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E-Pedagogy

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ABSTRACT

E-pedagogy can generally be defined as 'learning design that integrates educational content, values and effectiveness of technology-supported teaching, learning and evaluation activities. According to UNESCO, one and a half billion students around the world have been participating in remote learning since March 2020 at the height of the COVID-19 pandemic. The increasing availability of online learning has gained its popularity among students. Because of this pandemic, everything has become online, it is difficult for teachers to have different software that performs various tasks such as marking attendance, scheduling meetings, sending notes, assignment and conducting examinations. With all the enhanced software, hardware, and mostly the Internet access, provides more options for online education which will become available. With all the student enrollments increasing in the universities faster than classrooms can be built, students becoming more proficient with technology, and students pursuing an education that meets their needs, the future of online education will continue to grow. Online education programs will become more widely accepted since they have become a more common practice. We therefore need a full all-in-one online education solution. This provides features such as the submission of online assignments, the scheduling of meetings, the maintenance and management of individual student marks, the attendance marking system and the conducting of exams on a single platform. In online education, applications that can include therapy sessions or arrange extra classes for students can also play an important role.

Keywords— *Online education, Technology, Classroom, Students and Teachers, Assignment submission, Grading, Prediction, Counselling sessions*

1. INTRODUCTION

E-Pedagogy or Online Education is a technology which supports teaching and learning using various Internet-enabled technologies. Distance learning can be termed as an online based education system where learners and teachers are physically or timely separated and where interactive telecommunications systems are utilized to connect learners and instructors and to share resources.

First component is that distance education is institutional based. Institution in this context could be both traditional educational school or college. Second component of the definition is the separation of teacher and student. Separation implied in by the definition means not only being distant geographically but also means that teachers and students can be involved in education at separate times. The final component of the definition is connecting learners, teachers and resources. This component implies that teachers are able to interact with learners and also resources are accessible to all participants so that learning can occur.

Students will encounter this new innovation in the Immersive Learning Environment, which focuses more on student-centred, task-oriented teaching such as assignments, quizzes, tasks, grade assessments, and can also be used to see their progress and learning strategies with a lot of interaction.

2. LITERATURE SURVEY

2.1 Existing System

Adobe Acrobat Connect: Adobe Acrobat Connect is a commercial web-conferencing solution with a comprehensive set of features. It can be licensed as the installed product or hosted product. Adobe Acrobat Connect provides unlimited number of meetings and full customization of them. It also supports VoIP, video conferencing, meeting recording, screen sharing (desktop, window or application sharing), white-boarding, video conferencing, notes, Q&A session, chat, user management, administration and reporting, polling. Acrobat Connect provides asynchronous performance assessment capabilities, such as simulations and quizzes. In addition, instructors can benefit from reporting tool to get information about attendance of learners.

Limitations

- On the other hand, regarding synchronous assessment of participants, acrobat connect does not have any related features.

- It enables participants to ask question and answer question in real-time.
- Q&A log is not processed to assess performance of participants in synchronous environment.

2.2 Google Classroom

It is a free web service developed by google for schools that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students. It speeds up the assignment process. No need for paper. It provides effective communication and sharing of files. One of the greatest advantages of Google Classroom is Google Docs; these documents are saved online and shared with a limitless number of people, so when you create an announcement or assignment using a google doc, your learners can access it immediately through their google drive**,** as long as you have shared it with them.

Limitations

- Disadvantages is that there is no system to monitor and predict the performance based on the grade or attendance.
- One of the main reasons that Google Classroom cannot yet fully replace our Learning Management System is that it doesn't provide automated quizzes and tests for learners.
- Feature to share screen is not available in google classroom.
- There is no counselling or scheduling extra classes provided for students based on the performance.

3. PROPOSED SYSTEM

In the eyes of many, conventional education does have an advantage. E-learning has become a modern learning trend because of this pandemic. Many universities have adapted rapidly and have gone to great lengths to recognize this modern form of e-learning.

When it comes to organizing and managing classes virtually, there are drawbacks for both teachers and students, even though we have zoom for conducting classes, the real challenge is when it comes to organizing tasks and retrieving the students' answers, teachers will have to do several tasks, such as organizing classes, marking attendance, quiz, assignment responses. Using various software applications in one moment to accomplish all these teachers, this will certainly lead to commotion and create disordered completion of work.

In order to overcome this, we have introduced a solution that can be used to organize classes, schedule a task, exchange notes on the subject, respond to the assignment, label attendance and perform tests for which the instructor will provide the respective grades based on the student's response. Based on the marks earned, there will be organized courses planned for those who need extra class, which will certainly be a gain for students. This solution will definitely be a great innovation for both students and teachers.

4. PROBLEM STATEMENT

It's rare, to say the least, to have an entire university experience compacted into a personal electronic device. For students who have only ever remembered conventional classroom environments, it can be unnerving. Traditionally, during lectures, a degree of passivity is required, especially when taking notes and listening, while a limited time is reserved for discussion with tutors.

