

The Impact of Online Education in Bangladesh- A Case Study during Covid 19

Sadia Afrin¹, Dr. Md. Fokhray Hossain²

¹Student of MIS, Daffodil International University (DIU), Dhaka Bangladesh

²Professor Computer Science and Engineering (CSE), Daffodil International University (DIU)
Dhaka Bangladesh

Abstract:

Educational Data mining is a conspicuous research area that helps to develop an educational context. The primary purpose of this work is to find out the factors or attributes for finding out the impact of online education on school-level students in Bangladesh. To prepare the attributes, help was taken from some of the renowned persons of the English Medium and Bangla medium Schools in Bangladesh, such as the principal, vice-principal, coordinator, teacher, human resources manager, parents, and students. A set of questionnaires with 20 different questions were prepared. Google Forms collects data from students to identify the relevant attributes. This study reveals the main factors of online education in Bangladesh for school-level students. This study finds the strengths and weaknesses of online education for students. It refers to the idea of overcoming the disadvantages of online education. In the future, this study will help to implement a better online education system for school students in Bangladesh.

Keywords: online education, covid-19, the impact of online education, education in Bangladesh

I INTRODUCTION

Online education marks a new era in the traditional education system. While it has been implemented in higher education for a few years, it is a relatively new concept for junior levels. To encourage more people to use the Internet for education, awareness needs to be raised, emphasizing user-friendly and accessible features.

The epidemic forced educational organizations, including professors and students, to transition to an online environment where they felt uncomfortable.^[1] It is essential to understand the impact of online education from the mentors' and learners' corners in all learning eras. Therefore, the inability to consider the invisible underlying student self-selection could lead to an underestimation of the adverse impacts of the different formats on learners' course performance. Online learning has gained much priority in the education system. Most of the research is focused on how to apply online education at higher levels of education, where it was first used for higher education a few years ago.^[1] Like the school level, the junior education level also practices the d online education system.

It is crucial to comprehend the consequences and effects of the COVID-19 pandemic, as evidenced by the global education crisis. There have some positive and negative impacts of the online education system. To successfully implement online education at the school, college, and university levels, it is crucial to identify the main challenges and determine the most effective strategies to address them. The community recognizes educational data mining as a developing field in this regard.^[2]

Improving one's knowledge and skills through learning can lead to a better grasp of moral principles, ethical behavior, and social abilities, among other important aspects. Although there are several amenities available, there are still some obstacles that must be addressed in order to implement this method and achieve long-term success. ^[3]. This study highlights issues within the online education system in Bangladesh. Tertiary students in the country need to have access to affordable or free online subscriptions and practical distance learning courses. The level of consistency and methodical use of the system and the willingness to track self-study data can vary among learners.

II OBJECTIVES

Identifying the merits and demerits of the online education system in Bangladesh consist of three levels ^[4]. This study explores the effects of online education at various levels, as perceived by both students and teachers. It also aims to provide recommendations for establishing a reliable online education system in Bangladesh.

To address the challenges of online education, educational institutions should provide support for teachers, training for students, and assistance for content creation. ^[5]. Educators should strive to create high-quality, academically effective courses and utilize ICT to enhance online classroom engagement as much as possible ^[6]. It's important to remain open to communication, engage in frequent conversations, provide feedback, and respond promptly to any inquiries ^[7].

III LITERATURE REVIEW

Our children must develop a well-rounded education to succeed and prosper in a global society ^[8]. There is a need for more relevant work to be performed in Bangladesh. Although fewer projects were produced globally, the few significantly created pieces aided me.

