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Challenges faced by teachers to use multimedia in classroom and students' perception from it: a case study on a selected college in Bangladesh

Desafíos enfrentados por los profesores y percepción de los estudiantes al utilizar multimedia en el aula: un estudio de caso en un colegio seleccionado en Bangladesh

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ABSTRACT

The increasing popularity of multimedia-based classes (MMCs) can be attributed to their efficacy and the favorable reception they have received from students. Bangladeshi educational institutions face challenges to incorporate multimedia-based classes (MMCs) due to several inside and outside barriers relative to teachers, but there is a little literary work on the challenges faced by teachers in Bangladeshi government college context as well as students' perception on multimedia-based classes. Bangladeshi government college teachers like Cumilla Victoria Government College (CVGC) face a number of challenges to incorporate MMCs. Solutions are urgently needed to improve the teaching-learning environment of Bangladeshi Government Colleges. For this purpose 9 teachers and 9 students of CVGC were chosen by following qualitative research approach. Case study and FGD were done into both groups of respondents. Besides those, observation in classroom was done by the researcher. The study discloses that the teachers face a number of challenges to use multimedia in classroom. The major challenges have been found as inappropriate classrooms, lack of efficiency of teachers on multimedia content development, lack of proper steps from authorities and large number of students in classrooms. Both teachers and students acknowledge that utilizing multimedia in teaching-learning is the most effective approach to foster long-lasting connection within classroom settings. Additionally, it has been observed that MMCs have the potential to exhibit enhanced performance. The solutions to the challenges should be viewed from all levels like personal to administrative levels for ensuring the quality education of competitive world.

Keywords. Multimedia-based class (MMC), Bangladeshi government colleges, challenges of MMCs, teaching-learning environment, students' perception.

RESUMEN

La creciente popularidad de las clases basadas en multimedia (MMCs) puede atribuirse a su eficacia y a la favorable recepción que han recibido por parte de los estudiantes. Las instituciones educativas de Bangladesh enfrentan desafíos para incorporar clases basadas en multimedia (MMCs) debido a varias barreras internas y externas relacionadas con los profesores, pero hay poco trabajo literario sobre los desafíos que enfrentan los profesores en el contexto de los colegios gubernamentales de Bangladesh, así como la percepción de los estudiantes sobre las clases basadas en multimedia. Los profesores de los colegios gubernamentales de Bangladesh, como el Colegio Gubernamental Cumilla Victoria (CVGC), enfrentan una serie de desafíos para incorporar MMCs. Se necesitan soluciones con urgencia para mejorar el entorno de enseñanza-aprendizaje de los colegios gubernamentales de Bangladesh. Con este propósito, se seleccionaron 9 profesores y 9 estudiantes del CVGC siguiendo un enfoque de investigación cualitativa. Se realizaron estudios de caso y grupos focales con ambos grupos de encuestados. Además, el investigador realizó observaciones en el aula. El estudio revela que los profesores enfrentan una serie de desafíos para usar multimedia en el aula. Los principales desafíos encontrados son aulas inadecuadas, falta de eficiencia de los profesores en el desarrollo de contenido multimedia, falta de pasos adecuados por parte de las autoridades y gran cantidad de estudiantes en las aulas. Tanto los profesores como los estudiantes reconocen que utilizar multimedia en la enseñanza-aprendizaje es el enfoque más efectivo para fomentar una conexión duradera dentro del entorno del aula. Además, se ha observado que las MMCs tienen el potencial de exhibir un rendimiento mejorado. Las soluciones a los desafíos deben ser consideradas desde todos los niveles, desde el personal hasta los niveles administrativos, para garantizar la educación de calidad en un mundo competitivo.

Palabras clave. Clase basada en multimedia (MMC), colegios gubernamentales de Bangladesh, desafíos de las MMC, entorno de enseñanza-aprendizaje, percepción de los estudiantes.

INTRODUCTION

Align with the changing world, the teaching-learning methods, educational curriculum and courses, pedagogical approaches, and assessment systems are being modified and changed, and Bangladesh is not exception here. For this reasons, modification in teaching-learning methods are needed. Here, one of the new pedagogical ideas is multimedia based classes (MMCs) which are considered as student-centered teaching-learning activities. Several studies found that students are eager to get multimedia classes (MMCs) because of students' better perception than traditional method and are more effective for students' learning and provide positive feedback in learning process (Gilakjani, 2012). Students have a strong inclination towards participating in multimedia classes (MMCs) due to the perceived advantages over traditional approaches (Xu, 2010). The fundamental issue, nonetheless, remains unchanged. That is, the issue of how to utilize applications in a way that enhances students' understanding of concepts and provides them with a stimulating experience through the delivery of information (Shah & Khan, 2015). In this new pedagogical journey named multimedia based class, the teachers and the students must have the skills of multimedia instruments because multimedia based classes (MMCs) increase the standard of teaching-learning in classroom (Sánchez-García, 2013). Although multimedia classes provide positive and effective results in teaching-learning

