

## Using of Modern Materials in Open and Distance Learning: Problems and Solutions

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### ABSTRACT

The process of educating everyone regardless of age, gender, race and caste is called the open and distance learning method. The method has emerged as a popular and up-to-date medium in today's world because those who cannot participate directly in the classroom system can continue their lifelong learning in this method. Due to the use of this method, it has been possible to continue the education system even in the Covid-19 situation. However, developing countries are facing some problems in applying modern education technology in open and distance education. Problems Have been mixed and an outline of the solution to these problems has been presented. The analysis of the results shows that lack of necessary electricity, internet and technical infrastructure, and lack of necessary technical equipment and skills of teachers and students are the main problems of applying modern technology in open and distance learning in Bangladesh. Steps have been taken to outline the solution to these problems by providing necessary technical equipment and training to the research teachers and students, use of social media, etc.

**Keywords:** Open, Distance Learning, Student, Learning, Teaching, Technology, Internet

### 1. Introduction

Bangladesh is a developing country. The literacy rate here is not as expected. So the number of people deprived of education is also high (Titumir, 2021). The traditional education system is not enough here. Again in the traditional education system, the number of students who have read is not less and there are also unsuccessful students. Open and distance learning is an effective way to enlighten them in the light of education. And the application of modern education technology has made this education system more acceptable (Fozdar, 2015, Georgas et al., 2018). For the benefit of technology, students now do not have to go to the teacher, but the teacher reaches out to the student (Rao et al., 2020). However, researchers from different countries have pointed out some problems in the application of education technology, such as lack of necessary electricity, internet and technical infrastructure, lack of necessary technical equipment and skills for teachers and students (Arinto, 2016; Pangani 2016 Olanikawu et al., 2017) in the context of Bangladesh. Such problems exist, but there is some research on the

problems of applying technology in face-to-face education in Bangladesh (Khan et al., 2012, Mou, 2016; Parvin, 2013). So the research in question will fill this gap.

## **2. Objectives of The Research**

The main objective of the research in question is to uncover the main problems of applying modern educational technology in open and distance education in Bangladesh and formulate solutions to the problems. However, to achieve this primary objective, this study has also achieved the following objectives. (A) Identification of concepts and objectives of open and distance learning methods. (B) Unveiling the reasons for initiating open and distance learning systems in the international and Bangladeshi context. (D) Highlighting the importance of using modern technology in open and distance learning in the context of the current digital learning environment.

## **3. The Rationale for Research**

The use of technology in all areas of life is currently undeniable due to the constant advancement of technology. Similarly, the application of technology in all education systems (traditional face-to-face, open and distance learning methods) is undeniable due to the increasing integration of education technology. In particular, applying modern educational technology in open and distance learning methods is essential. This is because, in this method, teachers have to use some medium to teach the students (Ran et al., 2020). And in the current context, most of these media are technology dependents, such as radio, television, web radio, web television, e-mail, zoom software, e-book, and YouTube. The use of these technologies has made the open and distance learning system more flexible, attractive and popular. As a result, the use of these technologies in open and distance learning continues to grow worldwide (Rao et al., 2020). But in some countries, especially in developing countries, there have been some problems with the successful application of these technologies such as Mathers and Ebeelloanya (2016) point out that the necessary electricity, internet, equipment and technological infrastructure are significant obstacles to the successful application of education technology. Almost the same obstruction Arinto (2016), Pangeni (2016), Olanikawu et al. (2017) the Philippines, Nepal, Nigeria mentioned in the context of the country. Again Arulogun et al. (2020) noted that the lack of technology for students and teachers is also one of the significant problems. In the light of all these studies, it can be said that similar problems exist in the context of Bangladesh; however, very limited research has been done in this regard in Bangladesh, and Much of the research that has been done is to expose the barriers to the application of technology in face-to-face teaching methods (Khan et al. 2012 Mou, 2016, Parvin, 2013). Therefore, no significant research is available on the barriers to applying modern technology in open and distance learning in Bangladesh. Thus, the research in question was crucial to fill this gap, which would serve as a guideline for all institutions in Bangladesh that conduct open and distance learning (e.g. Bangladesh Open University).

## **4. Research Methods**

This study has been performed following the auditory research method. Accordingly, the analysis of the relevant documents and the analysis of the research literature have followed these two research strategies. A total of 16 pieces of research literature have been analyzed. In the case of selecting research literature, research articles published through Peer Review have been selected. In the selection of documents, documents published through appropriate authority have been selected.

