is one of the challenges of using multimedia tools in the classrooms of almost all educational institutions in Bangladesh like Patuakhali Government College.

Teachers' lack of ICT based knowledge

The success of the teaching-learning process depends largely on the skills and knowledge of the teachers (Pelgrum, 2001). Berner (2003) claims that the inadequacy of ICT training is largely responsible for teachers' lack of ICT-based knowledge. Inefficiency of Internet use, and lack of teachers' ability to use multimedia tools and software limits the use of ICT in the teaching and learning process. An in-house training program has been initiated to make the teachers skilled in using multimedia tools in PGC. However, this training program needs to be introduced on a wider scale to make teachers proficient in using multimedia tools according to the needs of students.

Lack of Proper Environment in a Multimedia Classroom

Students prefer ICT-based learning because they find multimedia tools more acceptable than traditional textbook materials (Hoque & Alam, 2010). Teachers that use a range of technologies in their classroom designs consider the active participation of all students—both strong and weak—and create engaging learning environments, as stated by Nawzad, Rahim, and Said (2018). Teachers in Bangladesh are reluctant to use multimedia tools in the classroom for a variety of reasons, including technical issues, a lack of authority regarding the empirical issue of multimedia classes, problematic multimedia tools, difficulties with operating systems and hardware configurations (Deutscher, 2009). In addition, the number of students in my college classrooms is excessive, which hinders proper classroom management.

METHODOLOGY

Research Design

The research methodology mainly indicates the achievement of the research objectives through the process of data collection and data analysis. Proper understanding is needed to select which design or combination of designs is appropriate for a particular study (Groenewald, 2004). The primary goal of this study is to examine the difficulties associated with integrating multimedia into the teaching and learning process. In order to overcome these difficulties associated with multimedia classes, Vygotsky's scaffolding theory has been applied to encourage students' technical proficiency and creativity in the teaching-learning process through the use of multimedia tools. Scaffolding is meant to help students learn and solve problems. Such as signaling, asking questions, dividing the problem into smaller parts etc. Scaffolding in education refers to a variety of learning strategies, which are primarily conducted with the help of teachers. This in turn increases the students' ability to grasp a certain level and level of understanding. This study is empirically conducted with prior research because it stresses the use of multimedia tools in the classroom to improve teachers' and students' conceptual understanding of multimedia applications, conduct lessons in a participatory teaching-learning approach, and scaffold or enhance the overall learning process. Therefore, this study has followed the qualitative research method based on the nature of the topic.

Research methods

The data were collected in this study through Case studies and Focus Group Discussions (FGDs). Case study is an in-depth study of an individual, an organization, a group or a unit, which is conducted for the purpose of generalizing different units. The goal of a focus group, on the other hand, is to get information from a group of people who have been purposefully chosen from a statistically representative sample of the general population (Nyumba et al., 2018).

The study was conducted at Patuakhali Government College (PGC), where there are a total of 76 teachers and 18000 students in 19 departments (Table 1). Classes conducted by teachers were observed in both lecture and multimedia methods. Here are three case studies with teachers and three with students from different departments. Also, two Focus Group Discussions (FGDs) were completed, one with seven teachers and the other with eight students. Four questionnaire guides were used for the case studies and the Focus Group Discussions (FGDs).

Table 1: College Information

| | |
|-----------------------|---|
| Whereabouts | Patuakhali Government College (PGC), Patuakhali |
| Number of Teachers | 76 |
| Number of Students | 18000 |
| Number of Departments | 19 |
| Levels taught | Higher Secondary, Bachelor, Masters |