Online learning needs to take action, to embrace course materials in a range of digital formats, and to engage in online conversations that will continue indefinitely.

In certain ways, online learning makes it impossible for students to control their time. For them, online learning is totally new and involves intense work. To handle their time in a productive way, they need a scheduled planner. Unlike conventional classes, online learning offers flexible time. But some are struggling to adapt to the time needed for online learning.

During online learning, learners lack productive communication skills. Teachers offer tasks to develop the ability to read and write, but there is a risk that they will not be able to write so convincingly that teachers understand the concept behind their assignments. Due to the modern model of learning, there are some students who feel shy about engaging with their teachers and peers.

5. USE CASE

Organizer can manage lecture notes by uploading new documents related to course content and by deleting files or folders in the system. In addition, both organizer and attendee can download or open lectures notes.

Organizer or attendee can view or download lecture notes. In order to view/download a file user should navigate to lecture notes page, and then should select the intended file to open or download a copy.

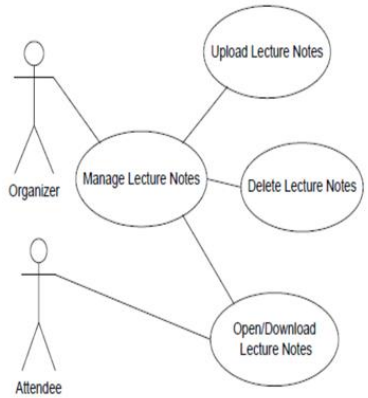

Fig. 1 Use case diagram for Lecture management

Organizer or instructor can manage assignments of his lecture. In order to create or update assignments, organizer should navigate to Assignments page. Attendee also can create and display assignments. Organizer can create new assignment for the lectures he owns. In order to create a new assignment, organizer should navigate to Assignments page and then should choose create assignment option.

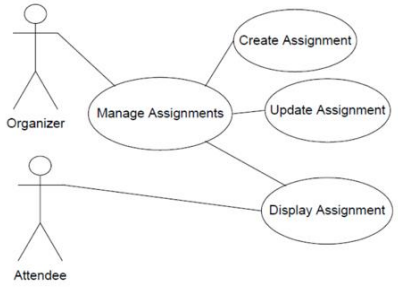

Fig. 2 Use case diagram for Assignment management

6. SYSTEM DESIGN

In software engineering, a functional requirement determines a feature or part of a software system. A function is defined as a collection of inputs, outputs, and actions. Calculations, technical information, manipulation and processing of data and other basic features that determine what a system is intended to do could be functional requirements. In use cases, behavioral requirements identifying all the instances where the system utilizes the functional requirements are captured. Take a username and password, compare it with corresponding entries in the database. Continue to raise an error message if a match is not found. Enable students to access research materials, take up quizzes and submit tasks. Teachers should be able to upload content, conduct courses, conduct appraisal quizzes, and even rate them.

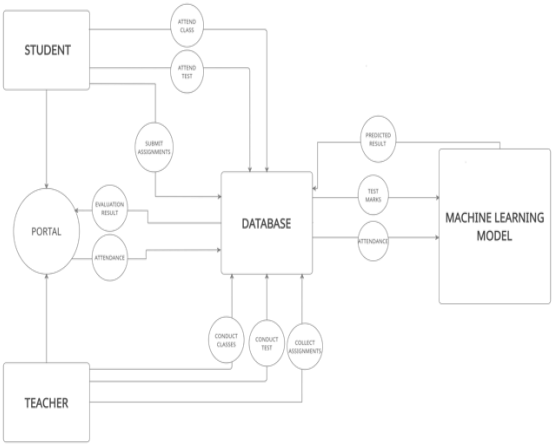

Fig. 3 System Design Diagram

7. SYSTEM ACTIVITIES

7.1 Login System

Login system contains the following programs.

7.2 Login As Teacher

By using already stored teacher username and password the individual can log on to the system anytime he/she desires to manage their activities. Login is successful only if the input detail is matched with the database, else an error message is displayed

7.3 Login as Students

The information of each student will be sorted by the admin upon their registration process, enabling this way the particular student to log on the system without having to undergo the process non-registration again. Login is successful only if the input detail is matched with the database, else an error message is displayed.

7.4 Attendance Activity

Attendance activities contains the following program with teacher enabling during the class hours and students are allowed to give their attendance.

7.5 Organize Class

Organizing class contains the following program with teacher able to provide student with an invite and students are able to join the class by accepting the invite.

7.6 Assignment Activity

Assignment activity contains an option of uploading the document containing questions with a completion deadline for the teacher, where students can download the document.

7.7 Machine Learning Activity

Machine learning activities contains the following program associated with its algorithm, to predict the student performance, identify weakness and suggest ways to improve. It provides extra coaching class to the students who has not performed well in internals to boost their scores in semester end examination.

8. MACHINE LEARNING

A sub field of artificial intelligence is machine learning (AI). Generally, the aim of machine learning is to understand the data structure and fit the data into models that people can understand and use.

