Review Article

The Challenges and Prospects of E-learning in Bangladesh- A Review

ABSTRACT

Aims: The main objectives of the research were to identify the significant challenges that Bangladesh's education sector needs to improve before implementing e-learning, assess the possibilities for implementation of e-learning in Bangladesh, and the benefits e-learning might offer Bangladesh and how it might help the country's advancement.

The challenges of E-learning in Bangladesh: E-learning is a potential replacement for conventional classroom instruction, but there are several obstacles to its adoption, such as a lack of technology and infrastructure, a digital gap, a lack of trained teachers and educators, and a lack of high-quality E-learning resources. These issues have been exacerbated by the COVID-19 pandemic and the lack of internet connectivity and digital gadgets among some pupils, making it difficult for them to participate in e-learning programs. In addition, the shortage of qualified instructors and resources is also a significant issue.

The prospect of E-learning in Bangladesh: E-Learning has the potential to close the digital gap, expand educational opportunities, and raise academic standards in Bangladesh. It can provide pupils with high-quality instruction and bridge the gap between rural and remote regions. E-learning can also broaden pupil access to education and equip them with the competencies they need to thrive in the real world. Additionally, it can offer pupils attractive, collaborative learning opportunities and allow instructors to track student development and spot areas where students might need extra help. E-learning can revolutionize Bangladesh's educational system by providing students with high-quality instruction, flexible learning, personalized instruction, global learning, and women's empowerment.

Conclusion: The future of e-learning in Bangladesh looks promising, with the potential to close the digital divide, expand educational opportunities, raise academic standards, advance technology, encourage inclusivity, offer flexible and personalized learning, give access to resources for global education, and empower women. To ensure this, the government should create and carry out programs and policies that support ease and equality, facilitate diversity and accessibility, and keep track of and assess electronic-learning projects.

Keywords: Agricultural Extension, Online learning, eEducation, Distance Education, Remote Learning

1. INTRODUCTION

Every nation invests in education because it can benefit individuals, organizations, and society. Education can be conventional (face-to-face school instruction), and distance

education is offered with separation in terms of instructors' and students' physical locations. Distance education created opportunities to receive education via e-resources can be called e-learning [1].

Bangladesh is a low-income nation with extreme poverty and needs a substantial drive toward improved socioeconomic performance [2]. This is not conceivable unless the country's human capital situation is improved. Due to seat limitations and inflexibility in space and time, only a few people can receive an education at conventional educational institutions. Promoting open and e-learning systems can aid in resolving this issue. In almost all areas of education, a developing nation like Bangladesh must make the knowledge of the most qualified faculty available to its distant citizens. However, the fundamental question remains whether distance education is optimal for achieving this objective. It encompasses e-learning, blended, mixed-mode, flexible, and distributed learning. Open, and Distance Learning (ODL) is a catch-all term that incorporates a variety of teaching mixtures and contexts [3].

E-education is a system of education based on a two-way interaction and communication between the sources of teaching and the learner, maintained through both conventional and advanced information and communication technologies, to provide the learner with opportunities to encourage his self-study with a choice of time, place, pace, medium, access, and curriculum. According to Mangal & Mangal (2010), E-education is the sort of education that must be organized and delivered with the distance factor in mind. Who administers such education and who receives it are separated by a common factor, namely distance. According to Picclamo (2001), distance education makes use of three prominent and current media formats: (a) broadcast television, (b) two-way video conferencing, and (c) asynchronous learning networks (multimodal, wave-based delivery of institution that the student at any time can review).

One of the main obstacles to the adoption of E-learning is that, in 2020, only 14.4% of Bangladesh's people had access to the internet, according to the International Telecommunication Union (ITU) [4]. Additionally, E-learning in Bangladesh is hampered by frequent power failures and sluggish internet, especially in remote regions.

Another difficulty with E-learning adoption in Bangladesh is the language issue. While E-learning resources are frequently in English, most people in Bangladesh understand Bengali. This results in a linguistic hurdle that prevents a sizeable percentage of the populace from accessing E-learning.

