



# International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)





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# To Develop an App for The Responsible Use of Generative Tools in Nextgen (Eduverity)

Kalaimagal G, Jayapriya V, Kavya S, Swetha S

Assistant Professor, Department of Computer Science and Engineering, P.S.V College of Engineering and Technology, Mittapalli, Krishnagiri, India.

UG Scholar, Department of Computer Science and Engineering, P.S.V College of Engineering and Technology, Mittapalli, Krishnagiri, India

UG Scholar, Department of Computer Science and Engineering, P.S.V College of Engineering and Technology, Mittapalli, Krishnagiri, India

UG Scholar, Department of Computer Science and Engineering, P.S.V College of Engineering and Technology, Mittapalli, Krishnagiri, India

**ABSTRACT:** This project aims to develop an innovative educational application, EduVerity, designed to promote the responsible and effective use of generative AI tools in next-generation learning environments. The application integrates advanced technologies such as Gemini AI and machine learning to enhance the learning experience for students. EduVerity allows users to enter questions, attempt solutions, and receive instant feedback. The system not only provides correct answers but also delivers detailed step-by-step explanations, helping learners understand concepts more clearly. Additionally, the application uses machine learning algorithms to predict potential questions based on user performance, learning patterns, and past attempts, enabling personalized learning pathways. The platform focuses on guiding students to use generative AI responsibly by encouraging active participation rather than passive answer consumption. It ensures that learners engage with problems, attempt solutions independently, and then utilize AI for verification and deeper understanding. Overall, EduVerity aims to bridge the gap between traditional learning methods and AI-driven education by fostering critical thinking, improving problem-solving skills, and delivering a smarter, adaptive, and ethical learning experience.

**KEYWORDS:** EduVerity, Generative AI, Gemini AI, Machine Learning, NextGen Learning, Personalized Learning, AI in Education, Intelligent Tutoring System, Predictive Analytics, Student Performance Analysis, Adaptive Learning, Problem-Solving Skills, Digital Education, Responsible AI Usage, E-Learning System

**DOMAIN:** Data Analytics and Machine Learning

## I. INTRODUCTION

The evolution of digital technologies has significantly transformed the education system, making learning more accessible, flexible, and interactive. In recent years, generative artificial intelligence (AI) has emerged as a powerful tool that can generate answers, explanations, and even complete solutions to complex problems. While these tools provide convenience and efficiency, their uncontrolled usage can negatively impact students' ability to think critically and solve problems independently. Students often rely on AI tools to directly obtain answers without attempting to understand the logic behind them. This results in reduced conceptual clarity, lack of engagement, and dependency on automated systems. Therefore, there is a growing need for a system that ensures AI is used as a supportive learning tool rather than a shortcut. EduVerity is proposed as a smart educational application that integrates generative AI and machine learning to create a balanced learning environment. The system encourages students to actively attempt problems before accessing AI-generated solutions. It not only provides correct answers but also detailed explanations to improve conceptual understanding and learning efficiency.



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### II. LITERATURE REVIEW

**“The influence of generative AI tools on social science students”** Data was collected through questionnaires from social science students and analyzed using statistical methods to evaluate AI usage patterns, learning experiences, and academic performance.

**“Generative Artificial Intelligence and Higher Education Assessments: More Opportunities Than Concerns?”** The study analyzed changes in assignments, examinations, and evaluation strategies caused by AI tools like ChatGPT, highlighting both opportunities and academic integrity concerns.

**“Revolutionizing Education with Artificial Intelligence: Exploring the Transformative Potential of Conversational AI Systems”** The implementation focused on integrating conversational AI platforms such as ChatGPT to support personalized learning, interactive discussions, and improved student engagement in educational settings

### III. METHODOLOGY

#### A. EXISTING SYSTEM

The existing In the current educational environment, students widely use generative AI tools and online platforms to obtain answers for academic questions. These systems provide instant solutions, explanations, and content generation across multiple subjects. Most existing systems focus on delivering quick responses without ensuring whether the student has attempted the problem. AI tools directly generate answers based on user queries, often without analyzing the user's understanding level or learning behaviour. Additionally, traditional e-learning platforms provide static content such as videos, notes, and quizzes, but they lack real-time interaction and intelligent feedback. Some platforms include basic performance tracking, but they do not use advanced machine learning techniques to analyze user patterns or predict learning needs. Overall, existing systems prioritize speed and convenience but lack mechanisms to ensure effective and responsible learning.

#### B. ADVANTAGES

1. **Direct answer dependency:** Students can easily copy answers without attempting the problem, reducing learning effectiveness.
2. **Lack of active learning:** No mechanism to force or encourage students to try solving questions independently.
3. **Limited personalization:** Most platforms provide the same content for all users without adapting to individual learning needs.
4. **No intelligent analysis:** Existing systems do not deeply analyze user performance, mistakes, or learning patterns.
5. **Absence of predictive learning:** No machine learning-based prediction of important questions or topics.
6. **Overuse and misuse of AI:** Students may overuse AI tools, leading to reduced critical thinking and dependency.
7. **No usage control (day/night or time tracking):** Systems do not monitor or regulate excessive usage, which can affect productivity and health.
8. **Lack of risk detection:** No identification of risky behaviors such as repeated copying, low engagement, or poor performance trends.