## **5. Open and Distance Learning**

Open and distance learning is basically based on a philosophy. Here are two words. "Open" and "distance learning". The discovery of open education has opened a new horizon. In this context, it is especially necessary to ensure the relationship between distance education and open education. (Lewis and Spencer, 1986)

"Open" learning refers to an educational policy. Introduce a simple education system for students outside the traditional education system. In this system, general principles do not stand in the way of their education. This is open education. According to M Aminul Islam, Open education means an open curriculum, open reading, and deadlines. Open education refers to four things.

1. Educational qualifications are not an obstacle in the process of admission of students.
2. Open education basically means learning from one's position. This education is not given in the classroom.
3. The novelty of the learning method
4. Development of ideas

And "distance learning" is one way to implement this open education system. In other words, a student can receive education in his own home, institution and workplace without appearing in front of the teacher.

And this method is called the distance learning method. In the distance education system, the curriculum, syllabus and teaching process are entirely different from the traditional education system. A teacher teaches in a traditional educational institution. On the other hand, an institution that teaches distance learning.

(Dhanarajan, G. 1990)

## **6. Introduction to Open and Distance Learning**

Sir Isaac Pitman was the first to introduce open and distance learning in England in 1840. He used to write the lessons in shorthand and send them to the students by postcard. Later, William Rainey Harper, the first president of the University of Chicago, played a global role in distance education. Officially, Illinois State University in the United States first introduced correspondence education in 184. Initiatives were taken to introduce Open universities in different countries to make the open and distance learning system dynamic and institutionalized. The University of Chicago was established in 1891, the University of South Africa in 1948 and the British Open University in 1969. According to Ram Reddy, the University of South Africa is the first total distance education university.

(Reddy, G. Ram, 1993: 241)

However, the British Open University is a priority in this regard. Because considering this university as an ideal, it has been inspired to build more universities. In South Asia, Indira Gandhi National Open University in India, Allama Iqbal Open University in Pakistan and the Open University of Sri Lanka in Sri Lanka are some of them.

## **7. Background of Open and Distance Education in Bangladesh**

Distance education started in this country in 1956. In 1956, the Educational Reforms Commission recommended the establishment of an experimental correspondence school for those students who were deprived of formal education but were interested in studying. That year, 200 radio sets were distributed to various educational institutions through the Department of Education to take lessons from radio broadcasting. This is how the path of distance education

started in this country. The Audio-Visual Cell was established on the basis of this history. The cell was later converted into an audio-visual learning center in 1982.

The radio broadcasting program was launched in 1986. A rider project (PILOT) called School Broadcasting Program was formed in 1968-70.

The National Institute of Education Media Technology (NIEMT) was formed in 1983 by merging the School Broadcasting Program and the former Audio-Visual Learning Center. Bangladesh Institute of Distance Education (BIDE) was formed in 1975.

The former NIEMT is integrated with the bye. Apart from preparing and supplying various types of audio-visual materials to educational institutions, BIDE also introduces BED courses in the distance learning system for untrained teachers in secondary schools. And it was largely successful. In this context, an initiative was taken to establish Bangladesh Open University to apply the international experience of open universities in Bangladesh to turn a large population into human resources. A high-powered delegation comprising members of the Ministry of Education, the Planning Commission and the University Grants Commission, with the support of the British ODA (Overseas Development Agency), visited India, Pakistan, Thailand and the United Kingdom in 1986 as part of a feasibility study. In March 1989, the delegation formulated a master plan for the Bangladesh Open University. In the same year, an ADB delegation visited Bangladesh at the request of the Government of Bangladesh. Following this, Bangladesh Open University (BOU) was established in 1992. At this stage, BIDE is associated with BOU. Currently, Bangladesh Open University is working as a pioneer of distance learning and virtual education in our country.

### **8. Objectives of Open and Distance Learning**

The primary purpose of the advent of open and distance learning is to provide education to those who have not had the opportunity to get an education. It points to the core philosophy of the learning education system.

And in this way, education is now at the doorstep of students for the benefit of modern technology. There is a saying that once people went to Aristotle for education. Aristotle is now being taken to the students. M Aminul Islam Said, the objectives of the Indira Gandhi Open University in India on open and distance learning are:

1. To provide opportunities for higher education to a large majority of the population
2. To advance education in the social system
3. Encourage open universities and distance learning methods in the homeland
4. To coordinate and determine the standard of distance education in the country.

