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Accessibility of Educational Information

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Abstract

Online learning continues to gain popularity, it is crucial for educators to understand the impact of student interaction with course content on engagement and learning outcomes. Technological advancements further highlight the need for insights into effective delivery of course materials to support the learning process. This study specifically examines the patterns of student access to instructional resources in an asynchronous online digital literacy course. The study focuses on private chat as well as public chat between students and faculty based on their individual needs. An administrator posts questions and collects responses through student and faculty votes. The administrator then takes action for the organization based on the feedback received. The project utilizes an EC2 instance to create a virtual private machine for deploying the necessary code. The abstract of the project "Web Accessibility of Educational Information" describes the purpose, methodology, and results of a study aimed at evaluating the accessibility of online educational information. The study focused on testing the compliance of educational websites with Web Content Accessibility Guidelines (WCAG) 2.1, a set of international standards for web accessibility. The study highlights the importance of ensuring that educational information is accessible to all users, regardless of their abilities. The findings have implications for educators, web developers, and policymakers who are responsible for creating and maintaining online educational resources. The study recommends that educational institutions prioritize web accessibility in their digital strategies and invest in training and resources to ensure that online content is accessible to all learners.

Keywords: Online Interaction, Private, Communication System, EC2 Instance, Decision poling

Introduction

Student-to-student interaction is a fundamental aspect of any successful course experience, as it facilitates the exchange of ideas, fosters rapport, and encourages participation. In traditional classroom settings, such interaction happens naturally, as students interact with one another during class discussions, group projects, and other collaborative activities. However, in an online learning environment, fostering student-to-student interaction.[1]

In any educational setting, interaction between students is a critical component for successful learning outcomes. In traditional classroom settings, this interaction happens organically, as students engage in discussions, ask questions, and build relationships with each other. However, in online courses, instructors must intentionally create

opportunities for student-to-student interaction.[2]

Accrediting bodies, such as the Middle States Commission on Higher Education, require universities to demonstrate evidence of student-to-student interaction in their online course and program design. This highlights the significance of this type of interaction in the learning process.[3]

When teachers have positive interactions with their students, it creates an environment that is conducive to learning and meets students' developmental, emotional, and educational needs. Personal interaction is a critical aspect of the teaching profession, and it demands a considerable amount of time and effort from teachers. Positive teacher-student interaction plays a crucial role in facilitating effective teaching and learning.[4]

Online instructors must be intentional in designing their courses to create opportunities for student-to-student interaction. This can involve building both formal and informal interaction opportunities into the course design. Examples of formal interactions may include group projects, peer reviews, and discussion forums. Informal interactions may involve creating opportunities for students to connect outside of class through social media or other virtual platforms.[5]

Effective student-to-student interaction can lead to numerous benefits for students, such as increased engagement, better retention of course material, and the development of critical thinking skills. Additionally, student-to-student interaction can create a sense of community and belonging, which is especially important for online learners who may feel isolated from their peers.

In conclusion, student-to-student interaction is a vital component of any educational experience. Instructors must be intentional in creating opportunities for student-to-student interaction, especially in online courses. Positive teacher-student interaction is also critical in facilitating effective teaching and learning. By prioritizing student-to-student and teacher-to-student interaction, instructors can create a supportive learning environment that promotes academic success and personal growth.[6]

Literature Survey:
Web-based teacher-student interaction in traditional course

The development of a platform-independent Java application has been initiated to facilitate interaction between instructors, teaching assistants, and students in a conventional classroom setting. The Teacher-Student Interaction (TSI) application includes a specialized web server, an ordinary web server, a mailer, and a simple database. The HTTP protocol is employed to establish communication among all the users of the application. Both teachers and students can access the TSI server through web browsers to perform tasks such as posting announcements, exchanging emails, uploading course materials, submitting assignments, and receiving feedback. The TSI application is designed to support communication and collaboration among all the participants in a traditional on-campus course. It enables instructors and teaching assistants to provide real-time feedback to students and to keep track of their progress. It also allows students to engage in discussions with their peers and to interact with their instructors outside of the classroom setting. One of the key features of the TSI application is its platform independence, which means that it can be used on different operating systems and web browsers. This makes it accessible to a wider range of users and reduces the risk of compatibility issues. Furthermore, the TSI application provides a centralized platform for all communication and interaction, making it easier to manage and monitor student activity.[1]

Student's interaction in the online learning management system

Effective interaction between learners and online course content is a crucial aspect of web-based education that contributes to the creation and sustainability of learning communities. This interaction involves reflective thought processes that occur internally within the learner's mind while engaging with the course content. The quality of interaction is influenced by various events and activities in the learning environment, which determine how learners interact with the material presented to them. This study compares the levels of interaction between undergraduate and postgraduate.