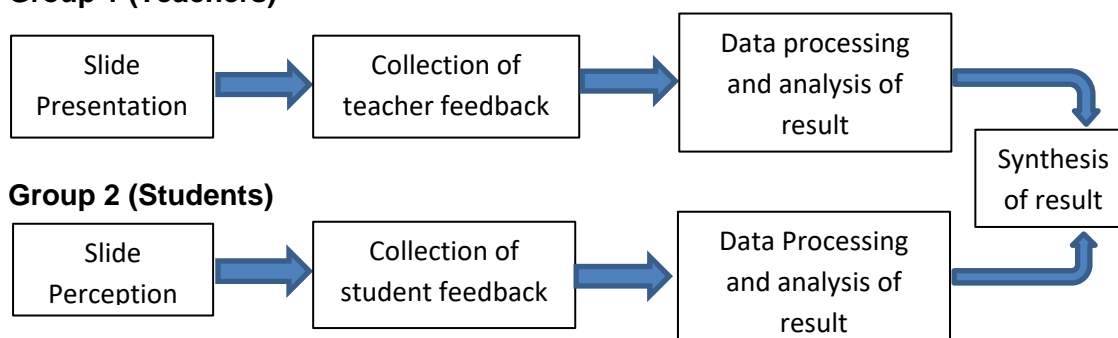
Table 2: Total Number of Respondents

| Gender | Teachers | Students | Total |
|--------|----------|----------|-------|
| Male | 5 | 6 | 11 |
| Female | 5 | 5 | 10 |
| Total | 10 | 11 | 21 |

The design of my research is as follows:

Figure 1: Field Procedures of the Current Study

Group 1 (Teachers)



Sampling Technique

The sum of all observable units is population. My research area is teachers and students from different departments (Science, Arts and Commerce) of Patuakhali Government College (PGC). Since the study method is qualitative, the sample size is kept small. In this study, I used a variety of 'non-probability sampling techniques'. Based on the 'purposive sampling method', I first started doing a case study through an in-depth interview with a teacher and a student based on my ideas and judgment considerations. I then asked them to find out the names of several other potential respondents and later interviewed their selected members based on previous interview experience. This process is known as 'snowball sampling'. To collect reliable information, I have collected information from both men and women. The challenge of using multimedia tools in the classroom appears differently to teachers and students. So when I did a Focus Group Discussion, I gathered the information through separate interviews, splitting the teachers and students into different groups to ensure all the parts received feedback. This type of sampling is called 'Maximum Variation Sampling'.

Data Collection Instruments

Due to the fact that more importance is given to the topic of qualitative research, the need for this study is very high. Qualitative research utilizes multiple instruments.

The instruments used for data collection in this research work are described in table-3 below:

Table 3: Sources and instruments of data collection

| Serial No. | Source of Information | Instrument |
|------------|-----------------------|--|
| 1 | Students | Questionnaire, Audio recording, Face to face interview, Taking notes |
| 2 | Teachers | Questionnaire, Audio recording, Face to face interview, Taking notes |

Validity and Reliability

If the purpose for which the instrument was made is capable of measuring the purpose, then it is called a valid instrument. If a consistent result is obtained by applying an instrument repeatedly, it can be said that the instrument is reliable. I created a few questionnaires for teachers and students to learn about the challenges of using multimedia tools in the classroom. I find consistency in the answers from both groups. In doing so, I confirm the reliability of the research instruments in this research. During the case study, I applied almost the same queries to different students and got consistent feedback from them. This is how I determine the internal consistency of the instruments.

Data Collection

Data for this study was gathered from both primary and secondary sources. The first task to evaluate respondents' feedback was to provide questionnaires to the sample respondents. FGDs and case studies were arranged to collect the opinions of teachers and students on various issues related to the questionnaire. Open-ended and semi-structured questions were used in the case study, and FGDs were organized according to FGD guidelines. Teachers and students were divided into groups based on categories and a total of four questionnaires containing ten questions each were used to conduct case studies and focus group discussions (FGDs). Since the participants in these interviews were teachers and students of a college in Bangladesh, all the interviews were conducted in Bengali to enhance the participants' understanding. I have observed at least six classes, three of which used the traditional method and three used multimedia tools. Of these six classes, I collect teachers' responses in three classes and the students' responses to the remaining three classes. It took about an hour to observe each class. The results were subsequently discussed with teachers and students at FGD. With the respondents' permission, the entire interview was videotaped.

Data Analysis

Transcribing the interviews from the videotape was the first step in the data analysis process. In this regard, data collected from case studies and FGDs were analyzed manually to arrive at the conclusions of this study. Data were collected to highlight the barriers to using multimedia tools. At the same time, the utility of using multimedia tools in teaching and learning has been explored. To present qualitative information, information from teachers and students has been integrated with existing data.

FINDINGS AND DISCUSSION

Case studies, Focus Group Discussions (FGDs), and classroom observations were used to gather data for this research. The following includes three case studies completed by teachers,

three case studies completed by students, and one focus group discussion completed independently by each group.

