STUDENT PERFORMANCE ANALYSIS THROUGH GRAPHS IN TECHNICAL AND NON-TECHNICAL TRAININGS CONDUCTED IN THE INSTITUTE

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Abstract. The project aims to analyses the performance of the student in training conducted in institute that include the no of trainings he/she attended, filtering and separation of students based on their performance. We can able to understand training performance of students or particular his/her training and the particular data is analyzed represented in the form graphs. In these projects the particular student can also gave feedback to the trainings that he/she attended and can able to know the type of trainings, when it starts and the training and placement department can share the materials through these websites. It is web application constitute on MERN stack these technologies include Mongo dB, Express, Reacts, Nodejs Student performance in training programs is a critical area of concern in education and professional development. This study investigates the multifaceted factors influencing student performance and explores effective strategies to enhance learning outcomes in various training contexts. A comprehensive literature review reveals the interplay of individual and environmental factors, including prior knowledge, motivation, teaching methods, resources.

Keywords: Web3.0, Node, React, MongoDB, React, MERN, Graph Analysis,

1 Introduction

The test scores or grades are important for the students to analysis his performance and to improve his performance [1] The environment for monitoring the students by management is also required for better analysis of their performance in trainings conducted by the management [1-3] This serves the foundation for conducting a good investigation, which will ultimately lead to the development of effective strategies to improve the effectiveness of the training programs [3] it adopts a different methods approach that combines both quantitative and qualitative analyses. The quantitative analysis focuses performance metrics, such as aptitude scores, to provide a numerical assessment of student capabilities. The general idea behind Focus is that index, thread, and page flipping URLs can be noticed on the basis of their layout description and intention pages; and forum pages can be categorised by means of their layouts[2].And also, it examines verbal learning skills, enabling the research to get linguistic and language-related aptitude that might influence performance of students [2-4] By combining both quantitative and qualitative data, to provide a clear view of the challenges faced by students and how these challenges impact their performance and finding or addresses their unique needs, results in good performance and outcomes of Students.

Related Work

There are different existing methods for analyzing the performance of students that exists are.

1.1 Manual Record

The performance of the students can be analyzed by a manual system, in which the marks of the students are stored in manual records [3]. There, the management can analyze the performance of the students, and these records are organized by the faculties of respective departments.

1.2 Drawbacks

1. Here, calculations are performed by faculties. It may result in human error.
2. There is no proper security for the records.

1.3 Online Coding Platforms

The coding platforms, which help to build problem-solving skills by solving various coding problems, offer a wealth of coding challenges, categorized by data structure, linked lists, trees, and graphs. [4], Using these platforms helps with learning and improvement. [5], By providing problems related to different data structures, the application helps users learn and understand how to apply these structures effectively.

1.4 Drawbacks

1. It is not dedicated to particular organizations or community members; in this context, the performance is not evaluated by any other person or external individuals.
2.This platform sometimes susceptible to data breaches like external gain access to sensitive information present in our account
3. Some coding platform like exhibit student performance analysis weak. For instance, certain may lack comprehensive tool or features like graphs to effectively evaluate the student performance.

2 Literature survey

We started conducting research on various fields, such as academic databases, journals, and books for related studies, and analyzed key theories and frameworks that were used for analyzing the topic.] We identified the key factors that are involved in student performance in training, such as teaching methods, learning environment [3-4], and some online platforms which are dedicated to particular platform which are not dedicated to particular organization [4-5]. Some of the topics we have gone through
A Critical Analysis of MERN Stack Application in Educational Environments [6]: Implications for Student Engagement and Learning Outcomes, and it says the role of MERN application in education settings and the combination of React, Express, Node, and MongoDB influences student engagement programs.
A Comprehensive Factor Affecting Student Performance in Training Programs[7]: It says how various factors influence student performance in training, examining approaches, and technological approaches.
We Understand how training programs have evolved over time and the impact of changing educational philosophies and technologies on student performance.

3 Methods and Experiments

The implementation of these systems helps to empower the students and track their performance in various tests and assessments conducted by the management. This system enables students to gain a clear overview of their performance throughout the training program. There are different roles that are involved during the process; they are

Roles

1.TPO (Training and Placement Officer
2.HOD
3.Students
4.Admin

3.1 HOD(Head Of Department)

Image description provided to each image through custom input. The dataset The HOD is able to analyses the performance of the students in his or her department, and the faculty of a particular department adds marks to the students and adds attendance to the students, which reflect the student data and his performance. These analyses help the department in decision-. evaluate the program efficiently performance. These analyses help the department in decision-making and allocating resources effectively to students.

