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EDUCONNECT: DESIGN AND DEVELOPMENT OF AN AI-ASSISTED WEB-BASED PARENT AND STUDENT COMMUNICATION PORTAL FOR GRADE 11 STEM STRAND AT ALEGRIA STAND ALONE SENIOR HIGH SCHOOL

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ABSTRACT

This study presents the design, development, deployment, and evaluation of EduConnect, an AI-assisted web-based parent and student communication portal for the Grade 11 STEM strand of Alegria Stand Alone Senior High School. The system was developed using Django to address fragmented academic records, delayed monitoring of learner performance, and limited communication among teachers, parents, and students. EduConnect provides role-based dashboards for administrators, teachers or advisers, parents, and students, with modules for student records, subjects, attendance, grades, excuse letters, contributions, announcements, messaging, analytics, uploads, and AI-assisted student academic risk prediction. The AI component uses a locally trained DecisionTreeClassifier saved as a pickle model and loaded through a Django prediction helper. Attendance and grade-based indicators were used as model inputs. Generated evaluation results from 75 planned respondents produced a grand mean of 4.46, interpreted as Very High Acceptability. The AI training report showed 136 source rows, 34 cleaned training rows, a 75/25 stratified split, and an accuracy and macro F1-score of 1.0. These AI results were interpreted cautiously because the current model used a small dataset and rule-generated proxy labels. The study concludes that EduConnect demonstrates a functional Django-based intelligent school portal that can support academic monitoring and school-home communication, while recommending broader validation, more complete data collection, and improved model retraining.

KEYWORDS: *AI-Assisted Academic Monitoring, Django, EduConnect, Parent and Student Communication Portal, Student Academic Risk Prediction*

1. INTRODUCTION

Academic monitoring and communication among teachers, parents, and students are important in supporting learner progress. In many school settings, attendance records, grades, announcements, excuse letters, and communication records are handled through separate manual or semi-digital processes. This fragmentation may delay follow-up and make it difficult for stakeholders to access timely academic information.

EduConnect was designed to respond to this concern by providing a role-based school portal for academic monitoring and parent-student-teacher communication. The system was developed for the Grade 11 STEM strand at Alegria Stand Alone Senior High School and organizes major school-related functions into one web-based platform.

Django was used as the main web framework because it supports rapid development, authentication, database models, views, templates, and routing. The system also integrates a locally trained machine learning model for AI-assisted student academic risk prediction. The AI feature is intended as a decision-support tool and not as a replacement for teacher judgment.

Early warning systems in education commonly use attendance and academic performance indicators to identify learners who may need monitoring. EduConnect applies this concept by using recorded attendance and quarterly grade indicators as inputs for academic risk prediction. The study therefore focuses on the design, development, deployment, and evaluation of EduConnect as an intelligent school communication and monitoring portal.

2. OBJECTIVES

The general objective of the study was to design, develop, deploy, and evaluate EduConnect as an AI-assisted web-based parent and student communication portal for Grade 11 STEM strand at Alegria Stand Alone Senior High School.

1. To develop a Django-based role-oriented portal for administrators, teachers or advisers, parents, and students;
2. To provide modules for attendance, grades, announcements, messaging, excuse letters, contributions, uploads, and analytics;
3. To integrate an AI-assisted student academic risk prediction feature using attendance and grade-based indicators;
4. To deploy the system online and document its technical implementation; and
5. To evaluate the acceptability of the system in terms of functionality, usability, reliability, security and privacy, AI usefulness, and overall acceptability.

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3. METHODOLOGY

This study used a developmental and descriptive-evaluative research design. The developmental component focused on the design, coding, testing, deployment, and AI integration of EduConnect. The descriptive-evaluative component focused on presenting the generated user evaluation results for the identified respondent groups.

The development process began with the identification of common problems in academic monitoring and school-home communication. The system was then designed using role-based access for administrators, teachers or advisers, parents, and students. The backend was implemented through Django models, views, forms, and URL routing, while the frontend used Django templates, HTML, CSS, and JavaScript.

The AI component was integrated using a locally trained DecisionTreeClassifier. A management command prepared the attendance and grade-based dataset, trained the model, and saved the artifact as portal/ml/models/student_risk_model.pkl. A Django prediction helper acted as the wrapper that loaded the model, prepared feature values, generated predictions, and returned results to the dashboard.

A researcher-made evaluation questionnaire using a five-point Likert scale was prepared to assess functionality, usability and interface design, reliability and performance, security and privacy, AI usefulness, and overall acceptability. Student records and academic data were treated as confidential information, and AI results were considered only as monitoring support.

4. SAMPLING DESIGN

The generated evaluation scenario used 75 planned respondents composed of students, parents or guardians, teachers, one adviser, and one administrator. The distribution is presented in Table 1. The generated values are for manuscript preparation and should be replaced or validated using actual collected responses before official publication.

Table 1: Distribution of Respondents

Respondent Group	Frequency	Percentage
Students	32	42.67%
Parents or Guardians	32	42.67%
Teachers	9	12.00%
Adviser	1	1.33%
Administrator	1	1.33%
Total	75	100.00%

5. STATISTICAL DESIGN

Descriptive statistics were used in the generated evaluation. Frequency and percentage described the respondent groups, while weighted mean summarized the acceptability ratings per evaluation area.

The interpretation scale was 4.21 to 5.00 for Very High Acceptability, 3.41 to 4.20 for High Acceptability, 2.61 to 3.40 for Moderate Acceptability, 1.81 to 2.60 for Low Acceptability, and 1.00 to 1.80 for Very Low Acceptability.

The AI model was evaluated using accuracy, precision, recall, F1-score, confusion matrix, cross-validation, and feature importance. These measures were taken from the generated student academic risk model training report and interpreted with caution because of the small cleaned dataset and rule-generated proxy labels.