Case study One [Teacher-1 (T-1)]

Gender: Male

Age: 40

Faculty/ Department: History

Teaching Experience: 9 years

T-1 is a teacher in the Faculty of Arts (History) of PGC with 9 years of teaching experience. He alleged that long-term use of multimedia tools is sometimes ruined. However, there is not enough money from the government to repair the damaged equipment. As a result, once a tool is damaged, it is left unattended for a long time. In this regard, he mentioned the issue of insufficient allocation of the college's ICT fund as a challenge.

Slow internet connections, inadequacy of training on the use of multimedia in the classroom, and a lack of multimedia-equipped classrooms are the major obstacles to conducting his classes using multimedia equipment. He thinks the slow internet connection is a big barrier to create digital content because downloading any information, pictures, audio or video from the internet takes a long time.

He claimed that the attendance of students has increased because of the use of multimedia tools in conducting classes. Teaching using multimedia tools by creating interesting slides on any subject increases students' interest in learning.

He demonstrates that teachers must take the initiative to engage students in more engaging and interactive learning experiences. He emphasized on providing adequate in-house training, making classrooms suitable for use of multimedia equipment, and using high-speed Internet connectivity to overcome challenges related to using multimedia equipment in the classroom.

Case study Two [Teacher-2 (T-2)]

Gender: Female

Age: 42

Faculty/ Department: Physics

Teaching Experience: 10 years

T-2, a teacher in the PGC Faculty of Science (Physics) with ten years of experience, lists the following as obstacles to implementing multimedia in the classroom: a large student body, reluctance to prepare lengthy science slides, inefficiency in using multimedia in practical classes, and sporadic power outages.

The students of our country are very weak in English language, especially the students of PGC. However, most of the information or videos that are downloaded from YouTube are made in English. As a result, students do not easily understand. She added that science students have to attend theoretical studies and practical classes. Conducting practical classes using multimedia tools increases the practical skills of students.

Understanding and applying techniques is given more weight in science education than memorization. He feels that preparing slides as a key point is much more effective than the lecture method.

Case study Three [Teacher-3 (T-3)]

Gender: Male

Age: 45

Faculty/ Department: Accounting

Teaching Experience: 12 years

T-3 is a teacher in the Department of Accounting in the Faculty of Commerce of PGC with a long teaching experience of 12 years. He cited the lack of computers for all teachers and students, no mandated multimedia classes, and fear of using multimedia as challenges.

His idea, whatever the topic, is that using multimedia tools, the enthusiasm for the lessons is increased among the students. However, many teachers in his department are not skilled at slide preparation. As a result, students are not equally attracted to all classes. This does not offset the weakness of the students in some subjects. Besides, many students are inefficient in using computers; many do not have their own computers. As a result, they cannot do any homework using ICT.

Computer courses should be introduced from primary schools. He expressed the opinion that this will remove the fear of ICT in the minds of the students. He also stressed the importance of ICT training for teachers.

Case study Four [Student-1 (S-1)]

Gender: Male

Age: 18

Faculty/ Department: Science

Learning Experience in PGC: 3 years

S-1 has three years of experience as a student in PGC's science department. He demonstrates the challenges of using multimedia tools in the classroom, including inadequate Wi-Fi connectivity, the reluctance of backbenchers to take lessons, and the inefficiency of teachers in using multimedia tools.

He finds it very appealing to use moving pictures and video clips as teaching tools. He believed that the amount of time needed for hands-on learning could have been significantly reduced if it had been shown beforehand on a projector. He also opined that it is easier to assess students formatively if various class tests are conducted using multimedia tools like MCQ tests, Kahut quiz competitions, etc. Using digital content makes the lesson longer and wastes a lot of time on data transfer. So, he emphasizes a high-speed internet connection.

Challenges can be overcome by taking actions like improving teachers' abilities, learning through rhythm, pictures, or graphics, and utilizing multimedia to engage weaker students.

Case study Five [Student-2 (S-2)]

Gender: Male

Age: 22
Faculty/ Department: Management
Learning Experience in PGC: 5 years

Student-2 (S-2) of the Business (Management) Faculty, with five years of experience with multimedia tools, listed the following challenges: teachers' ICT skills; limited use of multimedia in formulating and applying various mathematical formulas; and their mental retardation when it comes to using multimedia.

He describes the conventional lecture format as a rote learning system and views the utilization of multimedia resources as an effective and long-lasting method of learning. The lecture method does not provide enough time for teachers to ask questions in the classroom, but using multimedia can solve more problems in less time. Almost all the departments of the college have Wi-Fi connection but password is not given to the students. As a result, he has to use expensive package data provided by various mobile operators, he complains. The utilization of multimedia tools, in his opinion, has significantly enhanced students' test scores.

