Summer Project Report

by

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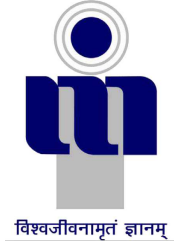
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Abstract

For a very long time, the teaching-learning process has remained the same. Even though online leaching was present, it was not prioritized, but with the recent outbreak of the covid19, lockdown was imposed and every one was forced to be stay at home, which lead to change in the entire teaching and learning. Initially both teachers and students struggled with the process, no proper way to teach students, or to take assignments. Which created a huge demand for a product which could ease online learning.

It is important to explore this market and constant research and development needs to be done because this is going to have a huge impact in the futures education system. The aim of the project is to build one single platform for all the academic requirements. In this Project I use simple technology such as MERN Stack is used do build a web-based application.

This paper discusses the the introduction and working of the project.

Acknowledgments

I would like to take this opportunity to thank Dr. Pinku Ranjan sir and Dr. Somesh Kumar sir, not only for their mentorship but also for the guidance and motivation they provided throughout this project. Thanks to their Suggestions and feedback, I was able to do such a great project.

This project for me was a great experience and a huge opportunity to learn so many new things. I would also like to thank the institute for a giving me this opportunity.

Atlast, I would like to thank my friends and family for their indirect support throughout the project.

(Sanket Kumar Dawar)

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Chapter 1

Introduction

1.1 Context

As last year we saw a breakout of a serious pandemic, which affected us in many ways, Education system also took a major hit. Soon online classes became the main source of teaching-learning.As this was just the beginning there were very few resources were available to continue schools and colleges online. This project is focused towards enhancing online teaching-learning by providing one single web application for all academic needs of both student and teachers.

1.2 Problem/Motivation

With this sudden shift from offline to online teaching, the huge issue is that there is no proper application to manage all the academics related activities. teachers and students need to have multiple applications for different purposes. e.g.- one application for taking online class, another for exam and another for attendance alone. This often leads to confusion and frustration.

There is no proper way of communication between student and teacher, To clear any doubt student have to either email or wait for the next online class, which may take too much time and the process becomes too frustrating for both student and teacher.

1.3   Objectives

The objective of this project is to build one single platfrom for both teachers and students to manage all the day-to-day academic related activities. such as Online Class, Notes, Assignments etc. to ensure better efficiency in the process of teaching.

Chapter 2

Literature review

2.1   Background

The online education system came into picture with the outbreak of covid-19 with the lockdown situation, there was a need for a way to continue schools and colleges. At early stage, to take online classes, video conferencing software were used and for assignments/exams, primarily whatsapp was used as many were not aware of other ways, which was not very efficient. So there was clearly a massive demand for a online teaching-learning system.

2.2   Analysis

The online Teaching-learning will change the education system in a drastic manner.It has alot of advantages,it is more efficient and convenient for teachers and students to take classes and assignments, flexible timings and teaching methods etc. But also has some disadvantages, it is the process is not as involved as offline, Plagiarism has increased, and there is often disturbance in surroundings.

2.3   Conclusion

As we saw in the previous section(background), this is fairly a new market and still alot of research needs to be done in this to satisfy the true needs of the teachers and students and put efforts to remove the disadvantages.

Chapter 3

Methodology

The objective of this project is to create one single web application for all the academic activities. With the recent pandemic situation, the concept of online classes saw an huge increase as you can see in the given graph.
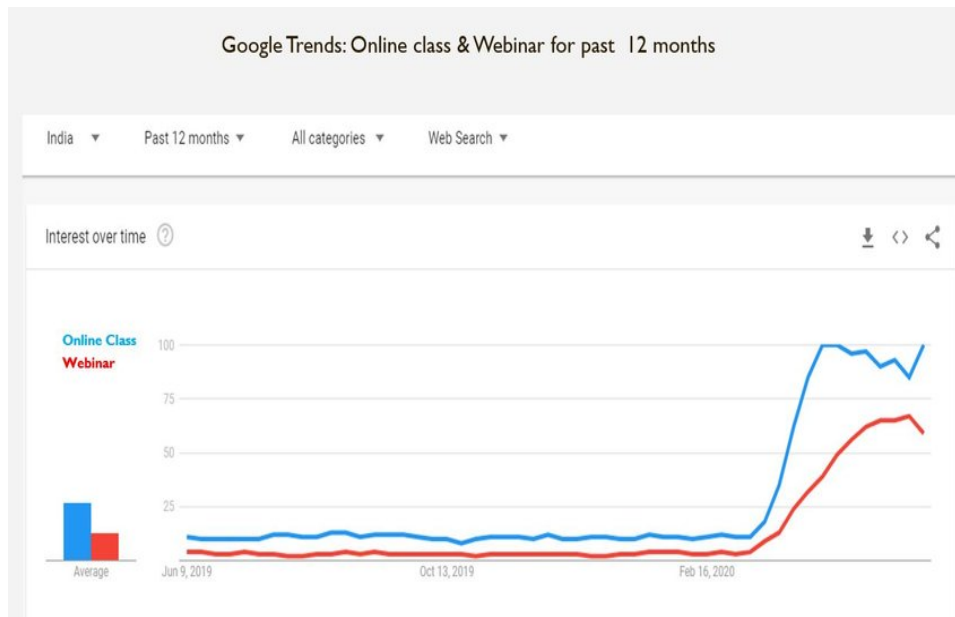