process, the gap and challenges relative to multimedia use in classroom have not been yet emphasized in Bangladeshi educational context. Furthermore, this area has not been studied properly by institutional levels. Recognizing the importance of this field of study, this paper was empirically researched at a reputable government college in Bangladesh. This paper include several parts as- definition of basic concepts, situation of multimedia based teaching-learning in Bangladeshi context, review of relevant literature, methodology, findings and overall discussion, and conclusion and recommendations with existing limitations.

Definition of Basic Concepts

Multimedia based classes (MMC) refer to the integration of several forms of media, including text (alphabetic or numeric), symbols, images, photos, audio, video, and animations, typically utilizing technological tools in classroom setting for teaching learning activities. Its primary objective is to augment comprehension and retention (Guan et al., 2018). In order to improve expressiveness and comprehension, it uses visualization of technology to assist spoken instruction through the use of static and dynamic graphics (Alemdag and Cagiltay, 2018). In order for a multimedia application to effectively imitate the teacher in the classroom or for educational purposes, its design quality and sophistication must be sufficient to integrate the various components of cognitive processes. A wide variety of multimedia applications are presently available for purchase. These applications have been implemented for a variety of academic purposes, including education (Shah & Khan, 2015).

Student-centered learning, on the other hand, is an outcome of multimedia based class (MMC). Student-centered learning emphasizes on classroom and student engagement directly in educational process where the teacher acts as a "guide on the side" to help students achieve their aims (Overby, 2011). Student-centered learning is a way of teaching where students decide what they learn, how fast they learn, and what tasks they do. With this way of teaching, the student is at the heart of the process. The teacher gives the students chances to learn on their own and from each other, and also helps them develop the skills they need to do this well (Michael, 2006).

Active learning is associated with multimedia based classes (MMC) and students-centered learning. Active learning is a way of teaching-learning where students are involved with the subject by doing things like role plays, discussions, problem-solving, case studies, and more (Overby, 2011). Students are more responsible for their own learning in active learning methods than in passive methods like traditional classes, but teachers still need to be there to help students. Active learning tasks can last anywhere from a few minutes to the whole class, or they can happen over more than one class period (Fernández-Portillo et al., 2020).

Besides the mentioned concepts, some methods are also associated with teaching-learning activities linked with multimedia based class, active learning and student-centered learning process. Here, Nissley (2010) focuses on arts-based learning which is situated within the broader arts in business context as well as our present reality that suggests a couple leading-edge management education programs that are framed by arts-based learning approaches for leadership development among learners. Although this approach is looking to arts-inspired creativity, it is mostly applicable for richer perspective and that's why Bangladeshi context is not fully fit for this.

Teaching-learning through Multimedia in Bangladeshi Context:

The teachers of both developing and developed countries face challenges of incorporating multimedia (Moursund and Bielefeldt, 1999). Bangladeshi educational institutions, including government colleges, and teachers are encountering numerous obstacles in implementing multimedia classes. The challenges have a substantial influence on the activities involved in teaching and learning. Therefore, it is imperative to find potential solutions in order to enhance

the current situation (Hossain et al., 2016). The integration of multimedia tools in educational settings is a significant priority for the current government in Bangladesh as the initiative aims to transform traditional teacher-centered classrooms into student-centered learning environments (Bank, 2017). Although the multimedia based classes provide positive feedback for students, teachers face many challenges to use multimedia tools in Bangladeshi government colleges. Additionally, these challenges of government college teachers have not yet been studied empirically for better solutions.

Bangladesh will achieve the prestigious status of developed country within 2041 (Hossain et al., 2016). Information and Communication Technology (ICT) is the driving force to be so. As the citizens of the global village, there is no chance to deny the importance of multimedia based education because multimedia classes work as a catalyst for changing teaching-learning style (Watson, 2001). Use of multimedia tools in classrooms is one of the prime concerns of the present government for teaching-learning activities in Bangladesh to convert the teacher-centric classroom to student-centric classroom (Bank, 2017). The government of Bangladesh has taken some steps like ICT Policies in 2009, National Education Policy in 2010, Access to Information or a2i in 2012 by the financial support of USAID and UNDP, training on multimedia content development and providing laptop in schools and colleges since 2010 (Mohajan, 2013). Teacher barriers to employ multimedia in the classroom must be overcome because multimedia classes improve student perceptions over traditional method (Xu, 2010). Since multimedia class has got the minimal attention in Bangladesh, the government college teachers' obstacles in using multimedia tools must be addressed. The study has been conducted in a reputed government college at the southeastern part of Bangladesh named Cumilla Victoria Government College (CVGC) to find out the real causes and solutions to the problems.

