STUDENT PERFORMANCE ANALYSIS DOCUMENTATION

Introduction:-

1.1 Overview:

My Project title is Unleashing the potential of youth- Student Performance Analysis. This is a Virtual Internship opportunity given by Smart Bridge & APSCHE for the completion of our semester internship. This project understands how the student's performance is effected by other variables such as Gender, Ethnicity, Parental level of education, Lunch and Test preparation course on performance of students in the exam. This approach helps educators identify areas of improvement, personalize learning experience, and provide targeted support to struggling students. Furthermore, student performance analysis and prediction can also aid in decision making processes for school administrators and policymakers, helping them allocate resources more effectively.

Student performance analysis system is an application. It is completely offline application. It is developed to help teachers i.e. faculty and students enrolled in particular course in terms of their performance in that course and is useful for maintenance of records as well. DBA can implement, modify, update and can maintain the system and can develop the system for future use as per the need of the users.

In this project of student performance analysis the main objective is observing the students performance , their result, gender ethnicity, parental level of education, test preparation of different students and their performance in their subjects of their course and representing that data with few visualizations which will be easy for everyone to understand.

1.2 Purpose:

This student performance analysis is mostly useful for the faculty and students also by which they can know about their performance in easy manner. This project can be useful for the schools or colleges who wants the data for the student performance.

It can be useful for:

Student:

1. Can retrieve the details related to particular course in which he/she is enrolled.
2. If they want to check their performance compared to others then this analysis will be useful for them.
3. Can prepare well for his/her future teste or exams by analyzing his/her previous marks.

Database Analyst:

1. They can add, delete, view and update the data based on the faculty, changed performance of student   and course.
2. Can compare the performances of all students.
3. Can check the date, percentage of enrollment of the students in different course in graphical or pie chart or any different format.

Faculty:

1. Can delete, view and update the details of the students as faculty or guide or in charge.

2. Can compare the performance of the students in particular course and know who is weak or good in any particular subject.

3. Can save the details and statistics related to the students performance which will help them to know about their students.

Literature Survey :-

2.1 Existing Problems:

In a literature survey students analyze concisely earlier research related to particular research problem and utilize that information for their understanding the significance of new research and its connections to earlier work.

❖ One of the most challenging tasks in the education sector in India is to predict student's academic performance due to a huge volume of student data. In the Indian context, we don't have any existing system by which analyzing and monitoring can be done to check the progress and performance of the student mostly in Higher Education System.

❖ Every institution has their own criteria for analyzing the performance of the students. The reason for this is happening due to lack of study on existing prediction techniques and hence to find the best prediction methodology for predicting the student academics progress and performance. Another important reason is the lack of investigating the suitable factors which affect the academic performance and achievement of the student in particular course.