Related works:

- This article employs an interpretive research method to explore the perspectives and emotions of 28 adjunct professors. The researcher could draw comparisons by gathering the viewpoints of adjuncts and full-time professors on the effect of face-to-face interactions on teaching. The study's results highlight areas online colleges could improve to enhance adjuncts' trust and connection with their institution, which could positively impact student acceptance rates ^[9].
- The goal of this study was to conduct an online survey to gain insight into how students and instructors perceived and experienced online classrooms. The survey results revealed that certain factors are essential for teachers and learners to feel satisfied and committed to the lessons. These factors include timely and efficient communication between students and professors, access to technical support, well-organized online course interfaces, and accommodations to accommodate class behavior ^[10].
- In the current era where distance classes are the only accessible choice, students have varying opinions and assessments of their usefulness. The findings suggest that students' responses to online education depend on their comfort level with online resources, the technological capacity to access online courses, and how teachers manage active learning ^[11].
- This study shows the advantages of online education, such as increased access to schooling for those who cannot attend traditional institutions, better teacher-to-student ratios, and improved ease of learning. The research was observational and critical, with only a small number of telephone interviews conducted with lifelong residents of Saudi Arabia. Additionally, data was collected from various e-learning institutions ^[12].

- When it comes to distance learning, certain factors can impact a student's enjoyment and academic achievement. This study considered the teacher's professionalism, instructional strategy, timely evaluation, and meeting students' expectations. These four elements are essential for school leaders to focus on to ensure high levels of productivity and success for online learning. This study aims to investigate how online instruction has affected students' academic achievements during the COVID-19 pandemic ^[13].
- With the sudden halt of traditional teaching methods, "online learning" has become vital for engaging with students, maintaining their interest, and reducing study time loss. Although virtual learning started excitedly, its shortcomings have become evident over time, necessitating thorough scrutiny and research. This essay examines the impact of online learning in institutions during the COVID-19 crisis and proposes ways to enhance the online learning experience ^[14].
Computers are utilized for learning at all stages of life, including early childhood and throughout school, rather than solely in academic curriculums ^[15]. As schools gradually reopened their doors to learners following the COVID-19 outbreak, there needed to be more understanding and research on blended instruction ^[16].

IV RESEARCH METHODOLOGY

A. Research Subject and Instrumentation

In this research, the main subject was determining the impact of the online education system in Bangladesh. Here there are some sub-subjects, and they are:

Selecting Attributes Table: with the help of specialist persons from different schools in Bangladesh, several research papers and an additional website attributes table were created.

Data Pre-processing: Weka's built-in pre-processing technique ^[17] is a pre-processing instrument for data pre-processing. Also, pre-processed data manually.

The research design is a descriptive case study utilizing a qualitative method design ^[18]

B. Data Collection Procedure

Sample attributes were collected from some specialist persons of English medium, English Version, and Bangla Medium schools in Bangladesh. Based on those sample attributes, the main attributes were prepared.

Google form had been created based on those 20 questionnaires. Data were collected through this form from the students.

C. Data Analysis Procedure

I tried various machine learning algorithms with multiple variables to achieve this study's desired result or outcome. Simple EM, Simple K-means clustering, Farthest First, Filtered clustering, Hierarchical clustering, Canopy clustering, and Make Density Based Clustered are the clustering techniques I used. Machine learning algorithms produced various outcomes.

V FINDINGS

A. Results and Discussion

The best experimental result is given below:

K-means clustering

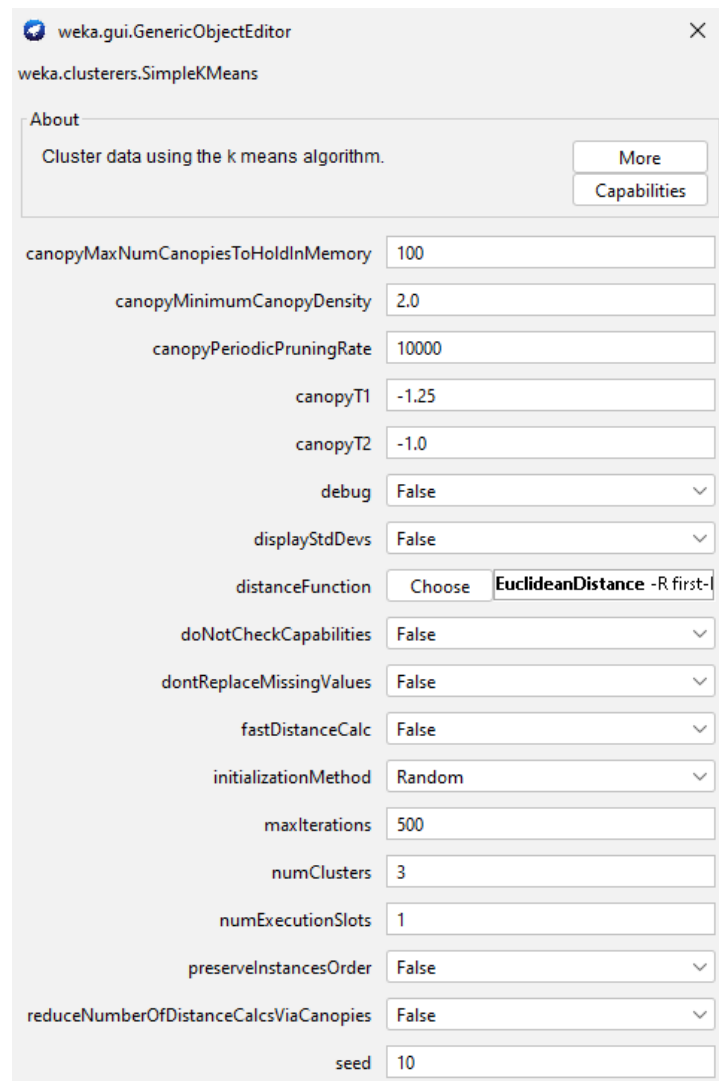


Fig 1: Cluster attributes

Simple K-means clustering with 3 clusters, seeds 10, Euclidean distance, maximum 500 iterations shows the best result.

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Time taken to build model (full training data) : 0.02 seconds

=== Model and evaluation on training set ===

Clustered Instances

0      134 ( 44%)
1       96 ( 32%)
2       74 ( 24%)
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Fig 2: Clustered Instance of K-means clustering with 3 cluster

Simple k-means clustering with 3 clusters gives the best result. One hundred thirty-four instances were found in cluster 1, the best cluster, which is 44% of all data.