In spite of being government funded college, Cumilla Victoria Government College (CVGC) has established a few multimedia classrooms. The departments are under the range of Wi-Fi but classrooms are not in this range. No smart board exists in the classrooms except overhead projectors with screens. Maximum teachers of 20 departments have been given laptops from department fund but most of the teachers face challenges to take multimedia classes for many reasons. Every teacher has to take four to six classes daily. Class duration is only 45 minutes but 7 to 10 minutes are wasted for daily attendance. So, in this situation, taking multimedia based class is obviously a great challenge for teachers in this college and it hampers the teaching-learning activities. So, the solutions to the challenges are urgently needed for the benefits of CVGC as well as environment of education. The findings of the research will be helpful for the academic development of Bangladeshi government colleges and for the large scale research in future. Besides this, CVGC and other government college will be able to get an outline about the real problems of MMCs and chalk out the exact steps to solve the problems.

Objectives of the study

The following three objectives have been selected for this study-

1. To explore what challenges teachers are facing to use multimedia in classroom.
2. To investigate how students perceive from multimedia classes for their learning.
3. To outline the possible solutions of the challenges to use multimedia.

To the fulfillment of my topic, the following research questions have been selected as-

Q1. What are the challenges for teachers to use multimedia instruments?

Q2. How do students perceive multimedia classes in learning?

Q3. What are the possible solutions of challenges using multimedia?

REVIEW OF LITERATURE

The favorable impact of multimedia classes on the teaching-learning process in all levels of educational institutions is well acknowledged. The incorporation of multimedia in educational settings facilitates effective classroom management for teachers in both developed and developing countries. At present 24382 secondary to higher secondary educational institutions, 2 million teachers and 7.5 million students are enjoying the facilities of multimedia based education in Bangladesh under different projects (Rahman, 2018). In Bangladesh, the advancement of information technology has recently brought a new pattern of teaching and learning activities. In this respect, multimedia technology can play a key role in higher education of Bangladeshi colleges (Hossain et al., 2016). In the twenty-first century, students have become habituated to technology-driven education. However, in Bangladesh, the majority of government college teachers have not yet been involved in the widespread adoption of multimedia-based classes which are needed for quality education. A. Bank (2017) found three interlinked perspectives of quality of education as role of administration and teachers, the knowledge and facilities of applying ICT instruments efficiently in the classrooms, and reputation of institutions. A. Bank(2017) also depicted that multimedia based education of developing countries like Bangladesh can be figured out in seven dimensions for teaching-learning activities like development of learning environment, betterment in examination system and assessment, development of educational management system through research and evaluation, professional improvement of educational leaders and teachers, multimedia classroom infrastructure, modernization of teaching-learning activities and curriculum, and national policies and strategies for multimedia based education. Bangladeshi government colleges are lagging behind in the implementation of multimedia-based courses due to internal and external obstacles. Furthermore, the research on the challenges associated with multimedia-based education in government colleges in Bangladesh is limited.

Perceptions of students about multimedia based classes

Zhang (2002) found that students had more positive views of multimedia classrooms than traditional classes because multimedia content stimulates their minds and senses. It can also attract students using multimedia videos, photos, and animations. Borko and Pitman (2008) found that multimedia based education produce significant results in teaching-learning activities and exam results. Islam and Fouji (2010) depicted the correlation between students' achievement and multimedia based teaching-learning activities. Islam, (2015) also found that multimedia presents the abstract concepts into real forms through animations, pictures, videos, audios and simulations which increase students' perception. In Bangladesh, students are willing to have multimedia classes because of better understanding than traditional classes and dropout rate has also reduced for applying MMCs. The students can show their performances because they are not confined in topic knowledge only (Milon and Iqbal, 2017). Students have favorable opinions of multimedia classes despite their initial apprehensions, and MMCs involve every student in the learning process. However, teachers of government colleges in Bangladesh encounter difficulties in integrating multimedia tools into their lessons.