#### C. PROPOSED SYSTEM

The proposed system, EduVerity, is an intelligent AI-based educational platform designed to overcome the limitations of existing systems. It integrates generative AI (Gemini AI) with machine learning to provide a more interactive, personalized, and responsible learning experience. Unlike existing platforms, EduVerity ensures that students attempt questions before accessing AI-generated answers. After submission, the system evaluates the response, provides corrections, and delivers step-by-step explanations. The system also includes a machine learning module that continuously analyzes user behavior, performance, and learning patterns. Based on this analysis, it predicts important questions, suggests topics for improvement, and personalizes the learning experience. Additionally, EduVerity introduces usage monitoring features, such as tracking study time (including day/night usage patterns), identifying overuse, and encouraging healthy learning habits.



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### D. DISADVANTAGES

- 1. Encourages solution attempt before answer:** Students must attempt the problem first, ensuring active participation and better understanding.
- 2. AI-based answer with explanation:** Provides accurate answers along with step-by-step explanations for clarity.
- 3. Machine learning-based analysis:** Analyzes user performance, mistakes, and learning behavior to improve outcomes.
- 4. Predictive learning system:** Suggests important and frequently asked questions based on user data.
- 5. Personalized learning experience:** Adapts content and recommendations based on individual strengths and weaknesses.
- 6. Usage tracking (day/night monitoring):** Tracks study time and usage patterns to promote balanced learning habits.

### E. DESIGN OF THE SYSTEM

The EduVerity system is designed using a modular architecture in which all components work together to provide an intelligent and user-friendly learning platform. The process begins with the user or student, who interacts with the system through a web or mobile application. The user interface is designed to be simple, responsive, and attractive so that students can easily ask questions, submit answers, and view their learning progress. Before accessing the system, the user must pass through the authentication module, which manages registration, login, password protection, and secure access. This ensures that only authorized users can use the application and that personal data remains safe.

After successful login, the user requests are sent to the backend server, which acts as the main controller of the system. The backend is developed using technologies such as Flask or Django and is responsible for processing requests, managing communication between modules, and returning results to the user interface. When a student submits a question, the backend forwards it to the AI engine. The AI engine, powered by Gemini AI, generates accurate answers, step-by-step solutions, and clear explanations. This helps students not only get the correct answer but also understand the concept behind it.

At the same time, the machine learning module analyzes the student's behavior and academic performance. It studies factors such as scores, question attempts, time spent, and learning patterns. Based on this analysis, the system predicts important questions, identifies weak areas, and provides personalized recommendations. This adaptive learning approach makes the system more effective for individual users. All user details, question history, scores, and reports are stored securely in the database module, which ensures proper data management and quick retrieval whenever needed.





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Fig.1 The architecture diagram of EduVerity shows how different modules are connected to create an intelligent learning system. The process starts with the user, who accesses the application through the web or mobile interface. After login through the authentication module, the request is sent to the backend server. The backend communicates with the AI engine to generate answers and explanations, while the machine learning module analyzes performance and predicts important questions. All user data and history are stored in the database. The evaluation module checks the user's answers and calculates scores.

### IV. IMPLEMENTATION

#### MODULE DESCRIPTION

##### 1. USER INTERFACE MODULE

This module acts as the communication layer between the user and the system. It is developed using Android (Android Studio) and/or web technologies to provide a responsive and interactive environment.

##### 2. AUTHENTICATION MODULE

The authentication module uses secure protocols to protect user credentials and prevent unauthorized access. It may implement techniques such as hashing and token-based authentication. This module also maintains user sessions to provide a seamless experience without repeated logins, ensuring both security and usability.

##### 3. ENGINE MODULE (GEMINI AI)

The AI engine uses generative AI techniques to understand the context and intent of user queries. It converts user input into structured data, processes it using AI models, and generates meaningful responses. The module ensures that explanations are detailed and easy to understand, helping users grasp concepts rather than just viewing answers.

##### 4. MACHINE LEARNING MODULE

The machine learning module uses algorithms such as classification and prediction models to analyze user data. It continuously learns from user interactions and updates recommendations accordingly. This module plays a key role in adaptive learning by customizing the content based on individual user needs, improving efficiency and outcomes.

##### 5. DATABASE MODULE

The database is designed for efficient storage and fast access to data. It ensures data integrity, consistency, and security. The module supports structured and unstructured data, enabling smooth interaction with AI and ML components. Backup and recovery mechanisms can also be implemented to prevent data loss.