Fig1

With the huge demand in the market there are very few products to address the demand, and the demand will be increasing further on(referFig2) so there is an opportunity to for a product like this one and the availability of all the resources makes it alot easier.
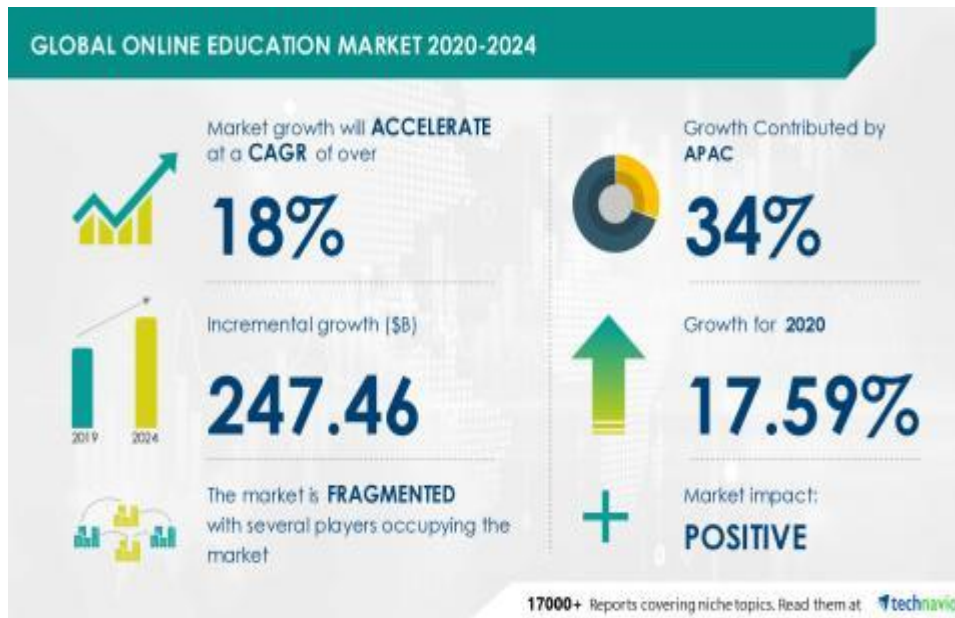

Fig2

3.1 Proposed hypothesis

3.1.1 Software Requirements

As the project is be a web-based application, Following are the Technologies and tools used-

(1) **Node.Js** and **Express.Js** are used for backend .

(2) **React.Js** is used for frontend development.

(3) **MongoDB** is used as database

(4) Some other tools and setups used are -

   -**Git** for project management

-**Mongoose**, Nodejs lib for better management of MongoDB

-**BcryptJs** and **JWT** Nodejs libraries for authentication.

-**Bootstrap** and **CSS** for responsive and better User interface.

- **PostMan** Development tool

3.2   Mechanism/Algorithm

There will be two separate interfaces, one for Teachers and ohter for Students, with some minor changes. Each Student and teacher will be enrolled with some subjects and in those subjects there will be all the functionalities related to that subject.

Following are some steps to explain the basics –

(1) Authentication

- Through a signUP and Login system, user will be verified and and authenticated and once authenticated, user will be redircted to the Homepage.

(2) HomePage

-The homepage consists of all the subjects user are enrolled to, with some info like batch name and Faculty name.

(3) Subject

-Onclicking a particular subject, user can access the the subject. which consists of four 'tabs' Class-For accessing the Online class and the previously recorded classes, Notes- To upload and access the Notes, Assignments- where teacher can provide assignment, Discussion-A place to clarify doubts.

(4) Class - In class, There are previously recorded class, and a link for the live online class.

(5) Notes- for teachers there is an option for uploading the notes, and a list of all the previously uploaded notes. For sstudents a list of all the notes provided by the teacher.

(6) Assignment - For Teachers, there will be Take assignment option along with due date and marks. On uploading the assignment, student will be notified about the assingment and can access the PDF and has to submit in time.

(7) Discussion - student can ask any doubt directly to the teacher.

3.3 Conclusion

Overall the project is feasible and all the resources are available. However there are some challenges faced too. For video conferencing(taking Online Classes),building from scratch seems is not a viable option, so Jitsi, an openSource Video conferencing plactorm can be directly integrated into the project. Mern Stack was chosen as because of its flexibility and availability of vast libraries. For database, NOSQL database, MongoDB is used. For project management, and version control GIT is used.

Chapter 4

Discussions and conclusion

The project as a whole, is an attempt to understand and tackle the challenges faced in this new emerging sector. The primary goal of the project is to enhance the experience of the online teaching-learning process, as the its fairly new to the market it has some challenges and needs to be resolved as it plays major role in future of education sector.

There is a need for proper research and development as there is a room and a potential to change the future of learning.

4.1   Limitations

This project was a great experience for me but also has some limitations. First of all building everything from scratch was not possible, so I had to use external API's for some features which however is considered to be a good practice.

Secondly, as easy it was to avail a resource it was quite a challenge to integrate all the individual thing together in one working system.

Finally the scale of the project was to big for 2 months of time.

4.2 Future scope

As discussed above, this project will explore the ways in which the we can enhance the online teaching system to find a proper way to manage daily academic activities such as online class, notes, assignments, discussion etc.

The project can further explore the ways in which exam cheating/plagiarism can be tackled and the availability of administration to ease the process.

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