Students in online learning management systems. The aim is to understand how learners at different academic levels engage with course content and the impact of their interaction on the overall effectiveness of web-based teaching and learning. By exploring the relationship between learner interaction and online course content, this study sheds light on the significance of promoting meaningful interaction in online learning environments. It highlights the importance of designing effective learning activities and instructional strategies that foster active engagement and promote deeper learning among students. Overall, the findings of this study emphasize the need for online educators to focus on enhancing learner interaction with course content to improve the overall quality and effectiveness of web-based education.[2]

A way to bridge the gap between student faculty interaction

Interaction between students and faculty members outside the classroom is a crucial component of the higher education experience that has been neglected in modern educational systems. The absence of such interactions has had a negative impact on the overall development of students. To address this gap, a Learning Management System (LMS) has been developed to serve as a bridge between students and faculty members. The LMS facilitates continuous interaction between faculty members and students, enabling them to communicate with each other at any time and from anywhere. This system provides a platform for students to seek academic assistance, ask questions, and share their thoughts and ideas with their instructors. Likewise, faculty members can use the LMS to provide feedback, guidance, and support to their students, as well as to monitor their progress and performance. The development of this LMS is an innovative solution that promotes student-faculty interaction and helps to bridge the gap that currently exists in modern education systems. It provides a flexible and accessible platform for communication and collaboration that can enhance the learning experience of students and promote their overall development.[3]

Faculty and student out-of-classroom interaction: student perceptions of quality

The aim of this study was to investigate how students interact with their professors outside the classroom and to determine what factors contribute to high-quality interaction from the students' perspective. The study also aimed to identify successful strategies for promoting such interactions, which can be useful for colleges and universities in enhancing the overall undergraduate experience. By gathering data on the ways in which students and faculty members interact outside the classroom and examining student perceptions of the quality of these interactions, the study aims to provide insights that can inform the development of more effective out-of-classroom faculty-student interaction initiatives. Ultimately, the findings of this study can contribute to the promotion of positive relationships between students and faculty members and help to enhance the educational experience for undergraduate students.[4]

Existing System

The current approach to communication between students and faculty members is either manual or public, which can be inefficient and time-consuming.

Additionally, the administration may face challenges in communicating with students and faculty members in a timely manner. The current system lacks the ability to facilitate private communication between individuals, which can pose privacy concerns. Collecting information from a large number of students and faculty members can also be a daunting task. Furthermore, the existing system does not support voting activities, which may be necessary for decision-making processes. These limitations make it difficult to effectively communicate with a large number of students and faculty members, and to collect and process information efficiently. To overcome these challenges, there is a need for an improved communication system that can facilitate private communication, data collection, and voting activities.

Proposed System

The proposed system aims to create a platform that facilitates easy and secure communication between authorized individuals. The system will primarily focus on providing a private chat function between students and faculty members based on their specific needs. The system will also enable the admin to post questions and gather feedback from students and faculty through voting, with the final decisions being based on the number of votes received.[1]

To implement this system, we will use the latest Python technology. We will develop an application that will enable authorized individuals to communicate with each other in a secure and private manner. The system will be accessible via smart phones and laptops, making it easily accessible to everyone.[2]

To deploy our code, we will use an EC2 instance to create a virtual private machine. This will enable us to ensure that our code is secure and that our system is scalable. We will also be able to monitor the performance of the system and make necessary changes as needed.[3]

Overall, this proposed system will enable effective communication between students and faculty members and enable the administration to make informed decisions based on the feedback received from the users. By leveraging the latest Python technology, we aim to create a secure, scalable, and user-friendly system that will meet the needs of all stakeholders.[4]

