Smart Internz

Unveiling The Virtual Classroom:

An In-Depth Analysis Of The Online Education System

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1. Introduction

Many educational institutions switched to online teaching and learning during the Covid-19 pandemic. An online education system is one that provides education in lieu of a traditional system. Due to the unexpected and sudden change over in the mode of education the teachers were unprepared for this crisis circumstance, lacking enough time and resources to organize continuous distant teaching. In this project, a detailed analysis of pros and corns in online education is carried out for the betterment of future of the students and upcoming EdTech companies.

1.1 Overview

During the COVID 19 pandemic there was an immediate need to deliver online classes. Private professional certification bodies such as CISCO and Microsoft pioneered online learning and online evaluation, while some universities began to offer online classes in order to expand into new markets. It has been difficult for teachers and students alike to uphold the standard of instruction. Self-directed learning should be prioritized in order to maintain quality, and educators have to manage the satisfaction of learners with online classes in order to improve learning results. To bridge the gap between the learners and educators a survey was conducted and data was collected from 1033 online learners. This project aims to critically look into various parameters of online education thereby come out with some insightful findings and suggestions using IBM Cognos Analytics Software. Further, in this project some suggestions to improve the feasibility of online education are also highlighted.

1.2 Purpose

Universities gained expertise and skills in delivering online classes after the pandemic, and they are constantly upgrading their online content by making it more users pleasant. There is evidence that universities are enhancing the transition from traditional teaching to e-learning. Many EdTech companies like UpGrad, Udemy, BYJU's, Vedantu, Corseera and online learning platforms like Big Blue Button, Zoom, Microsoft Teams, and Blue Jeans are in a situation to analyze the effectiveness of online learning. According to research conducted with the data set, students' perspective in online learning is correlated with both their performance and the environment in which they are learning. The purpose of this project is to provide solutions to the Edtech companies to enhance their skill sets and features in communicating with the learners and thereby get benefited mutually.

2. Literature Survey

The survey is based on the online education and existing approaches for handling the problem thereby providing an alternative solution.

2.1 Existing problem

There are basically four vital components in any online education system.

- Virtual Classroom
- Individual Activities
- Assessment in Real Time
- Collaborative Group Work

Along with this Data analytics tool coupled with the LMS is essential to enhance the quality of teaching and improve the course design. The literature study has analyzed certain fundamental principles for effective usage of online tools as shown in Figure 1.

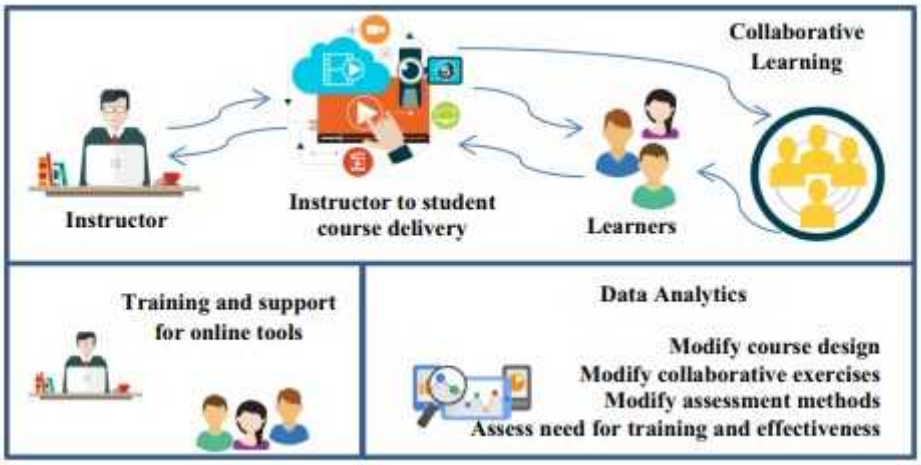


Figure 1: Basic Principles of effective online learning

2.2 Proposed solution

Based upon the customer feedback we propose certain solution for this business model.

- High bandwidth is typically required for EdTech solutions, as video buffering and strong analytics are frequently required. For an EdTech product to work, it requires a combination of high-speed internet and a reliable gadget, and India has yet to fully commoditize this coupling for its enormous population. EdTech companies can meet this problem by gradually adapting to the change and introducing a feature after the target audience has access to it.

- Many e-learning systems are beginning to employ a Dynamic HTML (DHTML) scripting in delivery. DHTML is similar to Thin-client technology. It allows the users for more engaging interactions without the need for browser plug-ins -provided the browser version is fairly recent.