Challenges of teachers to use multimedia in Bangladesh

Guan et al. (2018) have noted that a number of studies all over the world have emphasized the significance of multimedia technologies in the field of education, as well as the extensive integration of multimedia tools. Teachers are reluctant to use multimedia tools in classrooms in Bangladesh due to some factors as technical problems, lack of knowledge of authorities about the empirical problem of multimedia classes, hardware configurations and operating systems challenges, problematic multimedia instruments, the quality of multimedia and reluctance of

teachers to use multimedia (Deutscher, 2009). According to Rahman's (2018) research, the financial implications of multimedia tools deter educators from implementing them, while the technological advancements utilized in classrooms exacerbate the disconnection between instructors and learners. Additionally, he focused on the time-consuming nature of multimedia course content development. A lack of suitable study materials and approaches discourages the utilization of multimedia. Inadequate selection of materials and tools, lengthy class start times, the age of teachers, resistance to undergoing multimedia training, technophobia, and a dearth of adequate trainers and training are additional obstacles that hinder the effective utilization of multimedia by educators in Bangladeshi educational institutions, also founded by Rahman (2018). It is seen that the challenges of MMCs hampers the whole educational process in Bangladesh. The challenges are so acute that hamper the whole development process of Bangladesh because educational hampers affect the all sectors. So, this area needs to study more in Bangladeshi context.

Solutions to the existing challenges of multimedia in Bangladesh

As a country of third world, Bangladesh needs to uplift its education sector for national development. The problems regarding education must be solved to keep the national development of Bangladesh (Rahman, 2018). Quddusi (2015) found the necessity of teacher training courses, effective monitoring systems of the concerned authorities, specialized training for specialized subject on multimedia, incentive systems for the encouragement of using multimedia classes to teachers. Khan et al. (2012) focused on infrastructural development, required computer facilities, proper internet facilities and electricity facilities for the implementation of MMCs. Bingimlas (2009) suggested overcoming technophobia, a major challenge, by joining a series of training on multimedia. He also found that new technologies can enlarge the pedagogical performance of teachers and teachers having knowledge on multimedia can properly help students in learning. One of the major problems in Bangladesh to implement Multimedia based education is that the government and societies is not fully ready to attain the positive effect of multimedia revolution (Meenakshi, 2013). The aforementioned studies have primarily concentrated on broad perspectives. Government colleges in Bangladesh offer undergraduate and postgraduate education, accounting for around 65% of the overall higher education system. However, the specific attention towards the challenges faced by government teachers in utilizing multimedia has not been adequately addressed. These areas require further attention and should be further emphasized, along with the provision of potential solutions to address the prevailing issues.

METHODOLOGY

The main task of the researcher, here, is to explore the challenges faced by teachers to use multimedia in classroom and the perception of students about multimedia classes. In this study, Vygotsky's Scaffolding theory was used for the teaching-learning process of students as well as to overcome the challenges of teachers relative to multimedia class. Scaffolding is a theoretical idea of learning that informs teaching strategies. This theory of learning guides teachers in planning what strategies to use to improve students' learning. In scaffolding students are motivated to perform their assigned task and guided about some directions to understand their true responsibilities. It also motivates students about why they should do a task and what is the true significance of it. Mainly it guides the students to reach their goals which help them to reduce frustration (Kim and Hannafin, 2011).

As the main task of using multimedia tools in classroom is to scaffold or uplift the teaching-learning activities, to create a student-centered learning and to make active learning process, this study area needs to explore empirically. So, qualitative research approach was used due to the

nature of the topic. Respondents were categorized into two groups as teachers and students. Two sets of semi-structured questionnaires were prepared for two groups and data were collected by face to face interview with the respondents. Focus Group Discussion (FGD) was done to fulfill the gaps of case study and bring the researcher to reach the goals. Besides case study and FGD, observation in classroom was done in the study area named Cumilla Victoria Govt. College (CVGC). Following tables summarize the information relative to the participants.

Table1. Respondents in Number

Gender	Teachers	Students	Total
Male	5	5	10
Female	4	4	8
Total	9	9	18

Table2. Research Instruments and Experience in MMCs by Respondents

Research Instrument	Teachers	Students
Case Study	3	3
FGD	6	6
Experience (Year)	5 to 20	3 to 5

Reliability and validity

The results found from all the instruments are expected to be reliable and valid as interviews were done empirically with the consent of respondents. In order to improve the reliability and validity of measures for the present study, the following steps were undertaken:

1. The constructs were clearly conceptualized and each measure indicates only one concept.
2. Attempts were made to measure constructs at the most precise level possible.
3. Finally, a pilot test was conducted through which the draft questionnaire was tested by asking the respondents.