He highlighted issues such as increasing the use of virtual devices as teaching tools to solve existing problems, increasing teachers' skills in using search engines, and uploading class videos to college websites.

Case study Six [Student-3 (S-3)]

Gender: Female
Age: 20
Faculty/ Department: Economics
Learning Experience in PGC: 4 years

After four years of study at PGC's Faculty of Humanities (Economics), Student-3 (S-3) demonstrates that there are challenges related to inadequate teacher training, a lack of multimedia settings in classrooms, and a teacher's reluctance to use multimedia projectors.

Her view on teaching using digital content is that the use of multimedia tools, any challenging subject can be better understood in a short period. Marker pens, duster etc. are not required when teaching using power point slides. This ensures the use of educational tools. Since audio, video, and images can be used simultaneously in the text, she can understand many things easily and solve various mathematical and realistic problems more easily than before. However, S-3 feels that students are deprived of multimedia's various benefits as teachers are not proficient in using different software to solve mathematical problems.

To solve the existing problems of using multimedia tools, he emphasizes issues such as ensuring a multimedia-friendly classroom environment, including training teachers, and increasing teachers' interest in using multimedia in the classroom.

Focus Group Discussion (FGD)

A focus group discussion is a qualitative research method that facilitates systematic and concurrent interviews with multiple respondents (Boateng, 2012). Krueger and Casey (2014) primarily attributed the popularity and widespread use of FGD to its advantages in terms of ease

of use, financial benefits, and quick results. Here, focus groups (FGDs) were held in order to accomplish the research's goals and close any gaps left by the case studies.

Teachers FGD

Seven teachers from various departments attended the teachers' focus group discussion. They felt that conducting multimedia classes was difficult due to a lack of goodwill among teachers, well-equipped digital classrooms, the teacher-student ratio, and a large number of students in a classroom.

Participating teachers demonstrated the improvement in students' test results as a result of increasing students' interest in multimedia classrooms. Teachers demonstrated that conducting classes using multimedia tools increases student engagement in lessons as well as increases student brain stimulation. This makes them keen to stay updated on the lesson topics.

Some teachers complain that teachers are not interested in making slides regularly as the use of multimedia equipment is not mandatory in most institutions. On the other hand, some teachers commented that it takes a long time to download information due to the slow internet in the college. As a result, many teachers are not interested in creating slides. Many students misuse the internet while teaching using multimedia tools. Hence, some teachers complain that backbenchers remain unresponsive in class.

Also, the participating teachers felt that a lack of adequate training, inadequate monitoring, lack of work coordination, and a lack of citizen charter in all institutions were also hindering the use of multimedia tools.

Students FGD

A total of 8 students from science, humanities, and commerce disciplines participated in the student focus group discussion. They blame the inadequacy of multimedia equipment, ignorance of using multimedia projectors, a lack of time, and the reluctance of teachers to create digital content.

Mentioning the traditional teaching process as incompatible with the modern education system worldwide, the participating students commented that the use of multimedia tools could provide ideas through 3D images or real life. Using virtual intelligence will make the learning process more productive. Some students talked about categorizing merit so that poor students would not hesitate to take classes with talented students.

Many students complain that almost all departments of the college have Wi-Fi connection but password is not given to the students. As the use of mobile phones is prohibited in the college, they are deprived of collecting lessons through various apps like e-book reader, Kahoot, and Poll EV.

Misuse of Wi-Fi by some students and access to unnecessary sites, not displaying digital content in practical classes, and slow internet connections were also perceived as challenges in using digital tools by participants.

Teachers' views on barriers to use of multimedia equipment in the classroom

In the question of evaluating the challenge of using multimedia equipment in the classroom, teachers made positive comments in some cases and negative comments in some cases. Most teachers attribute the inefficiency of teachers to poor use of multimedia projectors. However, many teachers see the lack of adequate training as an obstacle to using multimedia equipment. Many teachers lack the knowledge and skills of using computers, and they are not enthusiastic about the introduction of computer-based learning methods rather than the traditional education system. Many teachers have been accused of insufficient funds to purchase more sophisticated multimedia equipment.