Since distance education is based on a philosophical basis, its primary purpose is to provide educational opportunities to those who have not been able to get an education in any traditional institution. It is the responsibility of society. The right to education is a social commitment and a democratic right. The Open University was established with some such objectives in mind. (Reddy, G. Ram, 1993)

### **9. Methods of Open and Distance Learning:**

The origin of this education system is based on a certain philosophy. Learning is open and distance learning is the system. The method of open and distance learning has a philosophical basis. And that is:

The open education system is a student-friendly education system. The educational institution will go to the student. Students do not need to go to educational institutions later. In open education, students must have open access to the education system. The task of open

education is to easily involve a student in this education system at any age, at any time. Students can join the open education system as per their time and opportunity.

And the distance learning method is that a student can take part in educational activities from any place. In this case, he does not need to go to an educational institution. Using modern technology, a student can continue their learning activities at home. Thanks to technology, he can take part in audio and video or virtual classes at home. As a result, a student can continue their career as well as study. But a student cannot continue his career as he has to use a certain time, medium and institution in the traditional education system.

Therefore, for the benefit of technology, a student conducts his education and career together using open and distance learning methods. As a result, as the country's literacy rate rains, so does the country's economy.

### **10. Technology in Open and Distance Learning**

Technology is used to establish relationships between teachers and students in open and distance learning methods.

In this way, technology is a medium through which an open and distance learning institution communicates between teachers and students. In distance learning, the distance between teacher and student is filled with the help of technology. One of the main components of distance learning is technology or electronic media such as audio cassettes, radios, video cassettes, televisions, films and two-way communication between teachers and students. (Keegan, D. 1986). In this system, printed materials, audio-video, computers, etc., the technical means open the way for the acquisition of knowledge by bringing together teachers and students.

### **11. Using Technology in Open and Distance Learning**

The use of technology in open and distance learning methods has taken this education system to a unique height. A student can take lessons very easily using modern technology. In this case, internet technology has organized a ground-breaking revolution. However, the invention of Internet technology and distance learning methods began about 100 years ago. Distance learning was practiced through a method called correspondence education. It was a very simple teaching method, where the teachers would instruct the students by post and the necessary questions and assignments would be sent to the teachers by the students by post. In the beginning, this method was slow. It would take about a few weeks to communicate once. Massive improvements in the global postal system have resulted in better communication between teachers and students. Due to this, this method became popular in many countries of the world. Internet technology was later discovered and tied the world together. As a result, the distance learning system is greatly improved with the help of this technology. The quality of internet technology needs to be enhanced to improve the distance learning system. Internet technology needs to be developed in rural and remote areas.

We currently have a 4-G service in Bangladesh. The 5-G service may be launched on a trial basis on December 12 or 16 of this year (2021). Government mobile phone operator Teletalk will test this 5-G service. (Jabbar, 2021).

### **12. Problems of application of modern materials in open and Distance learning in the context of Bangladesh**

(a) Insufficiency of electricity in remote areas. Modern technology devices cannot be operated without electricity.



(B) The slow speed of the Internet and its inadequacy in remote areas The benefits of current technology without the Internet cannot be imagined. The slow speed of the Internet and its inadequacy in rural areas is a problem.

(C) High cost of technological resources and internet data The cost of modern technology devices is much higher. And the high cost of Internet services has exacerbated the problem of open and distance learning technology.

(D) Lack of technical resources and skills of teachers and students There is a significant shortage of skills of teachers and students in the use of modern technology. I

(e) Inertia and Fear of Using Newer Technologies There are many newer technologies (tabs, laptops, smartphones) that many have inertia and fear to manage. As a result, problems are noticeable in the application of these technologies in open and distance learning methods.

(F) Curriculum, teaching-learning activities and evaluation methods of open and distance learning system.

### 13. Outline of Problem Solving

(a) Meeting Power Deficit in Remote Areas Renewable energy must be used to meet the power deficit in remote areas.

(B) Increasing the speed of internet 5 - Internet speed should be increased through 5G service.

(C) Providing Internet services in remote areas Government mobile companies to play an effective role in providing Internet services in remote areas I.

(d) Providing resources and Internet data Providing technical resources and Internet data to teachers and students at a reduced cost.

(E) Provide necessary training for use of technology Teachers and students need to be provided necessary training for the use of technology.

(F) To ensure the application of technology in open and distance learning curricula, teaching-learning activities and evaluation systems. Such as:

### F.1. Educational Materials Provided in Open and Distance Learning

Various educational materials are provided to the students in an open and distance learning system. The feature of open and distance learning is that the student will not go to the classroom. She will sit in her house and take part in educational activities. Again, his medium will be distance learning.

Therefore, considering this issue, up-to-date textbooks are arranged for the students. All these lessons are provided by the institute engaged in open and distance learning. The textbooks are discussed below.