Despite these difficulties, E-learning has great promise to improve Bangladesh's educational system. E-learning became a competitive option to conventional classroom-based education during the COVID-19 epidemic. To continue offering education during the epidemic, many educational establishments in Bangladesh have switched to online networks [5].

Bangladesh's government has also launched several projects to advance E-learning in the nation. By 2021, the "Digital Bangladesh" goal expects Bangladesh to have a digital community [6].

To sum up, E-learning can solve the issues with conventional Bangladeshi education. However, the country's shortage of infrastructure, restricted access to technology, and linguistic obstacles make the application of E-learning difficult. Addressing these issues and seizing the chances offered by emerging technologies are crucial if E-learning is to reach its maximum potential.

Learning, which is the transmission of instruction and training through technological media, has gained popularity across the globe. E-learning can completely transform the educational system in Bangladesh, where conventional educational systems encounter several difficulties. It allows students from anywhere in the country to receive a high-quality education. However, implementing E-learning in Bangladesh has been difficult due to a shortage of facilities, linguistic obstacles, and restricted access to technology. To emphasize the potential of E-learning to change the educational system, this study seeks to investigate the problems related to current e-learning and the future of E-learning in Bangladesh.

2. RESEARCH METHODOLOGIES

2.1 Identifying Research questions and goals:

Defining the research question and objectives is the first stage in the process of the paper. The research query should be clear, succinct, and precise to direct the evaluation process. The goals should contribute to answering the study issue and be quantifiable. The research questions for the paper were

I. What are the main obstacles Bangladesh's education industry must overcome to adopt e-learning?

II. How can e-learning be incorporated into Bangladesh's educational system, and what are its prospects?

III. What advantages might e-learning have in Bangladesh, and how might it advance the nation?

2.2 Literature searching

A thorough literature search is conducted in the second stage to find relevant studies. We conducted a research search using several sources, including PubMed, Scopus, or Google Scholar. The search words were used for the potential research query using Boolean expressions like AND, OR, and NOT.

2.3 Data extraction:

In this stage, the authors collected the relevant information from those studies. The collected data were combined and evaluated to address the research questions and goals.

3. HISTORICAL BACKGROUND OF E-LEARNING

Researchers first looked into using computers for education in the early 1960s, when the idea of E-learning, or computerized learning, first emerged [7]. IBM created the first computer-based instruction program for its staff in 1960 [8]. The creation of courseware for academic and practical education began in the 1970s with the introduction of portable computers [7].

In the 1980s, computer-based instruction started to adopt a more multimodal strategy with the addition of video, music, and images [7]. With the rise of online classes and virtual colleges during the growth of the internet in the 1990s, E-learning saw new possibilities [8].

The initial Learning Management System (LMS) was created in 1995 by WebCT, which subsequently changed its name to Blackboard [8].

Nichols (2003) considers e-learning to be synonymous with online learning that is exclusively facilitated by the internet and accessible through the use of web-based, web-distributed, or web-capable technological instruments. This trend of defining e-learning as online learning facilitated by network technologies [9] has been reinforced by referring to it as the application of IT and the internet in education to make it simpler, more capacious, and more effective [10]. Ellis (2004), on the other hand, proposes an expanded concept of e-learning that includes offline methods of disseminating learning content via CD-ROM, audio and videotapes, satellite broadcast, and interactive television [11]. Consequently, from a broader perspective, any use of well-established and proven computer technologies for educational purposes can be considered e-learning [12]. This specific strategy encompasses the specialized subsets of e-learning, such as m-learning, in which learning is mediated by mobile devices like smartphones and tablets [13]. E-learning encompasses any learning-supporting instruction transmitted on a digital device such as a desktop, laptop, tablet, or smartphone [14].