Observe teachers' views on the role of multimedia tools in diversifying the learning process

It was asked about the role of multimedia tools in making the learning process interesting. 3D pictures, audio recordings and videos are displayed in the field of using multimedia tools. As a result, the students' attention is enhanced in the lessons. Due to the lack of regular use of multimedia equipment in the practical classes, the students feel that the fear of the practical classes is aroused. There is a tendency among teachers to not update slides. Many students feel that this is one of the obstacles to implementing a digital classroom. Not all students have their own computers or laptops. Teachers also seem to think that this is a barrier to teaching using multimedia tools.

Analysis of student opinions about the constraints on using multimedia tools in the classroom

Mixed responses have been observed among students using multimedia equipment in the classroom. Most students feel that learning to look at images, videos, moving pictures etc., rather than memorization, helps them to learn sustainably. Class time is much shorter. So, when a problem arises in class time, it takes a long time to get it working again. Due to lack of competence and time needed to conduct the activities as planned, many teachers are reluctant to use multimedia in the classroom. As a result, students think that a lot of time is wasted. Not all classrooms in college have multimedia projectors. So, it is impossible to take all classes in a digital classroom if there are multiple classes simultaneously. Therefore, most students find this to be a barrier to using digital classrooms.

Overall discussion:

This research reveals that teaching using multimedia tools is more diverse than the lecture or traditional methods. Although there are many challenges for teachers at Patuakhali Government College (PGC) when utilizing multimedia tools in the classroom, it is evident that this approach can instruct students more successfully than conventional methods. Similarly, Mou (2016) observes that the increased use of ICT in higher education has led to significant changes in the teaching and learning process. The researcher holds the view that these changes are not solely caused by technology, teachers play a major role in the integration of ICT in pedagogy. The ability of teachers to teach effectively creates positive feedback in students' minds. Analyzing the results of this study shows that conducting classes using multimedia enables students to actively participate in lessons and ensures sustainable learning, which is in line with the results of Ozdemir and Ozan's study. Ozdemir et al. (2013) concluded in their research that the use of visual education, including animation, slides, videos, and sound, can assist students in learning through exploration as teaching aids, that are effective in ensuring sustainable development.

Despite the positive effects of using multimedia tools in the classroom, several challenges have been identified. Although these challenges are very common, their impact on teaching and learning is far-reaching. Although these challenges have not yet been resolved, their solutions greatly enhance the variety of the learning process. The main challenges are as follows:

- (i) Inability to use multimedia tools for teachers.
- (ii) Reluctant of teachers to create digital content.
- (iii) Slow internet connectivity and bandwidth.
- (iv) Lack of adequate training for teachers.
- (v) Inadequacy of skilled technicians for repair of wasted equipment.
- (vi) Insufficiency of a digital classroom.
- (vii) Funding crisis for digital classroom maintenance.
- (viii) Incompatible teacher-student ratio.
- (ix) Regular load shedding.

Based on prior research, multimedia equipment is believed to dramatically raise educational standards in the classroom (Hadi et al., 2022). So, reducing the existing barriers is a timely demand.

CONCLUSION AND RECOMMENDATION

Due to inadequacy of multimedia equipment in the classrooms of PGC and various challenges in using this equipment, teachers are not motivated to take classes using multimedia equipment which hinders the sustainable learning of students. Many studies have shown that students look forward to multimedia classes because this method of teaching is perceived to be more effective than traditional teaching methods (Azad, 2024). Due to the inadequacy of digital classrooms and lack of funds for maintaining digital classrooms, other higher education institutions in Bangladesh like PGC feel pressure to modernize their systems and procedures to meet the challenges of the 21st century. However, various case studies and FGDs conducted in PGCs have significantly impacted the professional development of teachers regarding the use of multimedia tools. The purpose of this assignment was to identify current barriers to using multimedia tools in the classroom, investigate potential solutions, and explore the utility of using multimedia tools to foster students' technical proficiency and creativity. Using case studies, FGDs and classroom observations to explore these issues yielded significant results and the objectives of the study have been achieved. These results were able to clearly identify the challenges of using multimedia tools in the classroom and find ways to solve the challenges. The biggest obstacles to adopting multimedia tools in the classroom, according to the study, are unsuitable classrooms, ineffective teachers who are reluctant to use multimedia tools, uneven teacher-student ratios, and a lack of funding for sustaining digital classrooms. Using multimedia equipment in the classroom is an important technique that can be used to ensure students' creative development (Hasan, Ashraf, & Rahman, 2016). Students at PGC are eager to attend classes that involve the use of multimedia tools as they find this system to be more learner-friendly, participatory, and easier to understand than traditional methods. The findings of this study shed light on the challenges and solutions of using multimedia tools in PGC and the impact of the challenges on the teaching-learning process which is a true picture of the use of multimedia tools in higher education in government colleges across Bangladesh. The following recommendations were made by the participants in the case study and FGD to address the existing challenges:

- In-house training can be arranged under an ICT specialist to showcase teachers' use of multimedia equipment.