Q1	Q2	Q3	CIE1	CIE2	CIE3	ASSIGN1	ASSIGN2	ASSIGN3	LAB1	LAB2	LAB3
4.00	5.00	5.00	19.00	10.00	19.00	4.00	5.00	5.00	6.00	8.00	8.00
4.00	2.00	3.00	9.00	10.00	24.00	4.00	3.00	3.00	8.00	6.00	7.00
5.00	2.00	3.00	5.00	20.00	13.00	5.00	5.00	3.00	7.00	8.00	9.00
5.00	2.00	3.00	7.00	11.00	17.00	3.00	3.00	5.00	8.00	4.00	6.00
2.00	5.00	5.00	7.00	17.00	17.00	3.00	5.00	4.00	7.00	8.00	7.00
4.00	2.00	4.00	6.00	10.00	14.00	5.00	4.00	3.00	4.00	6.00	8.00
2.00	4.00	3.00	13.00	20.00	19.00	5.00	3.00	3.00	6.00	8.00	9.00
4.00	4.00	3.00	5.00	11.00	19.00	3.00	1.00	5.00	6.00	4.00	6.00
4.00	5.00	4.00	18.00	13.00	20.00	5.00	1.00	4.00	9.00	4.00	5.00
2.00	4.00	4.00	22.00	25.00	18.00	3.00	4.00	5.00	5.00	8.00	9.00
3.00	5.00	3.00	18.00	12.00	24.00	3.00	5.00	5.00	9.00	9.00	4.00
3.00	5.00	3.00	5.00	22.00	21.00	3.00	1.00	4.00	4.00	5.00	7.00
2.00	4.00	3.00	22.00	13.00	21.00	3.00	5.00	4.00	9.00	6.00	4.00
2.00	4.00	3.00	8.00	23.00	24.00	3.00	3.00	3.00	5.00	8.00	4.00
5.00	5.00	5.00	5.00	11.00	20.00	5.00	1.00	4.00	5.00	8.00	5.00
2.00	2.00	3.00	12.00	15.00	21.00	3.00	5.00	4.00	6.00	7.00	7.00
4.00	3.00	3.00	7.00	16.00	14.00	5.00	1.00	3.00	8.00	5.00	7.00
4.00	2.00	5.00	12.00	17.00	17.00	4.00	2.00	5.00	5.00	6.00	7.00
5.00	5.00	4.00	9.00	25.00	16.00	5.00	5.00	3.00	9.00	5.00	8.00

Fig. 4 Enhanced assessment record of student

A major advantage of machine learning is its capacity to predict the success of students. The technology may detect vulnerabilities by "learning" about each student and recommends ways to improve, such as additional practice tests. Machine learning can also help increase retention rates, such as learning analytic. By recognizing students at risk," schools may reach out to those students and get them the assistance they need to succeed. Machine learning activities contains the following program associated with its algorithm, To predict the student performance, Identify weakness and suggest ways to improve. It provides extra coaching class to the students who has not performed well in internals to boost their scores in semester end examination.

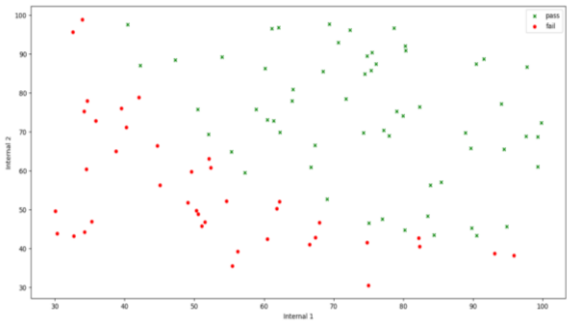

Fig.5 Scattered plot of student performance

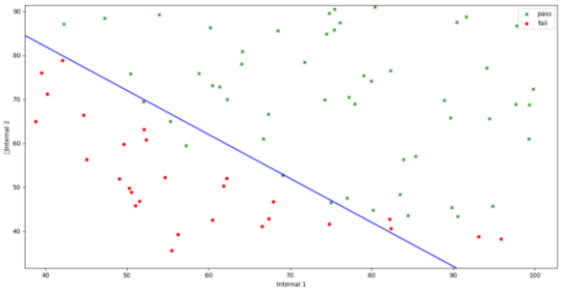

Fig.6 Prediction: Best fit line

9. CONCLUSION

The increasing availability of online learning has gained its popularity among students. Because of this pandemic,

everything has become online, it is difficult for teachers to have different software that performs various tasks such as marking attendance, scheduling meetings, sending notes, assignment and conducting examinations.

This system allows the faculty to exchange notes with the respective class and sections, allows students to submit their homework and assignments on the portal. This project uses machine learning for predicting student's performance in studies.

We therefore need a full all-in-one online education solution.

This provides features such as the submission of online assignments, providing the information about the scheduled meeting, the maintenance and management of individual student marks, the attendance marking system and the conducting of tests.

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