With the emergence of social media, web 2.0 technologies, and the spread of mobile devices since the turn of the twenty-first century, E-learning has experienced a significant change [15]. Massive Open Online lessons (MOOCs) are now widely used, with websites like Coursera, edX, and Udacity providing free studies from prestigious institutions all over the globe [15]. In recent years, the use of social media in teaching and learning, such as the learning feedback system, has grown in popularity due to its interactive mode of instruction, which facilitates and accommodates the requirements of learners [16].

There are numerous designations for e-learning platforms, including learning management systems (LMS), course management systems, virtual learning environments, and knowledge management systems [17]. This multidimensional usage and standards have contributed to an overabundance of information regarding e-learning practices, ultimately deteriorating its conceptual obscurity [18].

E-learning is a quickly expanding market today, with projected worldwide earnings of $325 billion by 2025 [19]. Since schools and colleges worldwide were forced to switch to online learning to meet social separation regulations due to the COVID-19 pandemic, the acceptance of E-learning has been hastened [20].

3.1 E-learning in Bangladesh

E-learning is becoming increasingly popular worldwide, particularly during pandemics when conventional education has become complicated due to social isolation measures. Bangladesh, a growing nation, is also attempting to use E-learning to replace traditional classroom instruction.

Bangladesh has dramatically expanded its use of E-learning in recent years. The Bangladeshi government has launched several projects to advance E-learning, including "Amar Pathshala," a venue for online learning [21]. Schools, colleges, and universities are just a few of the private organizations in Bangladesh that provide E-learning courses.

The Global Digital Report estimates that nearly half Bangladesh's populace uses the internet [22]. Overall, 76.22 million of whom were regular mobile internet users, according to the study. Between January 2017 and December 2017, there was a more than 29% rise in online consumers. In addition, 93.69% of all contacts are made through cell networks, 6.17

% through internet service providers, and 0.14 % through metropolitan WiMAX networks [23].

Most people with access to technological devices are between the ages of 15 and 24. (e.g. computers, cell phones) [24]. They have cell phones in almost 90% of the cases. The figures above show that there is a chance for integrating technology into Bangladesh's teaching and learning procedures because pupils make up most of this age group. Few studies examine the promise and efficacy of e-learning in Bangladesh, even though it is still a comparatively new occurrence there [25]; [26].

Bangladesh Open University developed a dynamic learning environment backed by ICT using video, mobile devices, SMS-based tools managed through an LMS, and cutting-edge teaching based on the student-centred learning paradigm [27]. This research showed how effectively mobile phones can be used to build engaging learning spaces to reach most people and tens of thousands of pupils. Social media are used for student exchanges in Bangladesh, where ICT integration in education is still being introduced. In an observational investigation, [28] looked at the group interactions of college students using social media for integrated learning. In addition to classroom lectures on the fundamentals of computer programming, students also had to use social media to complete several tasks (questions) actively. The findings showed that text-based pupil engagement improved peers' problem-solving abilities. The results of the research discussed above are thus supportive of the use of e-learning tools. To better comprehend the benefits and drawbacks of adopting such tools in higher education schools in Bangladesh, this research seeks to do just that.

Despite E-learning's rising appeal in Bangladesh, several obstacles prevent its widespread use. The absence of facilities and technology in remote regions is one of the significant problems [29]. Another issue is the absence of qualified instructors and tutors who can deliver high-quality E-learning [30]. Another critical issue is the "digital divide," which prevents some pupils from accessing computers and the internet [29].

Despite these obstacles, Bangladesh's E-learning industry has bright future possibilities. The Bangladeshi government is constructing a digital infrastructure to support E-learning [21]. Private schools also engage in E-learning to give pupils an excellent education. In addition, the COVID-19 epidemic has sped up the acceptance of E-learning in Bangladesh, which is anticipated to increase considerably over the next few years.

In Bangladesh, E-learning offers a potential substitute for conventional classroom instruction. While several obstacles are preventing its execution, both public and private organizations are trying to surmount them. In Bangladesh, E-learning has bright future possibilities and is anticipated to experience rapid growth in the years to come.