#### a. Printed Textbooks:

Textbooks are provided to students in open and distance learning. In this case, the educational institutions print books about their various programs and provide them to the students. Students can collect all these textbooks and learn from their own position. Educational institutions need to pay special attention to the composition of these textbooks. Care should be taken to ensure that the books are standard. You have to see that the book print is clear.

And whoever writes the book will look at the linguistic aspect so that the language does not become complicated. If the language is not easy to understand, the purpose of education will be disrupted. You also have to pay attention to the composition style and syntax. Books should be written keeping in view the main text so that the students can easily understand it.

With all these issues in mind, education has to take appropriate initiatives. If necessary, they should be honored by forming a committee to compose textbooks.

The downside of textbooks is that students have to take lessons on their own without the help of any teacher. If students are weak in understanding the lessons, it will create problems even if it is not impossible for them to learn through textbooks. Many lessons require the teacher's close supervision in order to be understood. Only textbook supply is ineffective in this case.

**b. E-book:**

In the Modern-day, people are very busy. In many cases, it is difficult for them to collect textbooks by contacting the organization directly. Therefore, textbooks are now being delivered to the students in the form of e-books through modern technology. Direct textbooks are no longer needed. Students can sit at home and use the internet to access the e-book and take lessons. It does not cost to print the book. Bangladesh Open University has launched an e-book for its students. With the expansion of e-book activities, students from all over the world will be able to easily access e-books and take lessons. In this regard, educational institutions have to appoint skilled technology experts. The limitation of e-books is that reading in e-books is not the same as reading directly from books. The joy of reading a book directly and learning from it is never found in an e-book.

**c. Audio:**

Audio is one of the most important textbooks for students. Through this, students learn by using their hearing.

In this case, the audio should be melodic. Sentence and speaking style should be clear. Otherwise, the purpose of education of the students will be disrupted. The person who will record the audio has to pay attention to these issues.

To improve audio quality, educational institutions need to provide good audio recorders and high-quality microphones. The audio lesson is considered a simple lesson material as students can master the lesson by listening to it repeatedly at their convenience. Even then, something remains limited. This is because listening to audio for a long time often leads to boredom and annoyance among the students.

**d. Video:**

Video is a powerful lesson in open distance learning. Teaching from audio to video is more effective. The one who will teach in the video will be careful in the speaking style and the application of language. If the language is incomprehensible, learning will be hindered. High-quality cameras and microphones are needed to make videos. For this, educational institutions can take steps to set up their studios. Many teachers are hesitant to speak in front of the camera. In this case, the concerned educational institution will organize the necessary workshops. Video lessons will be provided to the students using modern technology. Students can easily watch these videos at home and take lessons. However, there are limitations in this case as well. If students have questions or want to know about a video, they have no chance to find out. There is no opportunity to question the teacher in the video lesson.

**e. Virtual Class:**

Virtual classes are one of the most powerful contents among students for the benefit of modern technology. It has given excellence to the distance learning method. In the current epidemic situation, the education system was introduced through virtual classes all over the world. At present, its scope is increasing. In this method, teachers and students face each other and teach and take lessons. They do not live in the same place. This method is the most powerful. This is because even though they are not in the same place, using modern technology, the students take lessons directly like the learning process. There are no restrictions on virtual classes like textbooks, e-books, audio and video. Here students get to see the teacher directly. There is also an opportunity to ask the teacher about any subject. The limitation of the virtual class is the lack of an internet connection. If the internet connection is weak on one side, the student's learning is disrupted.

## **F.2. Hard Technical Materials Used in Open and Distance Learning**

In this age of technological advancement, a ground-breaking change has taken place in open and distance learning methods. With the help of internet technology, open and distance learning has reached a unique level through various technological materials. Through these materials, the textbooks are being delivered to the students very easily and in a short time. As a result, students can take part in reading activities at home with just one click. This is preventing the waste of his time and money. The technical materials are discussed below:

### **a. Radio:**

Radio is a technical device. Through which students can take lessons very easily. When audio lessons created for students are broadcast on the radio, they can learn using the sense of hearing. It can be broadcast to students at a specific time on Bangladesh Betar. In this case, educational institutions can take the initiative to establish their radio stations.

### **b. Television:**

Using the television, students can sit at home and watch the teacher live and learn from him. Video lessons created for students can be broadcast on television at a specific time. In this case, educational institutions can communicate with Bangladesh Television or other private television channels. Educational institutions can launch their satellite channels. Bangladesh Open University has already experimentally launched "Open TV."