Data collection

In this study, case study was conducted by open-ended and semi structured questions. FGDs were arranged by FGD guideline and three classroom observations were done. The teachers were classified into three sections as science, arts and commerce faculty, and so do the students. Four questionnaire guides were used to conduct case studies and focus group discussions (FGDs) with teachers and students, respectively. Teachers were also classified in two sections as taking classes in traditional method and in multimedia based classes. The entire interview was recorded in mobile phone with the consent of the respondents.

Data analysis

The process of data analysis was initiated by transcribing the mobile phone interviews of Bengali-speaking participants. In order to enhance comprehension among the participants, each interview was conducted in the Bengali language. The original transcripts were preserved in their entirety, including any handwritten annotations. Ultimately, the analysis of data was conducted by manual means in order to derive the research conclusions. The collecting data were compared with the existing literature to understand the challenges of teachers to use multimedia in classrooms and to investigate the perception of students on multimedia classes.

FINDINGS AND DISCUSSION

For this study, the data was collected by case study, Focus Group Discussion (FGD) and classroom observation from CVGC. Four questionnaire guides were used for case study and

FGDs for both teachers and students separately. Three case studies of both teachers and students and two FGDs of both Teachers and students of CVGC are given below-

Case Study One (Teacher or T-1)	
Gender	Male
Age	45
Faculty/Department	Business (Management)
Teaching Experience	17 Years

Teachers-1 (T-1), 17 years teaching experience in Business Faculty, says on the factors for the absence of MMCs like economic indigence of college, faulty multimedia instruments, no facilities of curtain beside the window to darken the room, no sound protection insulation in classrooms, lack of willingness of teachers, disruption of electricity and lack of training.

Lack of effective training, large number of students in classroom, failure of backbenchers to understand multimedia contents, and classroom settings are the main challenges for him to take multimedia classes. College should create the opportunities of both outside and in-house training regularly. To increase the use of multimedia tools, only the seminar fund of department is the key way but college should provide assistance from development and repairing fund because college has no direct fund of ICT.

Teachers work hard to show videos, audios, graphs and pictures for effective teaching which is impossible in lecture method. Students' eagerness of learning is high in MMCs. So, students achieve good score in examination.

He demonstrates that teachers, playing active role, must make the lessons relevant, updated and student-centered. Connecting with multimedia tools is time consuming. For the solutions to the existing challenges, he insisted on developed multimedia tools and classrooms, use of smart-board, willingness of teachers to update themselves and mandatory training on multimedia.

Case Study Two (Teacher or T-2)	
Gender	Male
Age	37
Faculty/Department	Science (Physics)
TeachingExperience	10 Years

Teacher-2 (T-2), 10 years long teaching experience in Science Faculty, demonstrates the major challenges as large number of students (the standard number for MMC is 50 students), lack of training, time consuming of setting up and closing of instruments, limited class time (45 minutes), everything cannot be represented by multimedia and sometimes much orally explanation of formulae is needed.

He insists the need of training on content development and video editing. Teachers' effort in classes is reduced like some videos or pictures can speak thousands of words. He cannot make students understand everything in lecture method but in multimedia. Students make good results by concentrating well and taking notes properly. The role of teachers in MMC should be presentable actively.

He demonstrates the disadvantage like only slide showing without explanation. He added some solutions as willingness of teachers, honesty in responsibility and mandatory training for all teachers.

Case Study Three (Teacher or T-3)	
Gender	female
Age	34

Faculty/Department	Arts (Sociology)
Teaching Experience	5 Years

Teacher-3 (T-3), 5 years long teaching experience in Arts Faculty, demonstrated the challenges as lack of equipment and standard training, lack of willingness, technophobia, no obligation of multimedia classes and less help from expert colleagues. She feels the needs of training on multimedia.

She added that students can easily understand, take notes and be organized in MMCs. She remains in main topic and class is enriched but in traditional methods she is often isolated from the topic. As students can take note or capture the photos of the slide by their smart phone and the subject topic is visible to them practically, students do well in the examination.

The role of teacher should be good presentable actively. She added the disadvantage like lack of attentiveness of teachers to create the proper slides. She further added the challenges like providing equipment, suitable multimedia classrooms, efficiency of teachers, regular basis training and feedback from students.

Case Study Four (Student or S-1)	
Gender	Male
Age	23
Learning Experience by MMCs	5 Years
Faculty	Social Science

Student-1 (S-1), having 5 years long learning experience by MMCs in Social Sciences (Sociology) Faculty, demonstrates the challenges as the absence of ICT knowledge and less time to prepare slides of teachers. College does not provide internet facilities for students but teachers use internet.