4. THE CHALLENGES OF E-LEARNING IN BANGLADESH

In Bangladesh, E-learning is a potential replacement for conventional classroom instruction, but several obstacles prevent its adoption. These issues have been made even more apparent, and the COVID-19 epidemic has stressed the demand for answers. In this academic paper, we set out to summarise the E-learning issues in Bangladesh and offer some possible remedies.

4.1 Lack of Technology and Infrastructure

One of the main issues with E-learning in Bangladesh is the absence of technology and infrastructure in remote regions. For example, only 18% of rural families have internet

connectivity, compared to 44% of metropolitan households [31]. This digital gap hampers the application of E-learning in remote communities.

4.2 Digital Gap

The lack of internet connectivity and digital gadgets among some pupils makes it difficult for them to participate in E-learning programs. In Bangladesh, only 35% of minors aged 6 to 17 have access to a digital gadget, and only 38% have access to the Internet [32].

4.3 Lack of Trained Teachers and Educators

Another issue with E-learning in Bangladesh is the scarcity of qualified instructors who can deliver high-quality online instruction. Only 51% of Bangladeshi instructors, according to a World Bank study, have a secondary school degree [33]. As a result, Bangladesh's E-learning industry suffers from a shortage of trained instructors and tutors.

4.4 Lack of High-Quality E-learning Resources

Another issue with E-learning in Bangladesh is the lack of High-Quality E-learning Resources. Only 31% of Bangladeshi institutions can access digital instructional material [34]. The shortage of high-quality E-learning resources is hampering the efficacy of E-learning in Bangladesh.

4.5 Financial Challenges

In many areas of the nation, the lack of infrastructure, such as electricity and telephone lines, and universities' lack of funding and other resources to upgrade their computer labs are major barriers to introducing new technologies that require significant capital expenditures. Bangladesh Open University (BOU) gets substantially less government support than other universities in Bangladesh. Delays in creating and distributing instructional resources are considered a severe problem in Bangladesh. Extended public support for audio-visual media, and the government should give the BOU authority sufficient funding to address current issues.

4.6 Restrictions on the Communication Infrastructure

The nation's outdated communications infrastructure is the biggest obstacle to providing remote learning. An ISDN telecommunication network with fast bandwidth is presently being installed in Bangladesh. The desire for telephone service is still strong even though only about 900,000 telephone connections are nationwide. More than 100 million cell phones are in use. Cell phone providers provide Internet access in many locations.

4.7 Knowledgeable Support Staff

The shortage of computer-literate experts who can help create and facilitate computer-based remote learning. However, in recent years, many small organizations have appeared to instruct computer utilization in big towns.

4.8 Precautions for Cyber Security

Electronic tools are used extensively to offer remote learning. Hackers can make attacks on electronic media. Cybercriminals and hackers always look for unwitting internet users to

exploit. Those countries that take remote education and e-commerce seriously have taken action to resolve security concerns. Bangladesh and other developing nations can benefit from Singapore's approval of the Electronic Transaction Act in 1998 [35].

4.9 Lack of Fast Internet Provider

High-speed Internet access requires links made using fibre optic technology. Bangladesh recently acquired this resource and is gradually utilizing the technology. Bangladesh's introduction to the internet at the beginning of the 1990s was mainly made possible by the Bulletin Board System. The country's first VSAT (Very Small Aperture Terminal, a satellite-based communications system) data link was enabled on June 6, 1996. Two businesses received permits as Internet Service Providers from the Bangladesh Telegraph and Telephone Board. (ISP). VSAT will be installed by Grameen Cybernet and Information Services Network (ISN) [36]. Twelve ISPs were present after just one year. There are about 40 Internet service companies in Bangladesh. (For a list of ISPs in Bangladesh, see Table 1.) Most consumers (about 95%) reach the internet through mobile devices, with only 5% switching to broadband Internet from ISPs. (ISP). The Internet Service Providers Association of Bangladesh saw a rise in Internet consumers as good. They claim a significant increase in dependence on mobile devices for Internet surfing. The number of Internet users has grown considerably since different Internet bundles started to be offered nationwide by two Wi-max carriers and six mobile phone providers.