Architecture
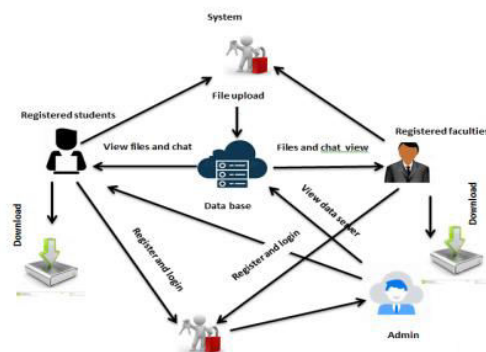
Methodology

- Amazon RDS (Relational Database Service) is a cloud-based service that simplifies the setup, management, and scaling of relational databases. It automates administrative tasks such as hardware provisioning, database setup, patching, and backups, allowing users to focus on their applications' performance, availability, security, and compatibility. With Amazon RDS, users can independently scale CPU, RAM, storage, and IOPS to meet their specific needs. The service also manages backups, software patching, automatic failure detection, and recovery. However, shell access to DB instances and access to system functions and tables that require advanced rights are not provided to ensure a managed service experience.[1]

- In order for applications to make API requests, they must be signed with AWS credentials. As an application developer, it's

important to have a strategy for managing your EC2 credentials and monitoring their usage. One approach is to securely distribute your AWS credentials across instances, allowing only authorized apps on those instances to use your credentials to sign requests, while keeping them safe from unauthorized access. However, it can be challenging to assign the most effective credentials to each instance, particularly for instances created on your behalf by AWS, such as Spot Instances or instances in Auto Scaling groups. To simplify this process, IAM roles have been created. With IAM roles, your applications can make secure API requests from your instances without the need for you to manage the security credentials they use. This provides a secure and efficient way to manage your application's API requests while ensuring that your AWS credentials are protected.[2]

- An EC2 instance refers to a virtual server that runs applications on the Amazon Web Services (AWS) cloud computing platform. With AWS, EC2 subscribers have the ability to run application programs within a computing environment. EC2 enables users to create a virtually limitless number of virtual machines (VMs) with various configurations of CPU, memory, storage, and networking resources to meet their specific workload requirements. To create an instance, users select from a variety of Amazon Machine Images (AMI) that serve as templates. These images come pre-configured with an operating system and software that define the user's operating environment. Users can choose from a variety of AMIs available through AWS, the user community, or the AWS Marketplace. Additionally, users have the option to create their own

AMIs and share them with others.[3]

- A security group in Amazon EC2 functions as a virtual firewall that manages both inbound and outbound traffic for EC2 instances. Inbound traffic entering an instance and outbound traffic leaving it are regulated by security group rules. When launching an instance, one or more security groups can be defined, and if no security group is specified, the default security group is used. Each security group can have rules applied to allow traffic to and from instances linked to it. These rules can be modified at any time, and new or revised rules are automatically applied to all instances associated with the security group. Amazon EC2 considers all rules from all security groups linked to an instance when determining whether to permit traffic to access it.[4]