Multimedia classes attract him most because he can grasp his attention in whole class. MMCs can teach him practically. He emphasizes for increasing the number of multimedia classrooms. In lecture method teachers deliver the lecture monotonously but in MMC he learns practically. Teacher presents the classes actively with visualization of the contents, pictures and videos.

He says that MMCs take more time to start the classes. When contents, videos are shown in tough English, he sometimes fails to understand fully. Multimedia classes help to achieve good score in exams. Steps like training facilities for teachers, internet facilities for students, improvements of ambience for multimedia are needed to solve the challenges.

Case Study Five (Student or S-2)	
Gender	female
Age	21
Learning Experience in MMCs	3 Years
Faculty	Business

Student-2 (S-2), carrying 3 years long experiences by MMCs in Business Studies (Accounting) Faculty, demonstrates the challenges as lack of emphasis from administration. College provides no internet facilities for students but for teachers. She enjoys multimedia class more than traditional class because of practical presentation. She emphasizes on the advantages like completion of daily lessons in college, capturing content photos by smart phone and noting of lessons easily.

She says that college principal and students should play role to increase MMCs. She demonstrates that real and applied fields of knowledge through videos and picture are viewed by

MMCs. In lecture method, only hearing without real knowledge is performed. So, learning by multimedia is more durable than lecture method.

She thinks, teachers' role should be actively presentable with real explanations for making lesson interesting. She believes, MMCs are beneficial for good exam result. She finds no disadvantage of MMCs.

She demonstrates for the solutions to the challenges like willingness of teachers, proper classroom environment and necessary steps from authorities.

Case Study Six (Student or S-3)	
Gender	Male
Age	22
Learning Experience in MMCs	4 Years
Faculty	Science

Student-3 (S-3), having 4 years long learning experiences by MMCs in Science (Mathematics) Faculty, demonstrates the factors responsible for the absences of multimedia classes as a lack of adequate budget for mandatory multimedia instruments and multimedia classrooms and lack of willingness of teachers. College provides no internet facilities for them. MMCs attract him because of easy understanding. He demonstrates the benefits of MMCs as durable and long-lasting learning.

College can provide fund to establish MMCs with departments. He also demonstrates the variations between multimedia and lecture methods as MMC share practical, real and effective than lecture method. The role of teachers in class should be actively presentable.

He says, MMCs play positive role in exam result. He found no disadvantage of MMCs. He suggested solving the challenges of MMCs as establishing more MMCs and efficient training of teachers.

Focus Group Discussion of Teachers

Six teachers participated equally from three faculties here. The participated teachers pointed out the challenges of multimedia as technical problems, training problems, unsuitable classrooms, Lack of willingness and high dependency on multimedia. Definitely effective training is urgent for teaching career.

The participants demonstrated the benefits of MMCs as verbal and visual presentation of the contents, providing updated information, stimulation of students' brain, befitting with time, and realistic. Traditional methods are too obsolete to fit with the advanced world. It is unsuitable for every subject.

Participants agreed the role of MMCs on exam results. The role of teachers should be active and presentable to support the students. Multimedia has the limitation in this college as absence of actual multimedia classrooms, cheap multimedia tools, large number of students in classrooms, lack of in-house and outside training and frequent disruption of electricity.

The participants demonstrate the advantages as access to update and variety of information, clear and deep learning of students, improved problem solving, effective presentations and holding full attention of students. The possible solutions of the challenges are establishment of more MMCs, providing effective training, increase of teachers' willingness and imposing obligation for MMCs.

The participated students demonstrated the challenges as lack of ICT instruments and MMCs as well as lab, required environment, lack of efficient teachers and no internet facilities from college.

They are benefited from MMCs as completion of daily lesson, solution of topic problems easily and acquaintance with updated education. Variations between Multimedia and traditional method

are noticeable as multimedia classes are realistic and active. Traditional method is monotonous and abortive to solve maximum problems practically.

MMCs help them to do good result in examinations. The role of teachers should be friendly and actively presentable. MMCs have some disadvantages like problem of tough English presented contents, videos and the quick slides are difficult to understand.

MMCs can teach them practically, grasp their attention and show the error easily. They suggested solving the challenges like providing internet facilities from college, ICT training for teachers and mandatory ICT education.