4.10 Inadequate Co-operation

The lack of true collaboration in quality management for remote learning—inadequate teacher tools for high-quality distance learning—is another crucial problem. The research found that people familiar with traditional organizations hold vital roles at BOU. A tendency toward "Conventionalizing the Distance Learning System" is seen occasionally. Furthermore, the online learning program at BOU lacks high-quality study and assessment efforts. The Bangladeshi government should establish a national content creation centre. With the help of this centre, the nation's content development can be coordinated, high-quality e-contents can be stored, e-content experts can be trained and developed, e-content standards can be created and monitored, and learning companies can share knowledge more easily.

5. THE PROSPECT OF E-LEARNING IN BANGLADESH

E-Learning can completely transform Bangladesh's educational system by giving pupils nationwide access to high-quality instruction. This section examines the future of E-learning in Bangladesh, including its potential to close the digital gap, expand educational opportunities, and raise academic standards. We also make some possible recommendations for effective E-learning adoption in Bangladesh. Bangladesh Open University (BOU) is the largest university conducting education through E-learning.

E-learning can revolutionize Bangladesh's educational system by giving pupils nationwide access to high-quality instruction. The demand for E-learning has increased due to the COVID-19 epidemic. We examine the potential of E-learning in Bangladesh and offer possible approaches for its practical application in this academic paper.

5.1 Bridge the Digital Divide

In Bangladesh, E-learning can help close the education gap by giving pupils in remote regions access to a quality education where conventional classroom instruction is impractical. Students who would otherwise be left behind can access E-learning thanks to

the expanding availability of digital gadgets and the internet. However, according to a Bangladesh Bureau of Statistics study, only 18% of rural families have internet connectivity, compared to 44% of metropolitan households [31]. E-learning can aid in bridging this gap and giving pupils in remote regions access to education.

5.2 Increased Access to Education

E-learning can improve Bangladeshi students' access to education, particularly those who cannot attend conventional classroom instruction due to distance or other constraints. According to a World Bank study, only 35% of Bangladeshi students finish primary schooling [33]. E-learning can broaden pupil access to education and equip them with the competencies they need to thrive in the real world.

5.3 Enhance education

E-learning can raise Bangladesh's educational standards. Students now have access to learning materials that are current and pertinent, thanks to the growing abundance of high-quality E-learning resources. Additionally, e-learning can offer pupils attractive, collaborative learning opportunities that are not feasible in conventional classroom settings. Additionally, e-learning allows instructors to track student development and spot areas where students might need extra help using data analytics.

5.4 Potential Strategies

Several possible strategies could be used to adopt E-learning in Bangladesh effectively. First, the Bangladeshi government can invest in digital infrastructure and give pupils who don't have access to it digital gadgets and internet access. Government agencies and private organizations can collaborate to create high-quality, open-access E-learning resources. To offer high-quality E-learning, qualified instructors can be recruited and taught. Efforts can also be made to ensure that E-learning is open and available to all pupils, regardless of their financial status.

E-learning can completely transform Bangladesh's educational system by giving pupils nationwide access to high-quality instruction. The COVID-19 epidemic has emphasized the value of online learning even more because conventional classroom instruction has become nearly impossible due to social isolation measures. This review examines the possibilities for E-learning in Bangladesh and its potential to close the digital gap, expand educational opportunities, and raise academic standards.

5.5 Flexible Learning

Students who use e-learning can study whenever and wherever it's most practical. This is particularly crucial in a nation like Bangladesh, where many pupils must labor to support their families. Students can obtain high-quality education through e-learning without sacrificing their jobs or other obligations.

5.6 Personalized Instruction

With the use of e-learning, instructors can give each pupil individualized instruction, enabling them to study at their own speed. This can assist in addressing the problem of congested classes in conventional educational systems, where instructors cannot give each pupil their

undivided focus. Additionally, instructors can use data analytics to track students' growth and give them input so they can get better.