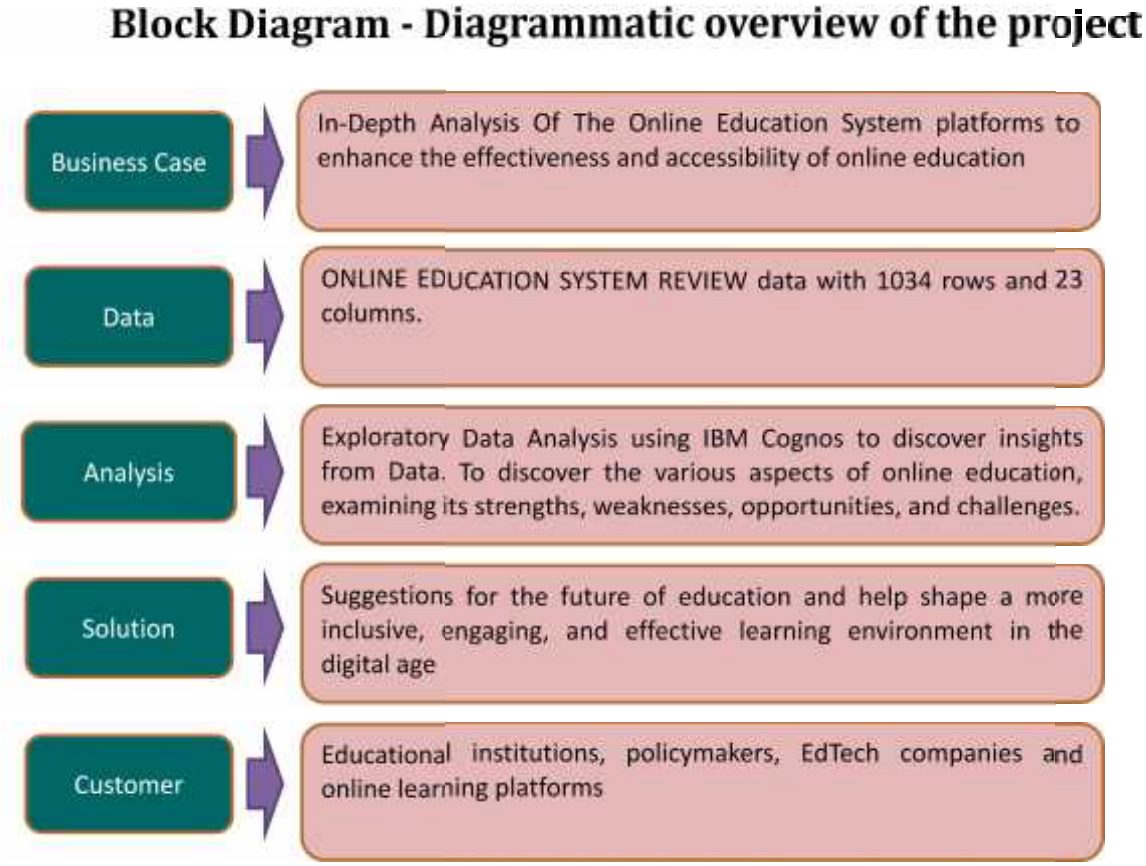
- XML, short for Extensible Markup Language, allows learning content to be labeled in detail, making it possible to customize e-learning content based on a learner's needs.

- Finally, VRML Virtual Reality Modeling Language is the 3D language of the Web. It's purpose is to provide information to web pages in a three dimensional format.

3 Theoretical Analysis

In this chapter, we will discuss into theoretical insights of the project.