❖ So to deeply understand the analysis we have to know the existing problems of the student performance.
  - High drop out rates.
  - Stress and mental health issues.
  - Teacher quality and training.
  - Lack of individualized attention.
  - Lack of parental involvement and support.
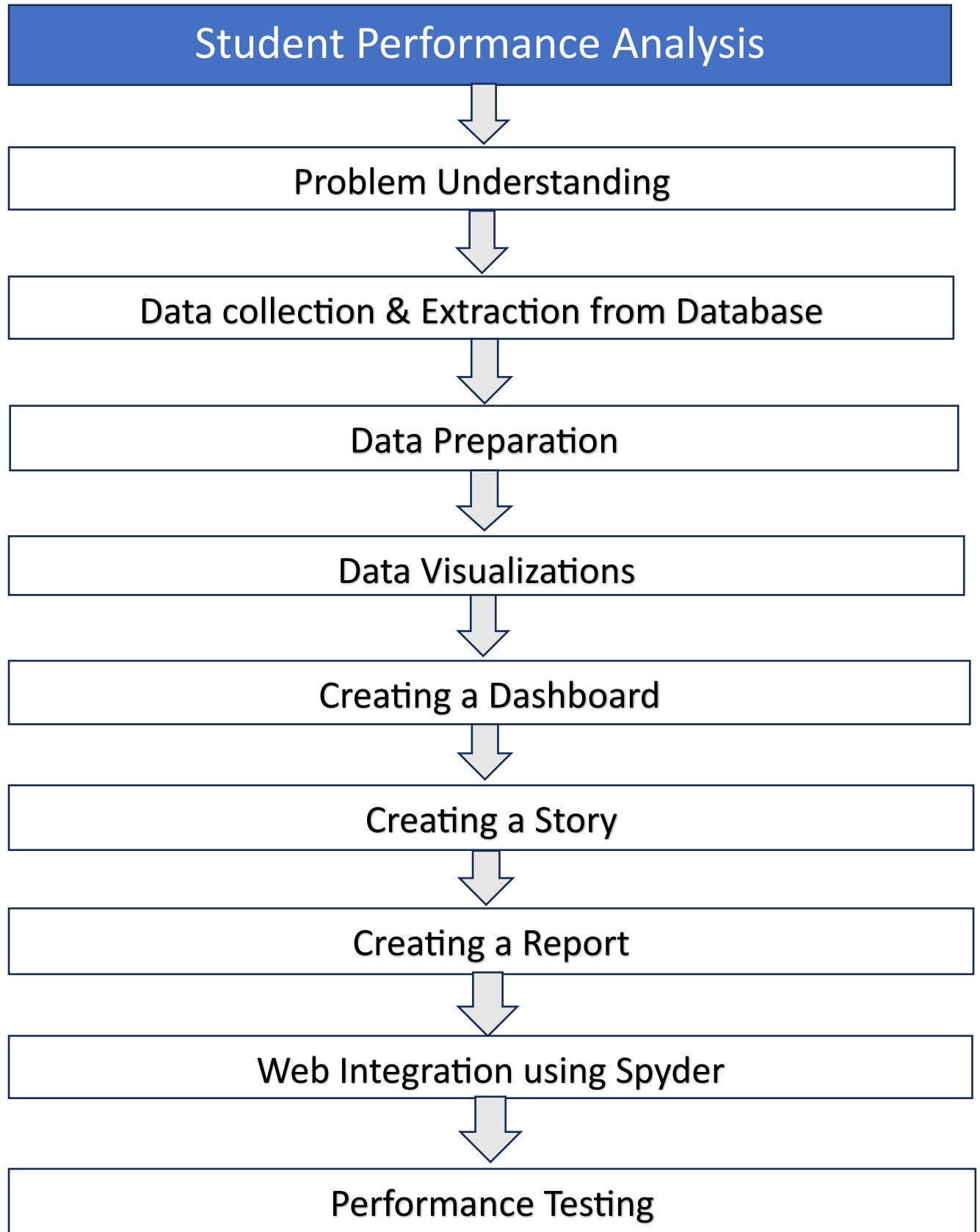 - Lack of student engagement.

2.2 Proposed solution:

There is a Proposed solution for existing problems in student performance. Addressing the existing problems of student performance requires a comprehensive and collaborative effort from various education systems. Here are some potential solutions to these challenges:

- Equity in education.
- Personalized learning.
- Teacher professional development.
- Mental health support.
- Curriculum reviews and flexibility.
- Parent and community engagement.
- Student engagement strategies.
- Continuous improvement.

Theoretical Analysis:-

3.1 Block Diagram:

Student Performance Analysis

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Problem Understanding

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Data collection & Extraction from Database

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Data Preparation

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Data Visualizations

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Creating a Dashboard

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Creating a Story

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Creating a Report

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Web Integration using Spyder

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Performance Testing

3.2   Hardware and software devices:

❖ Hardware requirements:

The hardware requirements required for completion of this internship and project are:

1. Laptop or Desktop.
2. Internet connectivity.

❖ Software requirements:

The Software requirements required for completion of this internship and project are:
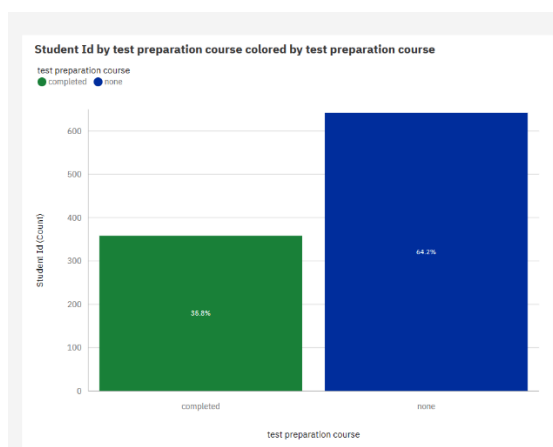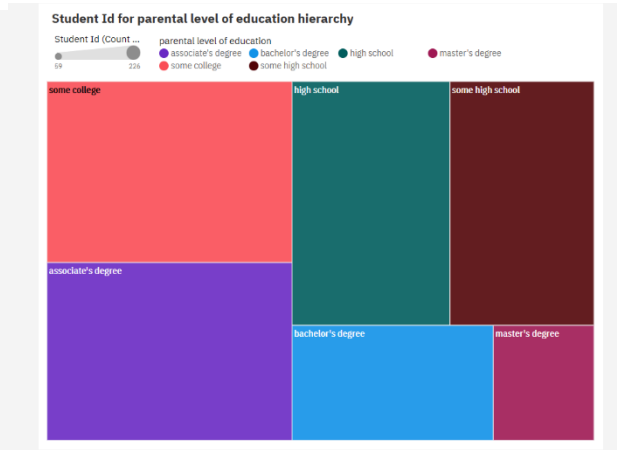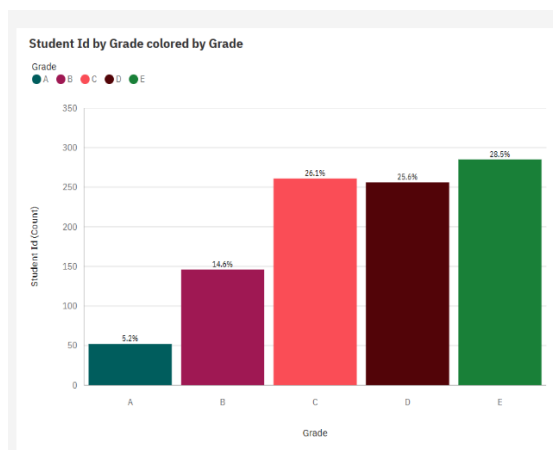
1. **Zoom app**
2. **IBM COGNOS Account**
3. **Anaconda** (In this app there are different tools which we used like Jupyter notebook, Spyder for html)
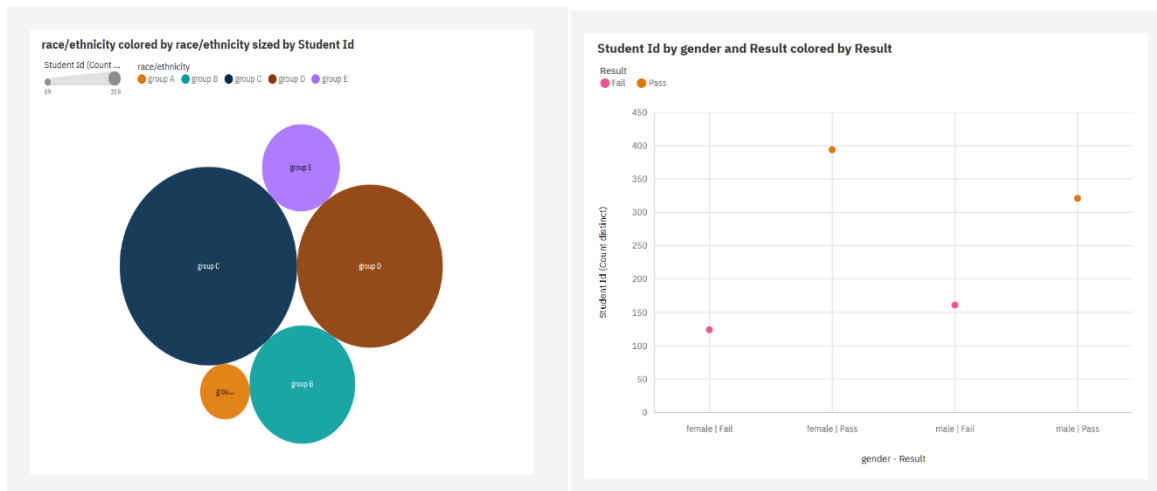4. **Visual code for project.**