Project Flow
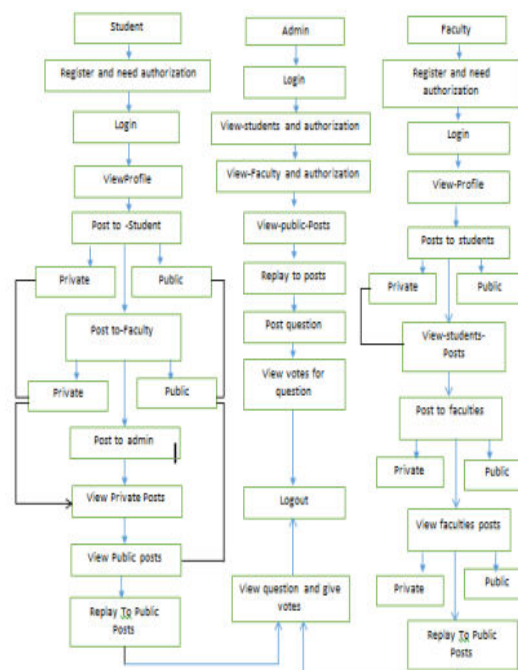
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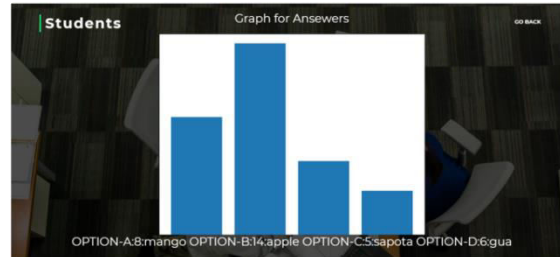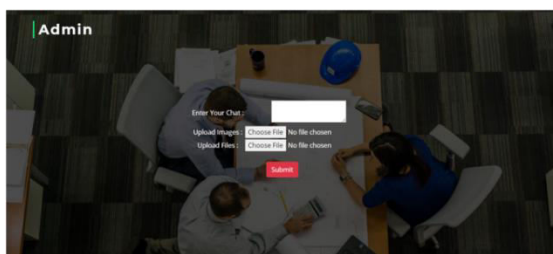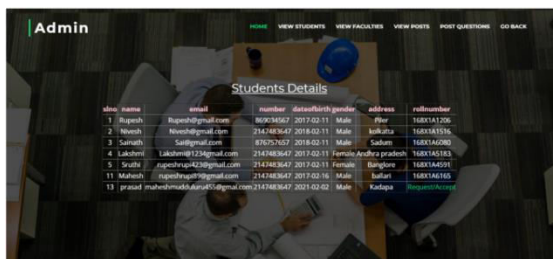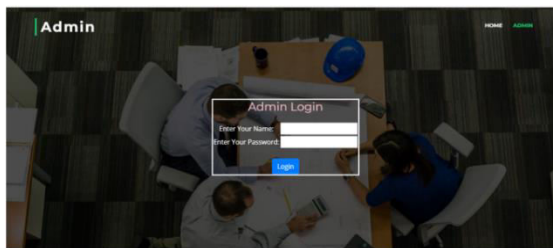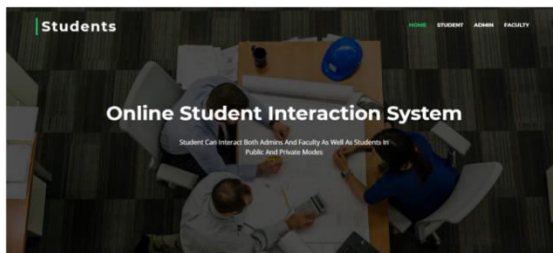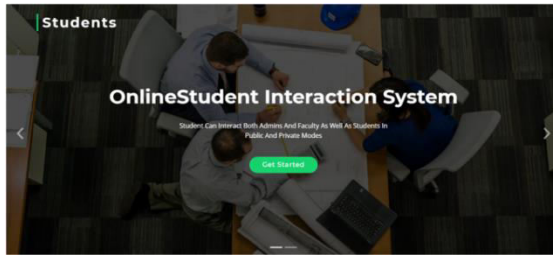
Conclusion

In conclusion, the project focused on improving the accessibility of educational information through the use of technology. With the increasing popularity of online learning, it is important to ensure that students have easy access to course materials and that their engagement with the materials is monitored. The project explored different aspects of technology that could be used to enhance the learning experience, such as private chat between students and faculty members. This allowed for a more personalized approach to teaching, where students could receive individualized attention and support. Moreover, the project also emphasized the importance of assessing student achievement to ensure effective teaching and learning. This was achieved through various methods such as online quizzes, assignments, and polls. [1]

Evaluating student achievement is crucial for effective teaching and learning. Teachers need to have a good understanding of their students' knowledge and skills to ensure that their teaching meets their learning needs. This can be achieved by creating a supportive environment where students and teachers can communicate freely through private chat. The assessment of student achievement, or understanding what

students know and can do, is fundamental to effective teaching and to students' learning. Unless teachers know students well and are knowledgeable about their achievements, they cannot be confident that they are meeting the learning needs of their students. This can be possible when we provide a free atmosphere between students and faculties by inserting private chatting with each other .[2]

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