

**AI Agent Project Report**

**Project Title**

AI-Based Student Performance Analyzer with News Context Awareness

“Internationnella School”



**Team Member** **Supervisor**

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**Project Duration:** Start Date: 7/5/2025🡪End Date: 11/7/2025

**1. Introduction**

The purpose of this project is to develop an AI agent capable of analyzing students' exam performance in context with real-world events happening in their country. The goal is to understand whether socio-political or economic events could have affected students' concentration or performance during exams. This project leverages machine learning (Phi-3 model), NewsAPI for live news data, and SQLite to manage a large student dataset.

**2. Objectives**

1. Analyze student exam results in the context of external events.
2. Use NewsAPI to retrieve relevant news based on student exam dates and countries.
3. Use Phi-3 to generate AI-based reasoning about the impact of news on student performance.
4. Create a chatbot assistant to help users while the analysis is being performed.
5. Ensure only authorized teachers can access the system using login credentials.

**3. Methodology**

**3.1 Dataset Preparation**

A large CSV file (~2.5GB) was converted and managed using SQLite to allow efficient querying.

Each student has a unique ID (CNTSTUID), country code (CNT), and ExamDate.

Dates were generated within a 1-month window acceptable by NewsAPI (10 June 2025 to 10 July 2025).

**3.2 News Fetching**

For each student, NewsAPI is queried for news articles 3 days before and after the exam date.

Articles are filtered and prepared into a list passed to the AI model.

**3.3 Phi-3 Integration**

The Phi-3 language model was used to analyze whether external events could have influenced the student's performance.

Initially used online via Hugging Face in Google Colab.

Later installed and integrated locally on a PC for independence.

**3.4 Chatbot Assistant**

A chatbot was implemented to handle user questions while the analysis is running.

It offers real-time guidance, status updates, and explanations.

**3.5 Authentication System**

A basic login page was added allowing only authorized teachers to access the AI analysis panel using a username and password.

**4. Project Planning**

**4.1 Theoretical Plan (Planned Duration)**

Get ready database + full load: 4 days

Auto-fetch and integration: 3 days

Online (Colab + Hugging Face): 1 week

**4.2 Real Execution (Actual Duration)**

Moved to SQLite to handle large dataset: 1 week

Manual date entry + NewsAPI constraints: 1 week

Local Phi-3 + chatbot setup: 2 weeks

**5. Technical Stack**

**Programming Language:** Python

**Database:** SQLite (for large dataset processing)

**Frontend:** Html+JavaScript

**APIs:** NewsAPI (external news retrieval)

**AI Models:** Phi-3 (Hugging Face API and local deployment)

**Development Tools:** VS Code, Google Colab (initial testing)

**Libraries:** pandas, requests, datetime, json

**6. Dual AI Implementation Approach**

**Online Deployment:**

First prototype tested using Hugging Face’s online Phi-3 endpoint.

Ideal for quick validation and access to powerful hardware.

**Local Deployment:**

Shifted to local Phi-3 instance for more control and offline reliability.

Improved response time and eliminated dependency on cloud.

**7. Ethical Considerations**

**Data Privacy:** All student records were anonymized and handled securely.

**Bias Mitigation:** The AI does not judge students; it provides context for understanding external influence.

**Transparency:** Teachers are provided with reasoning, not just scores.

**Responsibility:** Final decisions are left to human educators — AI is an assistive tool.

**8. Testing and Results**

Ran multiple scenarios with varied countries and exam dates.

Confirmed NewsAPI fetch accuracy within ±3-day window.

Phi-3 produced consistent, explainable conclusions.

**Example output:**

"The student's focus may have been diverted by critical ARDS research and lithium stock trends..."

Result quality improved by refining prompt to better highlight the exact exam date.

**9. Challenges Faced**

NewsAPI only supports 1 month of historical data, requiring dynamic date adjustments.

Phi-3 occasionally referenced incorrect event dates due to article content.

Dataset size made it hard to process in-memory (solved with SQLite).

**10. Future Work**

**Secure Multi-User Access:** Add student and parent logins.

**Emotional Analysis:** Integrate sentiment detection.

**Multilingual News Support:** Enable French, Arabic, and Spanish news.

**Customizable Scoring:** Let teachers weigh external factors.

**Real-Time Dashboards:** Live visual performance mapping.

**Automated News Sync:** Daily news updates in background.

**Historical Case Archive:** Store past results for research.

**11. Conclusion**

This AI Agent project successfully combines real-time data, contextual awareness, and advanced language modeling to provide deeper insight into student performance. It opens a path toward fairer and more empathetic academic evaluation tools.

**12. References**

**NewsAPI.org**

**Phi-3 Mini from Microsoft**

**SQLite Documentation**

**Python Libraries: pandas, requests, datetime**

**THE END**