3.2 Student

This feature allows students to track their progress and helps them improve skills, such as by finding the areas in which they need to excel, pinpointing the needs for improvement, and encouraging them to set personal goals and achieve them. And coming to the portal additionally, the student can send feedback about a particular trainer and check his attendance.

4.3 Admin

The role of an administrator involves important responsibilities and helps in the smooth operations of management in various aspects. Here, and here administrator plays a major role in maintaining student data and maintaining the integrity and security of records.

4.4 TPO

In these contexts, the role of the TPO plays a major role in adding students and faculties, and it includes several responsibilities like planning the trainings, coordinating the activities, and getting feedback from the students on the training classes

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Fig. 1. Architecture diagram of proposed solution

5 Tech Stack Used

5.1 Node: it is open-source and allows to execute JavaScript code outside the browser and run applications on the server side. It is commonly used to build fast and scalable network applications, and it contains a package manager (NPM) that gives access to a vast ecosystem of libraries and modules.

5.2 MongoDB: it is a NOSQL database it uses a document-oriented data model it does not uses tables instead it stores the data in JSON-like documents and are Dynamic.

5.3 React: It is used to develop the frontend part of the application, and we used React Redux for state management, which helps connect the components and interact in a global state. It also contains the UI components, which are reusable, and the components update efficiently in response to changes in the data.

5.4 Express: it is a web application framework designed to create robust web applications. It is known for its simplicity, flexibility, and ease of use. allowing the developers to define the routers and handle the HTTP requests, and it facilitates rapid development of server-side components.

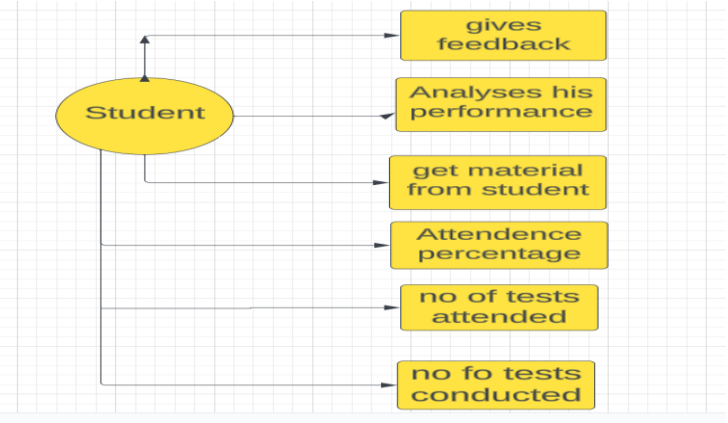

Fig 2.UML diagram of Student

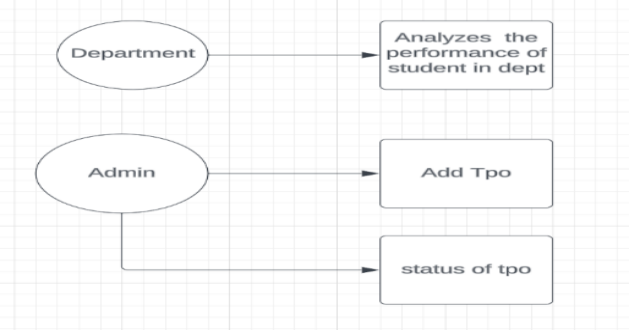

Fig 3.UML of Department and ADMIN

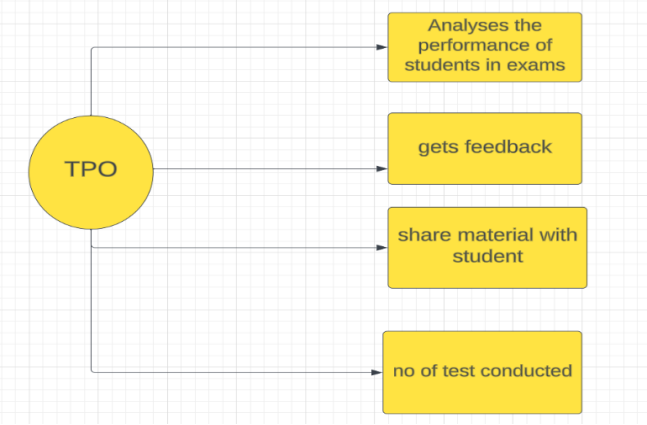

Fig 4.UML diagram of TPO

The above figure shows the workings of MERN project. React interacts with the Express framework, moving the data from the frontend to the backend through APIs (application program interfaces). These act as a bridge, facilitating the exchange of data between frontend and backend components. Here, react components make a specific request to specific end points defined by the express server, and triggering actions can fetch the data that is required. Upon receiving these requests to express, the express executes the necessary action and communicates with the MongoDB server to retrieve or manipulate the data.