5.7 Global Learning

Students in Bangladesh may have access to tools and knowledge from around the world through e-learning, which could improve the standard of instruction. In addition, students can obtain learning materials and resources from organizations and specialists around the globe through e-learning, which can expand their views and introduce them to fresh ideas and viewpoints.

5.8 Women's Empowerment

By giving Bangladeshi women access to education, e-learning can be a potent instrument for their advancement. Unfortunately, cultural standards and conventional gender roles frequently prohibit girls and women from getting schooling in many areas of Bangladesh. E-learning offers girls and women a secure and convenient method to receive education, which can help resolve this problem.

6. CONCLUSIONS AND RECOMMENDATIONS

The future of e-learning in Bangladesh looks bright, with the potential to close the digital divide, expand educational opportunities, raise academic standards, advance technology, encourage inclusivity, offer flexible and personalized learning, give access to resources for global education, and empower women. A coordinated effort from the government, commercial schools, and other partners will be necessary for the practical application of e-learning in Bangladesh to guarantee that it is affordable, inclusive, and of the highest standard.

The study concludes by highlighting the challenges and potential of e-learning in Bangladesh. While there are significant obstacles to adopting e-learning in the nation, the research showed that there are also bright future possibilities. The crucial issues cited were a shortage of digital knowledge, insufficient facilities, and uneven access to technology. The review did, however, point to some potential remedies, including creating a thorough plan for digital infrastructure, increased funding for training in digital literacy, and forming alliances between public, private, and international organizations to advance e-learning.

The future of e-learning in Bangladesh looks bright, with the potential to close the digital divide, expand educational opportunities, raise educational standards, advance technology, encourage inclusivity, offer flexible and individualized learning, give access to international learning resources, and empower women. However, a coordinated effort from the government, commercial schools, and other partners will be necessary for the practical application of e-learning in Bangladesh to guarantee that it is affordable, inclusive, and of the highest standard.

Based on the review's conclusions, the following suggestions are put forth:

1. Create a thorough digital infrastructure plan: Bangladesh's government should create a complete plan outlining the steps required to advance the growth of the nation's digital infrastructure. The strategy should include measures and efforts to advance the development of remote e-learning facilities, the growth of broadband internet connectivity, and the supply of essential hardware and software for e-

learning. The government should collaborate with the business sector and foreign groups to successfully execute the strategy.

2. Increase your investment in digital literacy training: Investing in digital literacy training initiatives is crucial to boosting e-learning usage. These courses ought to be created to give instructors, pupils, and other participants the ability to use online learning tools successfully. The training programs should include hands-on training, internet classes, and other engaging training methods and should be customized to suit the requirements of various parties.

3. Create alliances between the public, private, and non-profit sectors: alliances between the public, private, and non-profit sectors can help guarantee e-learning projects' success. These collaborations can offer the technological assistance, knowledge, and money required to create e-learning materials, set up criteria for excellence, and encourage e-learning. The collaborations should be built on common goals and should be planned to take advantage of each partner's abilities.

4. Encourage diversity and accessibility: Supporting students with impairments and those from underrepresented groups is crucial for ensuring that e-learning is open and accessible. This can be accomplished by creating open and equitable e-learning material, offering helpful tools, and establishing rules that support fair access to e-learning. In addition, the government should collaborate with pertinent groups and parties to create and carry out programs and policies that support ease and equality.

5. Keep track of and assess e-learning projects: Monitoring and assessing the results of e-learning efforts frequently is crucial to ensure their efficacy. A tracking and assessment system that keeps tabs on the development and results of e-learning projects and offers suggestions for growth should be put in place by the government. The system ought to be built with suggestions for development and areas of strength and vulnerability.

In conclusion, the suggestions made in this article call for a complete strategy to handle the issues and take full advantage of the possibilities presented by e-learning in Bangladesh. Bangladesh can effectively harness the potential of e-learning to increase access to education and close the digital divide by working cooperatively, investing in digital literacy training, forming partnerships, promoting inclusivity and accessibility, and monitoring and evaluating e-learning initiatives.

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