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SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

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Educational Datawarehouse: Unlocking Student Potential

A CAPSTONE PROJECT REPORT

CSA1674

DATA WAREHOUSING AND DATA MINING

Submitted by

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Educational Datawarehouse: Unlocking Student Potential

Welcome to the world of educational datawarehouses! This presentation explores how data can transform educational practices, providing insights to improve student performance and personalize learning.

Data Sources and Collection

Student Information Systems (SIS)

Collects student demographic data, enrollment information, attendance records, and grades.

Learning Management Systems (LMS)

Captures student activity within online courses, including assignments, quizzes, and interactions.

Assessment Platforms

Provides standardized test scores, performance data from various assessments, and personalized learning recommendations.

Data Modeling and Architecture

1

Data Extraction

Data is extracted from various sources using ETL (Extract, Transform, Load) processes.

2

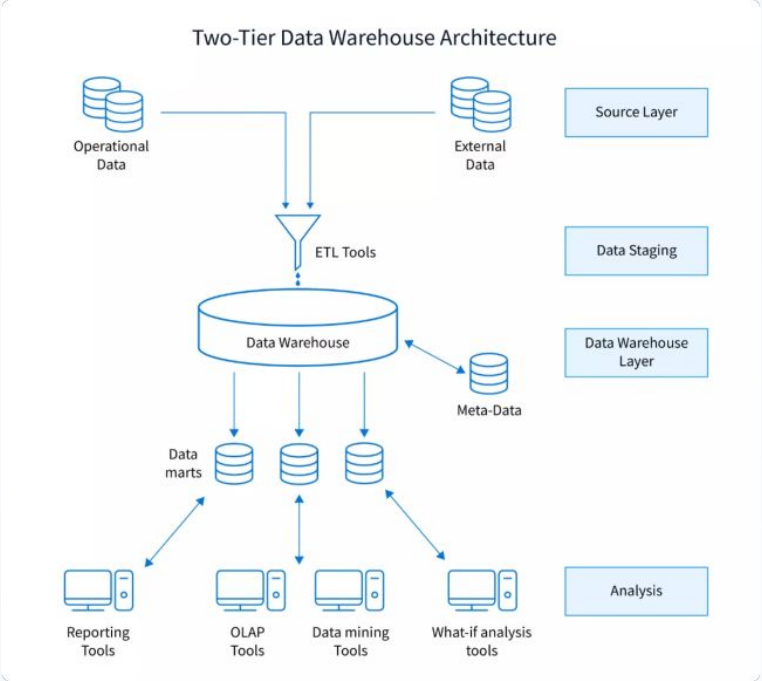
Data Transformation

Data is cleansed, standardized, and structured to ensure consistency and accuracy.

3

Data Loading

Transformed data is loaded into the data warehouse for analysis and reporting.



Student Performance Metrics

1 Academic Achievement

Measures student performance in core subjects and overall GPA.

2 Engagement and Participation

Tracks student attendance, participation in class discussions, and completion of assignments.

3 Learning Progress and Growth

Monitors student progress over time, identifying areas of improvement and skill development.

4 Behavioral and Social Factors

Captures student behavior, attendance, and interactions with peers and teachers.

Data Visualization and Reporting

Interactive Dashboards

Provide real-time insights and allow users to explore data through customizable filters and charts.

Customized Reports

Generate tailored reports based on specific needs, such as student progress reports or program evaluations.

Trend Analysis and Forecasting

Identify patterns in student performance and predict future outcomes to inform interventions and support.

Predictive Analytics and Interventions

1

Identify at-Risk Students

Predict students at risk of academic failure or dropout using machine learning algorithms.

2

Targeted Interventions

Develop personalized interventions based on student needs and risk factors.

3

Early Warning Systems

Alert teachers and counselors to potential problems before they escalate.

Data Privacy and Security

Data Anonymization	Protecting student identity by removing personally identifiable information.
Access Control	Restricting access to sensitive data based on user roles and permissions.
Data Encryption	Securing data in transit and at rest using encryption protocols.
Compliance with Regulations	Adhering to relevant privacy laws and regulations, such as FERPA.

Conclusion and Next Steps

Empowering Educators

Providing educators with data-driven insights to personalize instruction and support student success.

Improving Student Outcomes

Leveraging data analytics to identify trends, predict outcomes, and intervene effectively.

Continuous Improvement

Continuously evaluating and refining the data warehouse to meet evolving needs and improve its effectiveness.