Focus Group Discussion of Students

Six students from three faculties of different academic years participated here. The difficulties exhibited by the participating students included a dearth of ICT equipment and MMCs, a lab that did not provide the necessary environment, ineffective teachers, and no Wi-Fi access at the college for students. They are benefited from MMCs as completion of daily lesson, solution of topic problems easily and acquaintance with updated education. Variations between Multimedia and traditional method are noticeable as multimedia classes are realistic and active. Traditional method is monotonous and abortive to solve maximum problems practically.

MMCs help them to do good result in examinations. The role of teachers should be friendly and actively presentable. MMCs have some disadvantages like problem of tough English presented contents, videos and the quick slides are difficult to understand.

MMCs can teach them practically, grasp their attention and show the error easily. They suggested solving the challenges like providing internet facilities from college, ICT training for teachers and mandatory ICT education.

The Major findings from Case Studies, FGDs and Classroom observations have been discussed on the base of research questions as-

The challenges of teachers to use multimedia instruments

The case studies depict the major challenges like economic indigence of college, faulty multimedia instruments, no facilities of curtain beside the window to darken the room, no sound protection insulation in classrooms, failure of backbenchers to understand the multimedia contents (Teacher-1), large number of students, time consuming to process multimedia, limited class time (Teacher-2), technophobia, no obligation of multimedia classes, lack of help from expert colleagues (Teacher-3), lack of willingness of teachers, disruption of electricity and lack of training (All teachers). The students also pointed out some challenges as lack of ICT knowledge and time to prepare slides (Student-1), lack of emphasis from authorities (Student-2), lack of adequate budget for multimedia instruments and classes (Student-3).

From observation, teachers are reluctant to take MMCs because of busy schedule although departments provide laptops for them. One of the teachers of Social Work department said-

''We get less time for multimedia content development, ineffective training, faulty multimedia instruments and no evaluation and reward system for MMCs.''

Teachers express the challenges in Focus Group Discussion (FGD) as technical problems, training problems, inappropriate classrooms and high dependency on multimedia. FGD of students also depicted some challenges as the dearth of ICT equipment, inappropriate lab environment, inefficient teachers and no Wi-Fi opportunities for students in college.

In Bangladesh, multimedia based classes cannot be applied in maximum institutions due to several internal and external causes like lack of motivation and obligation for teachers, insufficient multimedia tools, lack of trained teachers and lack of proper environment (Sarowardy and Halder, 2019). MMCs face challenges like large class size, frequent load-shedding, inappropriate MMCs, lack of pedagogical knowledge of teachers, lack of time and willingness of teachers, and

technophobia (Asadullah, 2019). So, it is seen that challenges are institutional, personal and administrative and there is a strong relationship between the challenges of MMCs and its causes.

Students' perception about multimedia classes

Case studies of students emphasize on multimedia based classes (MMCs) because it is conductive to good result in examination and has no disadvantage of it.

In observation, students are attentive and interactive in MMCs. They can receive the lesson cordially because of practical presentation. A students of Chemistry says-

''Multimedia based classes attract me because of realistic learning. The videos speak thousands of word. I understand my topic practically.''

In the FGD of students, completion of daily lesson, solution of topic problems easily and being able to keep peace with the updated education have been emphasized because MMCs play role for good result in exams. They demonstrate that the role of teachers in MMCs should be friendly and properly explainable.

Students learn practically in MMCs which are durable and fit with the present education system (Milon and Iqbal, 2017). So, students get better perception in MMCs because of its usefulness for their learning.

Differences between Multimedia based classes and traditional classes

Case studies of teachers reveals that conducting MMCs increase Students' eagerness of learning which is absent in lecture method (Teacher-1), Students can understand more in MMCs than traditional method (Teacher-2), In MMCs, teachers remain in the main topic and class is enriched but in traditional methods teacher is often isolated from the topic (Teacher-3). Case studies of students demonstrate that MMCs can grasp the whole attention for teaching practically (Student-1), completion of daily lessons in college, capturing content photos and noting of lessons easily are possible in MMCs (Student-2), MMCs is more durable and long-lasting learning (Student-3).

In observation, students do hearing only in traditional method but learning with listening, visualizing and analyzing in details are performed in MMCs. One of the teachers in Sociology says-

''MMCs pull the students into classrooms and classes become student-centered. Here students feel easy to ask the question.''

The FGDs of teachers and students depict the differences between MMCs and traditional method as verbal and visual presentation of the contents with updated information, stimulation of students' brain and deeper understanding for students are noticeable in MMCs. Traditional methods are obsolete, monotonous and unfit with the advanced world.