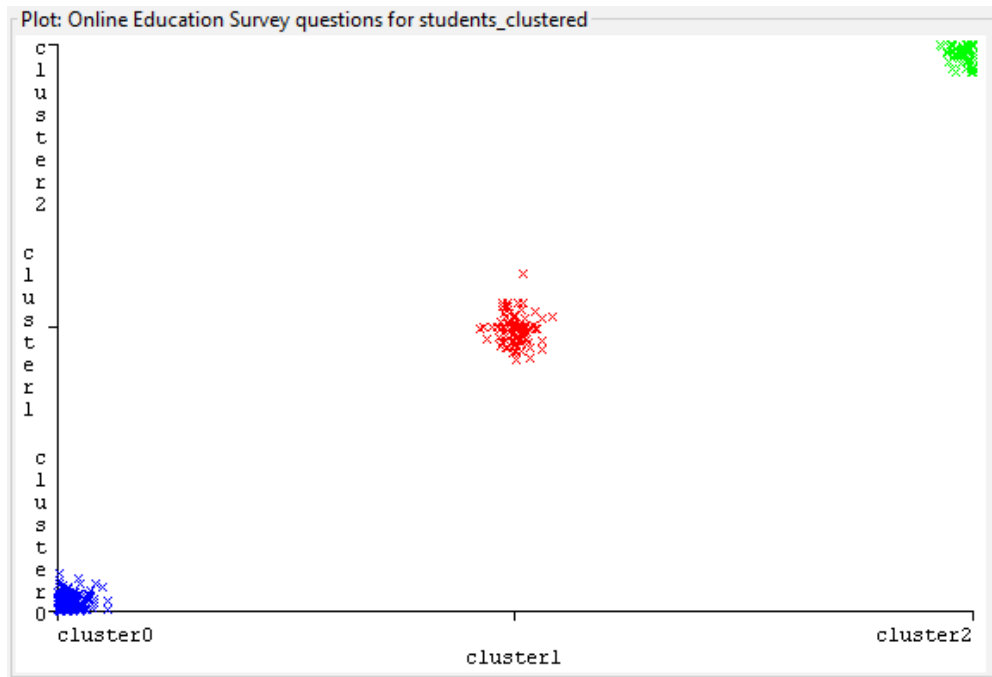


Fig 3: Cluster centroid of K-means clustering with 3 cluster

Table 5.3.1: Best cluster values

Serial	Attribute	Cluster value
1	Level of Student?	The school (Age under 16)
2	What device do you use for online classes?	Smartphone
3	How much time do you spend daily on online education?	4-6 hours
4	How effective was online learning for you?	Very effective
5	How helpful was your institute to learn from home by giving resources?	Very effective
6	How difficult was online learning for you during the COVID-19 pandemic?	Easy
7	Which platform do you use for academic activities?	Google Classroom
8	Do you enjoy online learning?	Yes, but I would like to change a few things.
9	How helpful are your mentors while studying online?	Very helpful
10	Do you get the proper theoretical and practical classes in online?	No
11	Is there any difference between face-to-face learning and online learning?	Yes
12	The class was very well organized-	Agree
13	The instructor was very good at communication-	Agree

14	The instructor was motivating and enthusiastic-	Agree
15	The teaching methods were helpful-	Agree
16	How well could you manage time while learning online? (5= extremely well, 1 =not)	2.98(Playtime) 3.0795(Academic schedule)
17	How do you feel overall about online education?	Good
18	From your point of view, which one is the main strength of the online education system?	Anywhere, anytime(Flexibility)
19	From your point of view, which one is the main weakness of the online education system?	Accessibility to technology

VI SWOT ANALYSIS

Online education has become increasingly popular in Bangladesh, especially after the COVID-19 pandemic. Online education refers to teaching and learning using digital technologies. Online education has had a significant impact on the education system in Bangladesh, as it provides more flexibility and accessibility than traditional classroom-based education. This essay offers a SWOT analysis of the effects of online education in Bangladesh.

A. Strengths

In Bangladesh, online education boasts several advantages. Firstly, it offers an opportunity for students who may have yet to be able to attend traditional institutions due to financial, geographic, or other constraints. This promotes inclusivity and fairness in the education system. Secondly, online education gives students more flexibility, allowing them to conveniently access course content. They can balance their studies with work, family, and other obligations. Thirdly, online education is cost-effective, eliminating the need for expensive textbooks, commuting, and other related expenses. Education should be this option is available to those who may not have the financial resources to attend conventional educational institutions. Fourthly, online education provides access to a wide range of learning materials and resources, making it easier for students to explore topics of interest. Additionally, online education allows students to learn from experts outside of traditional institutions.

B. Weaknesses

While online education has its strengths, there are areas for improvement in Bangladesh. One issue is that students need reliable internet access and technology, which may only be available to some. This can create inequality in access to education, especially for students from rural or disadvantaged backgrounds. Additionally, certain fields of study, like medicine, engineering, and the arts, require hands-on training that may be challenging to replicate online. Some students also thrive better in a face-to-face environment with teachers and peers, especially those who require extra support or struggle with self-directed learning. Finally, traditional classroom-based education, with its social and collaborative elements, may be more effective in keeping students motivated and engaged.

C. Opportunities

In Bangladesh, online education offers a number of advantages. Firstly, it can help overcome the shortage of qualified teachers by connecting students to experienced and skilled teachers worldwide. Secondly, online education provides a flexible and accessible approach to learning, thereby promoting lifelong learning and improving the skill set of the workforce, which can lead to increased productivity. Thirdly, online education can play a role in addressing the quality problems in the education system by providing quality learning resources and materials. Finally, online education can promote innovation and entrepreneurship.