3.1 Block diagram



3.2 Hardware / Software designing:

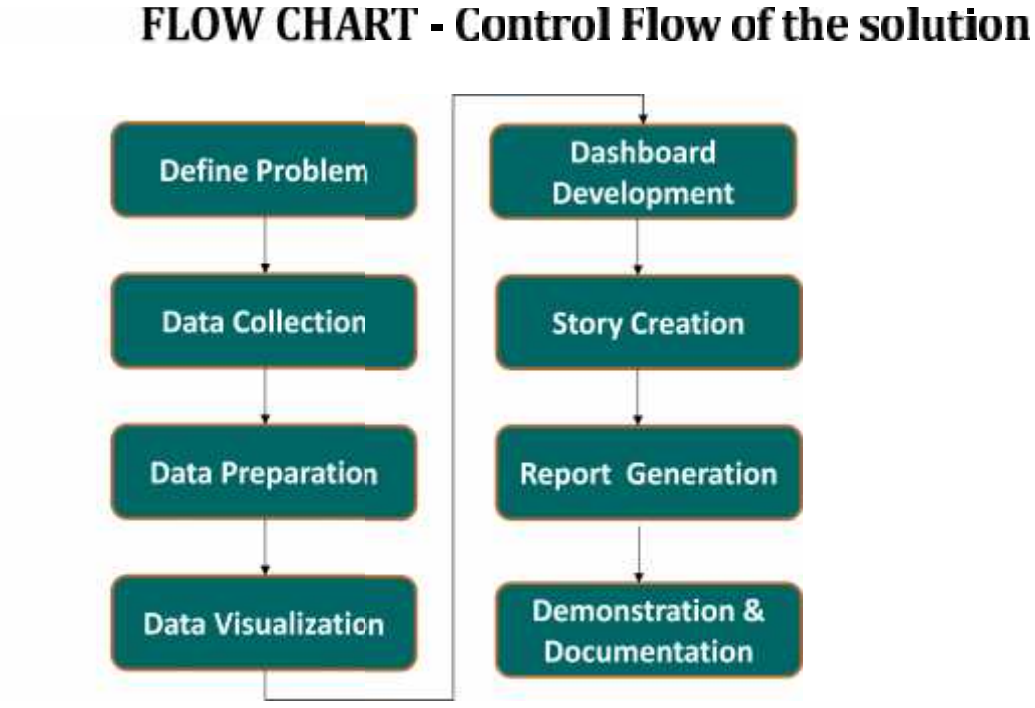
The software used in this project is IBM Cognos Analytics. The software IBM Cognos Business Intelligence is a web-based integrated business intelligence suite by IBM. It provides a toolset for reporting, analytics, score carding, and monitoring of events and metrics. The software consists of several components designed to meet the different information requirements in a company.

4 Experimental Investigations

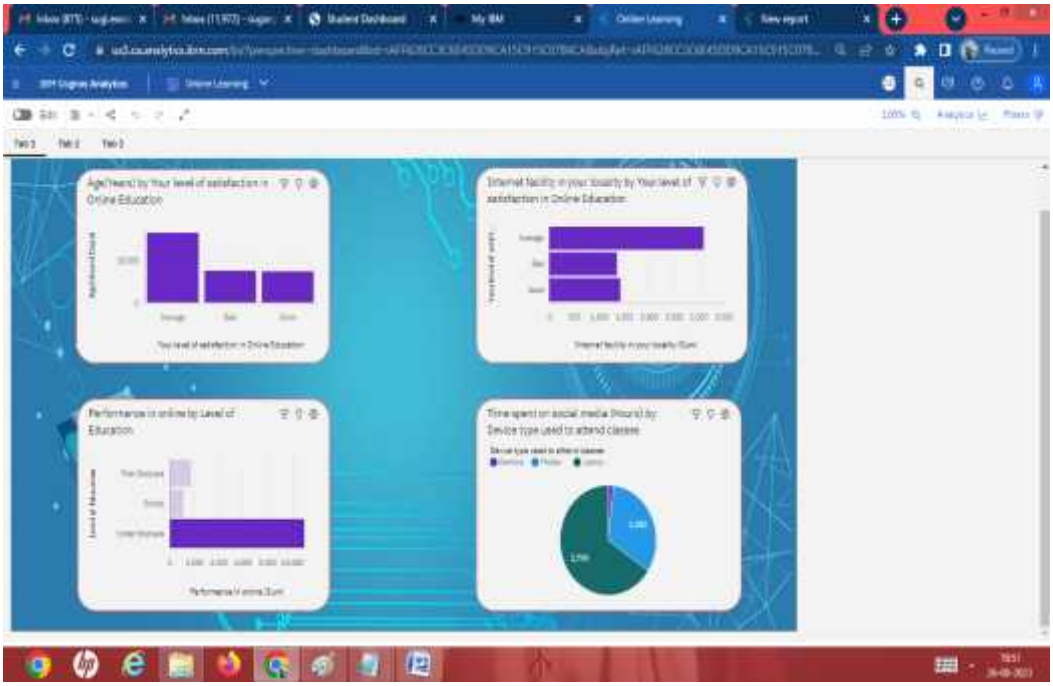
The data is collected from the students who took their online education and a detailed investigation is done with the help of IBM Cognos Analytics tool. We present some useful insights that are obtained after data cleansing and data exploration.