Multimedia classes are incorporated with digital contents, animations, videos and audios which provide practical and realistic learning. In lecture method, only hearing is done (Islam, 2015). So, it can be said that MMCs are more effective than traditional classes.

Possible solutions to the challenges relative to multimedia use

From the case studies, the following solutions have been found as developed multimedia tools and classrooms, use of smart-board, willingness of teachers to update themselves and mandatory training on multimedia, honesty in responsibility, efficiency of teachers and feedback from students (All Teachers), internet facilities for students, necessary steps from authorities to establish more MMCs (All Students).

In observation, one of the teachers of Accounting department says that-

''Proper multimedia classrooms with curtains beside the window, effective training, administrative steps and facilities and teachers' willingness are needed for fruitful MMC.''

FGDs have depicted the following solutions as establishment of more MMCs and smart board, effective training, teachers' willingness and obligation for multimedia classes (Teachers' FGD), internet facilities from college, ICT training for teachers and mandatory ICT education (Students' FGDs).

The problems regarding MMCs need to be solved by collaborative efforts from administrations, policy makers, institutional and personal levels (Sarowardy and Halder, 2019). It is evident that finding solutions to the prevailing issues is imperative in order to guarantee the provision of quality education in Bangladesh. Furthermore, it is imperative to address these challenges in order to remain aligned with the demands of the contemporary global landscape.

Overall discussion

The study reveals that teachers of Cumilla Victoria Government College (CVGC) encounter numerous obstacles when attempting to implement multimedia in the classroom. The superior performance that MMCs can achieve in comparison to traditional classes has been evident. Students are always influenced by the performance of their teachers, and they take pleasure in and participate in MMCs. As a result student-centered learning environment is created. Students are capable of acquiring practical and efficient knowledge through MMCs, and they hold a favorable perception of MMCs as well as can actively learn. Although the challenges of MMCs are very common, these remain unsolved. So, these challenges affect students' perceptions. The major challenges are as follows-

1. Lack of proper multimedia classrooms in quality and quantity.
2. Technophobia, lack of training and willingness of teachers for MMCs.
3. Electricity and internet problem.
4. Large number of students.
5. Limited class time.
6. Economic indigence of college and faulty multimedia instruments.

It is recognized that multimedia based teaching-learning is the best way for durable interaction and students can perceive properly from MMCs (Milon and Iqbal, 2017). So, the challenges relative to MMCs should be solve for the improvement of education in Bangladeshi colleges.

CONCLUSION AND RECOMMENDATION

Challenges of multimedia and other infrastructural facilities of Cumilla Victoria Government College (CVGC) dishearten teachers to continue the multimedia based classes and it influences students' perception and learning. Many educationists have shown that Bangladeshi higher education must include multimedia-based instruction, especially in government colleges which provide higher education. If teachers adjust their essential practices to assign students substantial learning and apply 21st-century knowledge and abilities like multimedia tools, it could change education (Morrison and Lowther, 2010). This study has provided significant outcomes by Case studies, FGDs and Classroom Observations and three objectives of the study have been fulfilled. The major challenges have been found as inappropriate classrooms, lack of efficiency of teachers on multimedia content development, lack of proper steps from authorities and large number of students in classrooms. Students have a strong desire to obtain MMCs due to its ability to facilitate successful and practical learning experiences as MMCs are durable and long lasting than traditional methods (Milon and Iqbal, 2017). Personal and administrative solutions should be considered. In many cases, CVGC's multimedia difficulties and solutions and their effects on students' learning paint the most accurate image of Bangladeshi colleges' higher education. Consequently, this study can serve as a blueprint for addressing the challenges associated with MMCs in other government colleges in Bangladesh.

Recommendations

The overall recommendations to solve the challenges are to improve the classroom and college environment, provide effective training for teachers, steps to increase multimedia classes and multimedia classrooms both in quality and quantity, free internet facilities for teachers and students, and students' feedback in every class. The findings of the CVGC will provide guidance for other institutions as well, given the similarities in circumstances observed in Bangladeshi colleges.

Limitations

Despite all-out attempts to make the present study a scientific one, it has the following limitations:

1. This study may not fully represent the picture of challenges of teachers using multimedia and the perception of students from MMCs because purposive sampling may not exactly represent the population.
2. The study is very much context specific. The respondents were selected from a particular college and the views of this group can't be considered representative of all colleges in Bangladesh. It is just a snapshot of the context.
3. Time frame and budget are very limited to conduct such a research. To do this type of research, at least 5 to 6 months is needed.

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DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CRediTAUTHOR STATEMENT

The author have contributed equally to all parts of the work.