D. Threats

While online education presents many opportunities, several concerns must be addressed. One significant risk is that it may worsen existing inequalities in the education system. Students from disadvantaged backgrounds may need more technology and internet connection for online learning. Additionally, online education may foster an individualistic culture that undermines traditional classroom-based education's social and collaborative aspects. Furthermore, better regulation of online education is necessary to ensure quality control and accreditation, as poor regulation may harm the credibility of online degrees and qualifications and lead to a decline in education quality. Finally, online education may not be able to provide the hands-on experience necessary for some fields of study, particularly those related to technical and vocational areas.

VII CONCLUSION

The research conducted on the influence of online learning in Bangladesh has offered valuable insights regarding the benefits and difficulties of online education in the country. The impact of online education in Bangladesh has been significant, particularly during the Covid-19 outbreak. The advantages of online learning, such as accessibility, affordability, and flexibility, have made it a worthwhile substitute for conventional classroom learning. The transition to online education has enabled students to continue their studies, even amidst the disruptions caused by the pandemic.

The availability of online education has opened up a great opportunity to make education more accessible to marginalized communities. It also has the potential to improve digital skills and offer a wider range of educational resources. Online education has had a positive impact in Bangladesh, but there are still some challenges to overcome to ensure that learners have access to quality education. One of the biggest challenges is the need for more access to technology and internet connectivity, which must be addressed so that learners in rural areas can also benefit from online education. In addition, it's essential to provide learners with relevant and high-quality digital resources and appropriate training and support for educators and learners. Educators must be trained to use digital technology and online platforms effectively, while learners require proper guidance to access and utilize online resources effectively.

The digital age has brought about the potential for online education to transform the education system in Bangladesh. This can make it more inclusive, accessible, and relevant to the needs of learners. However, some challenges must be addressed to ensure that learners have access to quality education. The government and other stakeholders must invest in technology, digital infrastructure, and training to make this a reality. By doing so, online education can become accessible to all learners in Bangladesh.

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APPENDIX

Sample attributes are given below:

```
23:29:12 - Ranker + CorrelationAttributeEval

=== Attribute Selection on all input data ===

Search Method:
  Attribute ranking.

Attribute Evaluator (supervised, Class (nominal): 1 Timestamp):
  Correlation Ranking Filter

Ranked attributes:
0.054    8 7. Which platform do you use for academic activities?
0.0536   13 12. The class was very well organized-
0.0536   15 14. The instructor was motivating and enthusiastic-
0.0535    6 5. How helpful your institute was to learn from home by giving resources?
0.0535   11 10. Do you think you get proper theoretical and practical class in online?
0.0534   16 15. The teaching methods was helpful-
0.0532    4 3. How much time do you spend daily on online education?
0.0531   10 9. How helpful are your teachers while studying online?
0.0528    7 6. How difficult was online learning for you during the COVID-19 pandemic?
0.0525   14 13. The instructor was very good at communication-
0.0525    9 8. Do you enjoy online learning?
0.0525    5 4. How effective was online learning for you?
0.0508    3 2. What device do you use for online class?
0.0504   19 17. How do you feel overall about online education?
0.0501   21 19. From your point of view which one is the main weakness of online education system?
0.0492   20 18. From your point of view which one is the main strength of online education system?
0.044    12 11. Is there any difference between face to face learning and online learning?
0.0407   18 16. How well could you manage time while learning online? (Consider 5 being extremely
0.0387   17 16. How well could you manage time while learning online? (Consider 5 being extremely
0.0204    2 1. Level of Student
0.0184   22 20. What is your opinion to overcome the weakness?

Selected attributes: 8,13,15,6,11,16,4,10,7,14,9,5,3,19,21,20,12,18,17,2,22 : 21
```

Fig 4: Attributes to collect data (Implemented in WEKA)