- Since the cost of multimedia equipment is high, budget for all multimedia tool, including my college, should be allocated on a priority basis.
- If any instrument is damaged, necessary funds should be allocated for immediate repair. Apart from this, funds can be allocated from the college development fund.
- High speed internet connection should be established.
- Teachers should update the slide regularly.
- Own generators can be arranged to avoid power outages.
- E-learning systems and E-book readers can be used.

Limitations of the study

The time limit for completing this assignment was limited. As a result, data was collected from only one college. Since this study was carried out using qualitative methodology, the results of the case study and FGD would have been much richer and more authentic if the number of respondents had been high. However, it is possible to conduct only six case studies and two focus group discussions (FGDs) here. In addition, only two classrooms were observed in this study. With such a small observation, it is difficult to distinguish between the traditional teaching method and the teaching method using multimedia tools.

REFERENCES

- Azad, A. K. (2024). Challenges faced by teachers to use multimedia in classroom and students' perception from it: a case study on a selected college in Bangladesh. *Journal of Management and Business Education*, 7(1), 54-69. <https://doi.org/10.35564/jmbe.2024.0004>
- Berner, E. J. (2003). *A study of factors that may influence faculty in selected schools of education in the Commonwealth of Virginia to adopt computers in the classroom*. George Mason University. ProQuest Dissertations & Theses, 3090718. <https://dl.acm.org/doi/10.5555/959645>
- Bigné, E., Badenes-Rocha, A., Ruiz, C., & Andreu, L. (2019). Development of a blended course for online teaching: process and outcomes. *Journal of Management and Business Education*, 2(2), 108-126. <https://doi.org/10.35564/jmbe.2019.0010>
- Boateng, W. (2012). Evaluating the efficacy of focus group discussion (FGD) in qualitative social research. *International Journal of Business and Social Science*, 3(7), 54-57. Retrieved from <https://s3.wp.wsu.edu/uploads/sites/2154/2015/09/Evaluating-the-Efficacy-of-Focus-Group-Discussion-in-Qualitative-Social-Research.pdf>
- Dai, W., & Fan, L. (2012). Discussion about the pros and cons and recommendations for multimedia teaching in local vocational schools. *Physics Procedia*, 33, 1144-1148. <https://doi.org/10.1016/j.phpro.2012.05.188>
- Debevec, K., Shih, M. Y., & Kashyap, V. (2006). Learning strategies and performance in a technology integrated classroom. *Journal of Research on Technology in Education*, 38(3), 293-307. <https://doi.org/10.1080/15391523.2006.10782461>
- Deutscher, R. (2009). Challenges using multimedia integrated within a science curriculum using a classroom-centered design approach. In *Meeting of the National Association for Research in Science Teaching*, Garden Grove, CA. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download>.
- Farhat, N. (2009). *The Impact of Technology on Teaching and Learning in High Schools in the United Arab Emirates* (Doctoral dissertation, University of Leicester). Available https://figshare.le.ac.uk/articles/thesis/The_Impact_of_Technology_on_Teaching_and_Learning_in_High_Schools_in_the_United_Arab_Emirates_/10088750