Result:-
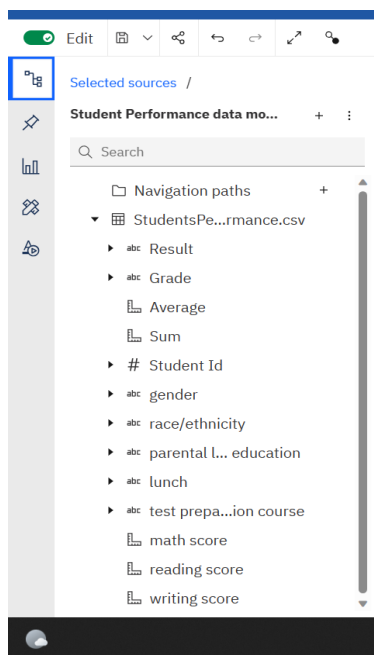
I created 8 visualizations using these sourses. They are:

1. Student Id by Grade
2. Student Id by parental level
3. Student Id by Test preparation
4. Student Id by race ethinicity
5. Pass And fail ratio
6. Race etinicity by student id
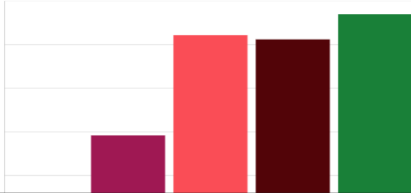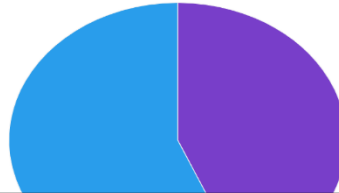7. Student id by Gender.
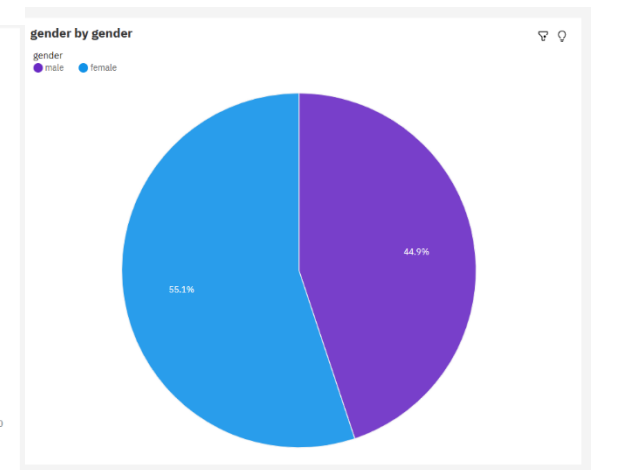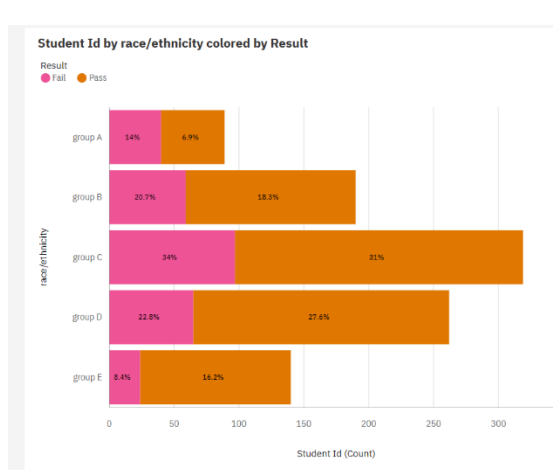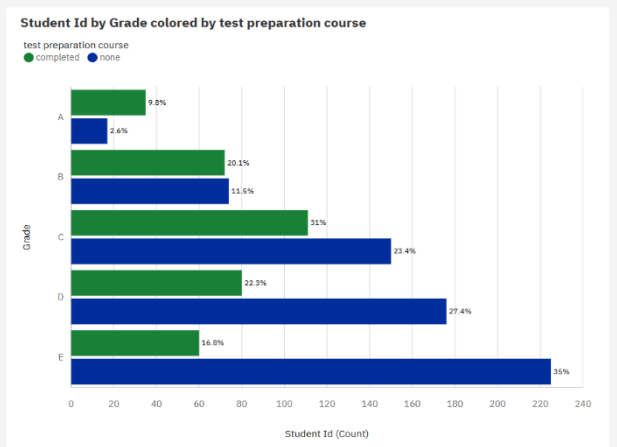
Final Output Of the project are:

STORY

Gender Diversity And Grades

Student Id by Grade colored by Grade
Grade
● A ● B ● C ● D ● E

gender by gender
gender
● female ● male

REPORT

Gender Distribution
gender
● male ● female

51.8% 48.2%
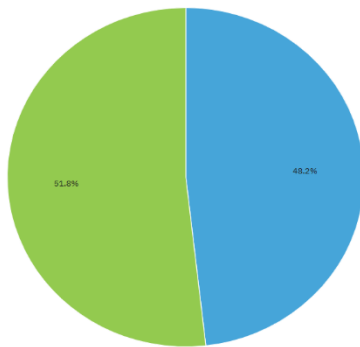
Gender Wise Result
gender - value
● male | Pass ● female | Fail ● female | Pass ● male | Fail

32.1%
16.1%
39.4%
12.4%
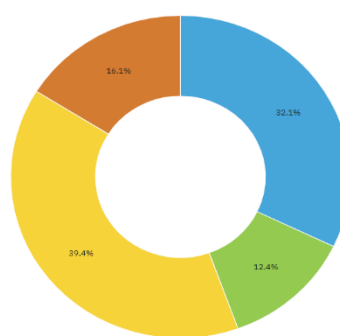
CONTACT US

Vesperr

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A108 Adam Street
New York, NY 535022

info@example.com

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Subject

Message

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Advantages & Disadvantages:

Advantages of student performance analysis are:

1. **Identifying strengths and weaknesses:** It helps educators pinpoint individual student strengths and weaknesses, allowing for personalized support.
2. **Curriculum Improvement**: By analyzing student performance data educators can identify areas where the curriculum may need improvement.
3. **Assessment of teaching methods**: It helps educators assess the effectiveness of different teaching approaches and adapt their methods accordingly.
4. **Data – Driven Decision Making:** Data driven insights can inform teachers instructional strategies, leading to more effective teaching methods.

Disadvantages of student performance analysis:

1. **Stress and pressure**: Constant evaluation can create excessive stress and pressure on students, potentially effecting their mental well being.
2. **Comparison and labeling**: students may be unfairly compared based on test scores, leading to labeling or stigmatization, which can harm their motivation.
3. **Limited scope**: Standardized tests may not capture the full range of a student abilities, interests and potential.
4. **Data interpretation challenges:** Interpreting performance data can be complex and incorrect conclusion may be drawn.
5. Students become discouraged sometimes when they compare with other students by seeing the performance analysis.

So these are the advantages and disadvantages of student performance analysis.

Application:

The areas where the solution for student performance can be applied: The solution for student performance analysis ca be applied in various areas, such as:

1. Educational institutions
2. Education Policy: Government bodies can utilize it to analyze overall educational performance, identify trends, etc.
3. Career guidance programs
4. Personalized learning: educational platforms can use it to offer personalized learning paths based on individual student performance.
5. Online learning: Virtual learning platforms can utilize student performance data to improve engagement based on individual needs.
6. Student support services: can use data to identify students who may need additional guidance.
7. Parental involvement: parents can access the analysis to understand their child's academic strength & weakness, enabling better support and involvement in their education.

Conclusion:

The main objective of this study is to analyze and visualize the data and various factors which have contributes to the " Student Performance Analysis". This type of analysis is helpful for many educational institutions to analyze the performance of the students and prepare them accordingly. It can also be useful for students to check their data and prepare better and useful for parents to know their children's strengths and weaknesses and support them for better results.

We have to create a Dashboard, Story & Report for the better understanding of the student performance analysis. These will be represented graphically using different types of charts for different sources. Finally we have done Web Integration where the Dashboard, Story & Report will be presented in one web page . I have done this web integration using Spyder.

Many Businesses use these Dashboard , Report & Story tools for their business requirements. Dashboard is used to track key performance indicators for various projects. Story is used to define, understand and revise. They can become the standard way to communicate. Report is an important tool for both project teams and stakeholders. Through report we can track the current progress of the project and compare it against the original plan.

Future scope:

In the future , student performance analysis can be enhanced through the integration of advanced Data Analytics and Artificial Intelligence. This could include :

1. Personalized learning
2. Real time feedback
3. Learning analytics dashboard
4. Collaborative learning platforms
5. Natural language processing