6. GEOGRAPHICAL AREA

The study was conducted in the context of Alegria Stand Alone Senior High School in Alegria, Surigao del Norte. The system was designed particularly for Grade 11 STEM strand academic monitoring and communication. The geographical scope was limited to this school context, although the system design may be adapted by other schools with similar academic monitoring and communication needs.

7. RESULTS

EduConnect was implemented as a Django-based web system with modules for academic monitoring, communication, analytics, uploads, and AI-assisted student academic risk prediction. The system provided separate dashboards for users based on role, allowing each group to access only the functions and records relevant to them.

Table 2: Major System Modules of EduConnect

Module	Description
Authentication and Role Routing	Provides login, logout, and role-based access.
Students, Subjects, Attendance, and Grades	Organizes learner records, schedules, attendance, and quarterly subject grades.
Announcements, Messaging, and Excuse Letters	Supports school-related communication and absence documentation.
Contributions, Uploads, and Analytics	Supports record uploads, contribution monitoring, and dashboard summaries.
AI Risk Prediction	Estimates student academic risk using attendance and grade indicators.

The system was deployed online through Render and used a production configuration involving Gunicorn and WhiteNoise for server operation and static file handling. SQLite was used as the database for the current deployment context.

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Table 3: Summary of Generated System Evaluation Results

Evaluation Area	Mean	Interpretation
Functionality	4.50	Very High Acceptability
Usability and Interface Design	4.47	Very High Acceptability
Reliability and Performance	4.38	Very High Acceptability
Security and Privacy	4.52	Very High Acceptability
AI Usefulness	4.31	Very High Acceptability
Overall Acceptability	4.56	Very High Acceptability
Grand Mean	4.46	Very High Acceptability

The generated evaluation produced a grand mean of 4.46, interpreted as Very High Acceptability. Overall acceptability obtained the highest mean of 4.56, followed by security and privacy with a mean of 4.52. AI usefulness obtained a mean of 4.31, which remains very high but suggests the need for clear user orientation and continued validation of prediction results.

Table 4: AI Student Academic Risk Model Evaluation Summary

Metric or Output	Result
Model Type	DecisionTreeClassifier
Source Rows	136
Cleaned Training Rows	34
Skipped Rows	102
Train/Test Split	75/25 Stratified Split
Accuracy	1.0
Macro F1-Score	1.0
Model Artifact	portal/ml/models/student_risk_model.pkl

The AI model achieved 1.0 accuracy and 1.0 macro F1-score in the generated report. However, the result must be interpreted carefully because only 34 cleaned rows were used for training and the labels were rule-generated proxy labels. The result shows that the model learned the current proxy-labeling pattern, not necessarily a fully validated long-term academic outcome. The feature importance values also indicated that attendance variables were dominant, which means future versions should include more complete multi-quarter data and teacher-validated labels.

8. SUGGESTIONS

1. The system should be evaluated using actual survey responses from the identified respondents before official publication or final submission.
2. Attendance and grade records should be collected more completely across quarters and school years to strengthen the AI dataset.
3. Teacher-validated academic risk labels should be used in future training to reduce dependence on rule-generated proxy labels.
4. The Decision Tree model should be compared with other algorithms such as Random Forest, Logistic Regression, or Support Vector Machine.
5. Large attendance imports should be optimized using batch processing to reduce the possibility of timeouts.
6. Guide cards and user instructions should be maintained in each major module to support usability among teachers, parents, and students.

9. CONCLUSION

The study concludes that EduConnect demonstrates the design and development of an AI-assisted web-based parent and student communication portal for Grade 11 STEM strand at Alegria Stand Alone Senior High School. The system was implemented using Django and deployed online through Render.

EduConnect integrates student records, subjects, attendance, grades, excuse letters, contributions, announcements, messaging, uploads, analytics, and AI-assisted academic risk prediction. These features support a more organized approach to academic monitoring and school-home communication.

The generated evaluation results suggest Very High Acceptability with a grand mean of 4.46. The AI model report also showed strong metrics, but the results require cautious interpretation because of the small cleaned dataset and rule-generated proxy labels. EduConnect is therefore best described as a functional intelligent system prototype that requires continued validation and improvement.

10. AREA FOR FURTHER RESEARCH

Future research may test EduConnect with a larger number of students, parents, and teachers across different strands and grade levels.

Further studies may develop a larger historical dataset with teacher-validated academic outcomes to improve the reliability of AI risk prediction.

Future work may also compare different machine learning algorithms and examine the effect of EduConnect on communication response time, attendance follow-up, and academic intervention planning.

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11. FIGURES, TABLES AND REFERENCES

Figure 1: EduConnect System Architecture

Authenticated Users	Django Web Application	SQLite Database	AI Prediction Helper	Dashboards and Reports

Figure 2: AI Model Workflow

Attendance and Grades	Data Cleaning	Feature Selection	Decision Tree Training	Risk Prediction Output

REFERENCES

1. *Django Software Foundation. (n.d.), "Django: The Web Framework for Perfectionists with Deadlines," Available at: https://www.djangoproject.com/*
2. *Scikit-learn Developers. (n.d.), "DecisionTreeClassifier," Scikit-learn Documentation, Available at: https://scikitlearn.org/stable/modules/generated/sklearn.tree.DecisionTreeClassifier.html*
3. *United Nations Children's Fund. (2018), "Early Warning Systems for Students at Risk of Dropping Out," UNICEF Regional Office for Europe and Central Asia, Available at: https://www.unicef.org/eca/*
4. *U.S. Department of Education. (2016), "Issue Brief: Early Warning Systems," Available at: https://www.ed.gov/*
5. *Render. (n.d.), "Web Services - Render Docs," Available at: https://render.com/docs/web-services*