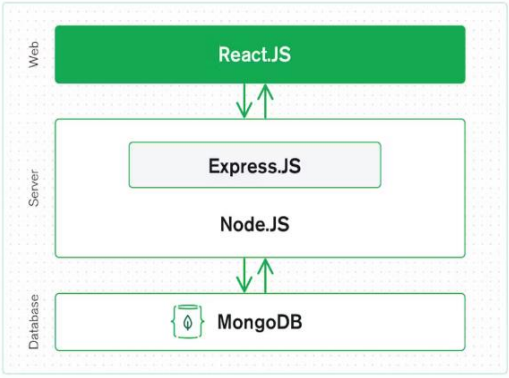

Fig 5.Working of MERN Project

6 Result and Discussion

The project results in showing the performance of the students in the form of form of graphs and the performance is analyzed in two ways the performance is analyzed by the student in different tests conducted by the management and the second analyzes is done by TPO (Training and placement department through the overall graph analysis of the students that which helps him to give clear view of understanding of students in different trainings that are conducted. It includes the faculty of particular department can assign the marks to students and these marks are converted in the form of graphs.

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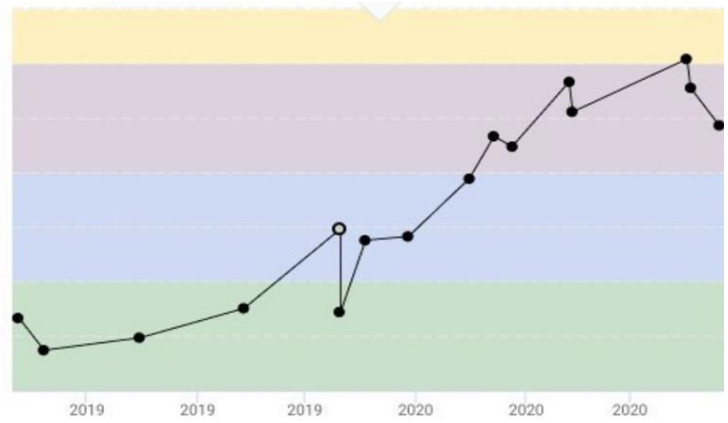

Fig 6.(Student graph analysis)

The graphs show the analysis of the student performances in various test conducted in the trainings and it helps their progress and helps to address the areas which they are lack or back. highlights areas where they good, and pinpoints those that need additional attention and provide insights for their development.

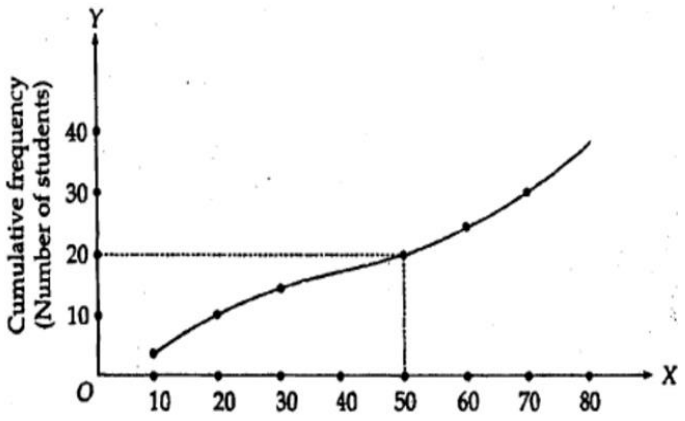

Fig 7.(TPO & HOD graph analysis)

The second graph analyses the performance of overall students who participated in the training process and it is analyzed by the TPO (training and placement officer) and HOD of particular departments, these information helps them for comprehensive evolution of training process, effectiveness of trainings conducted in the trainings

7 Conclusion

In this project, it analyzes the performance of students in various technical and non-technical trainings and assessments conducted at the institute. as it gives a comprehensive evaluation of students in various aspects of the training. It includes the attendance percentage and no tests attempted by the candidate, feedback given by students on classes that are conducted, and the separation of students on their performance with the above factors or assessments. It also helps the management take the necessary measures to improve their performance in training. Our project also focuses on the performance of the students through graphical analysis Which helps the students easily understand their performance in training and helps them improve their performance in the areas where they are back. The implementation of the project is done through MERN (MongoDB, Express, React, Node), which is), which is scalable, user-friendly, and adoptable

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