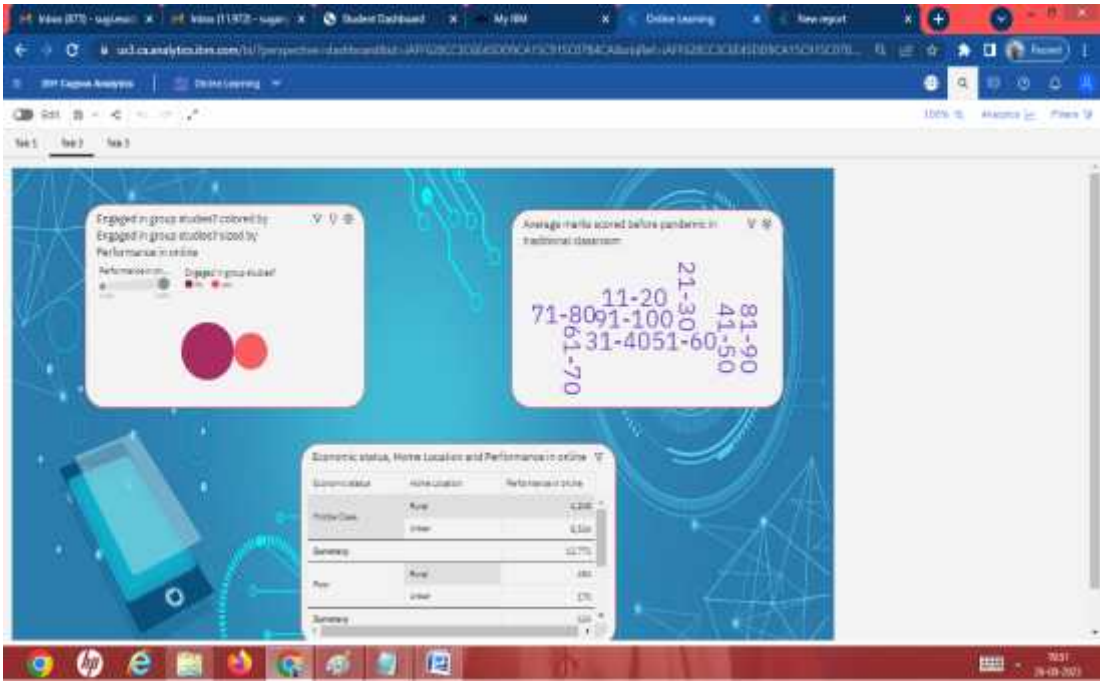
- Age(Years) is unusually high when Your level of satisfaction in Online Education is Average.
- Your level of satisfaction in Online Education Average has the highest total Age(Years) due to Home Location Urban.
- Home Location Urban has the highest Internet facility.
- The Under Graduate Students are observed to perform well in Online Education.
- Laptop is used most for online learning.
- Time spent on social media (Hours) is unusually high when Device type used to attend classes is Laptop.
- Average marks scored before pandemic in traditional classroom 81-90 has the highest total Number of Subjects at nearly 5 thousand, followed by 71-80 at nearly 4500.
- According to the data provided the rich rural students perform better than the other students.
- Performance in online is unusually high when Study time (Hours) is 4.
- Performance in online shows a strong seasonal trend every 5 hours. The largest values typically occur at period 2, whereas the smallest values at period 4.
- Performance in online is unusually high when Sleep time (Hours) is 7 and 8.