-
- Fayanto, S., Misrawati, M., Sulisworo, D., Istiqomah, H. F. N., & Sukariasih, L. (2019). The Implementation of Multimedia on Physics Learning Based on Direct Instruction Model in The Topic of Light. *Indonesian Journal of Learning Education and Counseling*, 1(2), 124-132. <https://doi.org/10.31960/ijolec.v1i2.94>
- Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods*, 3(1), 42-55. <https://doi.org/10.1177/160940690400300104>
- Hadi, W., Yuksafa, R., Yarmi, G., Safitri, D., Lestari, I., Suntari, Y., ... & Iskandar, R. (2022). Enhancement of Students' Learning Outcomes through Interactive Multimedia. *International Journal of Interactive Mobile Technologies*, 16(7), 82-98. <https://doi.org/10.3991/ijim.v16i07.25825>
- Hasan, N., Ashraf, M., & Rahman, A. (2016). Effects of information communication technology (ICT) in the childhood developments and lives of disabilities: A multivariate analysis. *Science Journal of Public Health*, 4(1-1), 28-37. Available <https://www.sciencepublishinggroup.com/article/10.11648/j.siph.s.2016040101.15>
- Heeks, R. (2010). Do information and communication technologies (ICTs) contribute to development?. *Journal of International Development*, 22(5), 625-640. <https://doi.org/10.1002/jid.1716>
- Hoque, S. M., & Alam, S. M. (2010). The role of information and communication technologies (ICTs) in delivering higher education—A case of Bangladesh. *International Education Studies*, 3(2), 1-10. <https://doi.org/10.5539/ies.v3n2p97>
- Karim, M. A. (2010, February). Digital Bangladesh for good governance. In *Bangladesh Development Forum* (pp. 15-16). Available https://erd.portal.gov.bd/sites/default/files/files/erd.portal.gov.bd/page/60daef34_a889_4a94_a902_f3a4a106762b/BDF2010_Session%20VI%20%281%29.pdf
- Khan, M. S. H., Hasan, M., & Clement, C. K. (2012). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. *International Journal of instruction*, 5(2), 61-80. Retrieved from <https://dergipark.org.tr/en/download/article-file/59739>
- Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research*. Thousand Oaks (CA): Sage Publications Ltd
- Lambert, J., & Cuper, P. (2008). Multimedia technologies and familiar spaces: 21st century teaching for 21st century learners. *Contemporary Issues in technology and teacher education*, 8(3), 264-276. Retrieved from <https://www.learntechlib.org/primary/p/25318/>
- Mou, S. (2016). Possibilities and challenges of ICT integration in the Bangladesh education system. *Educational Technology*, 56(2), 50-53. Retrieved from <https://www.jstor.org/stable/44430461>
- Nawzad, L., Rahim, D., & Said, K. (2018). The effectiveness of technology for improving the teaching of natural science subjects. *Indonesian Journal of Curriculum and Educational Technology Studies*, 6(1), 15-21. <https://doi.org/10.15294/ijcets.v6i1.22863>
- Niederhauser, D. S., Salem, D. J., & Fields, M. (1999). Exploring teaching, learning, and instructional reform in an introductory technology course. *Journal of Technology and teacher Education*, 7(2), 153-172. Retrieved from <https://www.learntechlib.org/primary/p/9309/>
- Nyumba, T.O., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9(1), 20-32. <https://doi.org/10.1111/2041-210x.12860>
- Ozdemir, T. Y., Ozan, M. B., & Aydogan, I. (2013). Influences of multimedia lesson contents on effective learning. *Educational Process: International Journal*, 2(1), 47-58. <https://doi.org/10.12973/edupij.2013.212.4>
- Parvin, S. (2013). Integrations of ICT in education sector for the advancement of the developing country: some challenges and recommendations-Bangladesh perspective. *International*
-

-
- Journal of Computer Science & Information Technology*, 5(4), 81-92. <https://doi.org/10.5121/ijcsit.2013.5406>
- Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & Education*, 37(2), 163-178. [https://doi.org/10.1016/s0360-1315\(01\)00045-8](https://doi.org/10.1016/s0360-1315(01)00045-8)
- Player-Koro, C. (2012). Factors influencing teachers' use of ICT in education. *Education Inquiry*, 3(1), 93-108. <https://doi.org/10.3402/edui.v3i1.22015>
- Press, L. (1999), *Against All Odds: The Internet in Bangladesh*, A Report on IT in developing countries. *The Mosaic Group, Fairfax, VA*. Available <http://som.csudh.edu/fac/lpress/devnat/nations/Bangladesh/bdmosaic.htm>
- Rahman, D. J. (2018). *Challenges of implementing CALL in multimedia classrooms of Bangladesh* (Doctoral dissertation, BRAC University). Retrieved from <http://hdl.handle.net/10361/10759>
- Sarkar, L. (2018). *Technology for interactive classrooms: prospects and barriers* (Doctoral dissertation, BRAC University). Retrieved from <http://hdl.handle.net/10361/11253>
- Shohel, M. M. C., & Power, T. (2010). Introducing mobile technology for enhancing teaching and learning in Bangladesh: Teacher perspectives. *Open Learning: The Journal of Open, Distance and e-Learning*, 25(3), 201-215. <https://doi.org/10.1080/02680513.2010.511953>