### **c. Computer:**

Computers are a wonderful tool of modern technology. By connecting to the internet, a student can take part in open and distance learning activities at home. Through the internet connection, a student can sit at home and listen to and watch the lessons on his computer. It also allows a student to participate in a virtual class.

### **d. Laptop:**

A Laptop is a simple version of a computer. Laptops can be easily transported everywhere. But that is not possible with computers. A student can do the same thing on a laptop as he can do on a computer. The advantage of the laptop is that it also runs on batteries. And you have to keep the computer with electricity connection all the time. A student can learn from his audio or video lessons by carrying a laptop everywhere.

However, not all students can afford to buy a laptop yet in our context. Computers or laptops run on the Windows operating system.

### **e. Smartphone:**

At present, smartphone technology has opened a new horizon. If you have a smartphone and an internet connection, the whole world should be at your fingertips. A student can continue their studies through a smartphone with an internet connection. Students can access specific educational websites on a smartphone and take lessons from audio, video, and e-books. You can also take part in virtual classes using a smartphone.

## **F.3. Soft Technical Materials Used in Open and Distance Learning**

A student can learn from their textbooks using modern technology. All these textbooks can be viewed and listened to in their technical materials. The soft materials of modern technology are discussed below:

### **f. YouTube:**

A student can benefit a lot from the distance learning system through YouTube. They can watch video lessons on YouTube. In distance learning, educational institutions can open a YouTube channel and upload videos for their students. And students can take lessons from anywhere in the world by watching the lessons on YouTube. In this case, the student can watch a video repeatedly. It can even download and save videos from YouTube through software. In this case, Bangladesh Open University has its own YouTube channel, "Bangladesh Open University." The channel has more than 56 thousand subscribers. Necessary video lessons for students are uploaded here. Students can take part in live lessons. Or you can watch the video later and take lessons.



**g. Facebook:**

Facebook is one of the tools of modern technology. There are a lot of Facebook users all over the world. Facebook can play an important role in open and distance learning activities. Educational institutions can open their own Facebook page and upload video lessons for students. From there, students can take part in their lessons. Videos can also be shown on Facebook Live. Students can take the necessary lessons directly from any part of the world or at any other time.

**h. Website:**

Using an internet connection, a student can also browse the educational institution's website through a smart device. They can view the lessons from the e-book by entering the website. Bangladesh Open University has its website. And that is "www.bou.edu.bd." Anyone can save lessons, exercises and lessons by clicking on the e-book option on this website.

**i. Web TV:**

Web TV is not a satellite-based TV. Rather it is internet-dependent TV. Students can also take part in live streaming of various video lessons on such TVs.

Bangladesh Open University has its web TV, "BOU Web Tv." Here are the required lessons for students.

**j. Zoom meetings:**

Among the elements of modern technology, "zoom meetings" are currently gaining widespread popularity in distance learning methods. During the Kovid-19, there was a strong reliance on "zoom meetings" to carry out educational activities worldwide.

Through "Zoom," teachers and students can take part in the teaching and learning process face-to-face, even if they are in different places. This class is called a virtual class.

**14. Impact of Technical Materials on Open and Distance Learning**

For the benefit of modern technology, The Open and Distance education system is no longer an alternative education system. At present, this education system is being included in the mainstream education system. Many people can't get an education by attending classes as it increases the busyness of the people of the world. The use of modern technology is a unique blessing for them. As a result, it is possible to take lessons at home.

Again, many people are not interested in reading books due to age or busy schedules. They can study at home by joining the open and distance education system for the benefit of modern technology.

The Distance learning system is being added to the mainstream in the country. Digital labs are currently being set up in various colleges and universities. The University Grants Commission is arranging virtual classrooms under "BDREN."

So not just because of the epidemic. On the contrary, it is possible to impart education through distance learning methods for the benefit of modern technology at all times. In today's world, it is expected that the education system of most countries of the world will one day be open and distance learning system.

**Conclusion**

Conclusion There is no substitute for increasing the literacy rate of a country to meet the challenges of the 21st century. In today's busy world, it has become difficult for people to get an education by attending classrooms. And the world has revolutionized the advancement of technology. Therefore, using modern technology, students can educate themselves from their position through open and distance education systems. And some problems are also noticeable in this method. If solved, an open and distance learning system will be a blessing for us.

**Recommendations:**

1. Remote areas should be brought under electrification.
2. Internet speed should be increased across the country through the 5G service.
3. Need to arrange necessary training for the use of technology

### **Conflict of interests**

The authors declare no conflict of interest

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