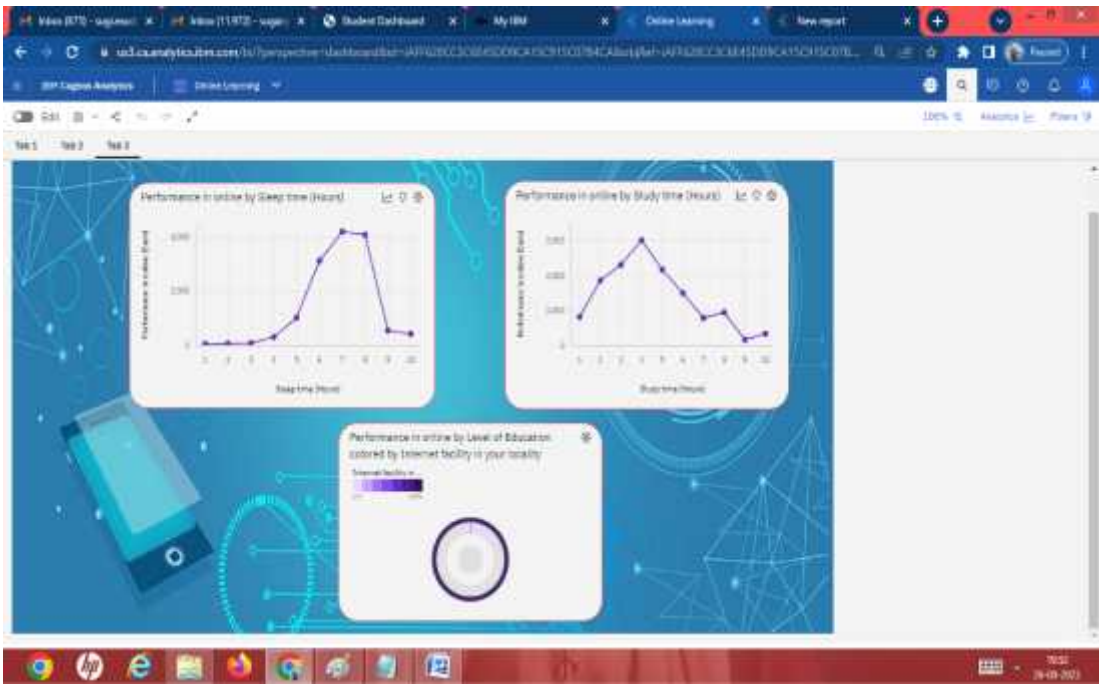
5 Flowchart



6 RESULT







7 Advantages & Disadvantages

There are certain advantages and disadvantages for the proposed solution. Let us discuss that in detail.

ADVANTAGES:

- The desire for convenience when managing existing commitments continues to be the leading motivator for enrolling in an online program.
- DHTML, VRML and XML will be learner centric thereby the students get interested in continuous learning.

DISADVANTAGES:

- The biggest challenges students face when making the decision to enroll in an online program continue to be finding a program that meets [their] needs and interests, applying for financial aid and identifying sufficient funding sources, and estimating actual costs.
- When students search for information about online programs, they rely most on college websites and online student reviews.
- The device type and internet connectivity is still a tough challenge to access the information from even rural locations.

8 Applications

The proposed solution of the project can have the following application.

1. **XML technologies** are mainly based on our experience within the project WebCoCT – Web-based Courses Creating Tools. The database accompanying WebCoCT contains the information on users and courses for administration purposes. It allows the administrator to restrict access to authorizing tools only to group of authors and parts of courses only for students with logins and passwords.

2. In **VRML** students can experience learning and actively participate in the lesson with virtual reality. Virtual reality fully immerses students and completely focuses their senses on the teaching topic. When experiencing topics as if they are reality the student's brain create a clear, detailed mental understanding thereby helping to improve the knowledge retention by up to 75%.

3. It can be used to practice a real time combat situation or battlefield training before being a part of the actual training and in medical training this can be used in order to practice virtual surgeries, treatment description and a have a 3D vision of the human anatomy to get to know and understand better.

4. Not just in these two fields virtual reality learning can be used in other training like mechanicals, disaster management, even virtual laboratories to get a detailed view of the situation and practice a safe and cost friendly learning methodology.

9 CONCLUSION

.This project focuses on in depth analysis of online education in today's era. The data was collected from students who took their online education during the pandemic period. Due to the sudden shift of traditional education to online education the faculties where not well equipped in engaging the students. The overall study and observation are highlighted in this project and the results emphasize the need for a paradigm shift of some new technologies to be introduced in the online education. This project can pave a way for the EdTech companies to restructure their model. It is to note that technology infrastructure has become an inseparable part of EdTech solutions for businesses to grow and lead and get ahead of competitors. From an infrastructural forefront, the prime necessities are a good internet connection, multi-feature apps, and 24*7 available study materials.

10 FUTURE SCOPE

- This year, almost half (47%) of school administrators surveyed said their schools were increasing spending for online programs, up from the previous two years where budgets were largely anticipated to remain steady during the pandemic.
- Health professions (including nursing) and computer and information science programs are expected to see the most enrollment growth online over the next five years.
- A little more than one-third (37%) of school administrators surveyed agreed that their institutions are actively researching the possibilities of immersive technologies (e.g., virtual reality, metaverse) for use in their online courses and programs.

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