##### 6. EVALUATION MODULE

The evaluation module uses predefined logic and AI assistance to analyze user answers. It not only checks correctness but also identifies where the user went wrong. This detailed evaluation helps in diagnosing learning gaps and supports targeted improvement.

##### 7. USAGE MONITORING MODULE

This module combines evaluation results and ML predictions to deliver personalized feedback. It highlights weak areas and suggests corrective actions. The recommendations help users focus on important topics, making learning more effective and structured.

### V. RESULT

The result of the EduVerity system shows that it successfully provides an intelligent and responsible learning environment for students. The system allows users to ask questions, attempt solutions, and receive AI-generated answers with clear step-by-step explanations. It effectively evaluates user performance, identifies mistakes, and gives personalized feedback for improvement. The machine learning module predicts important questions and recommends topics based on student progress. The usage monitoring feature helps track learning habits and encourages responsible use of AI tools. Overall, the system improves conceptual understanding, critical thinking, and academic performance while making learning more interactive, personalized, and efficient.



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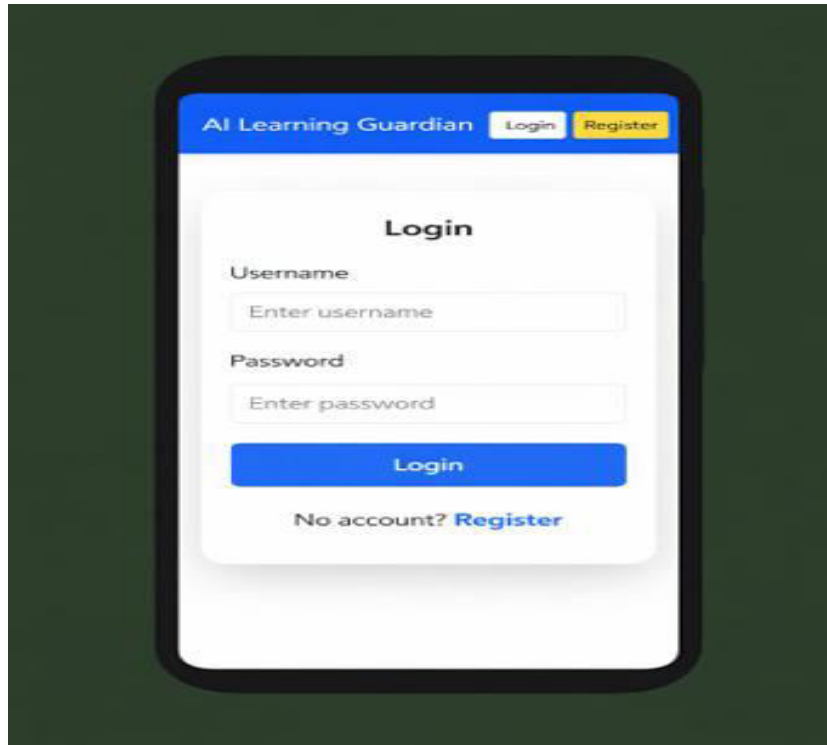


Figure No: .1. Login Page

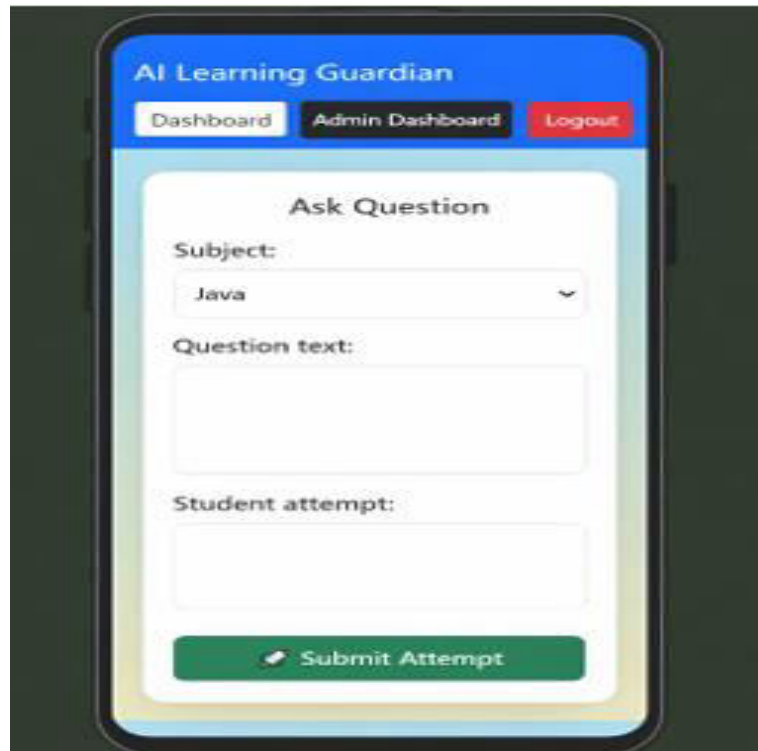


Figure No: 2. Ask Question



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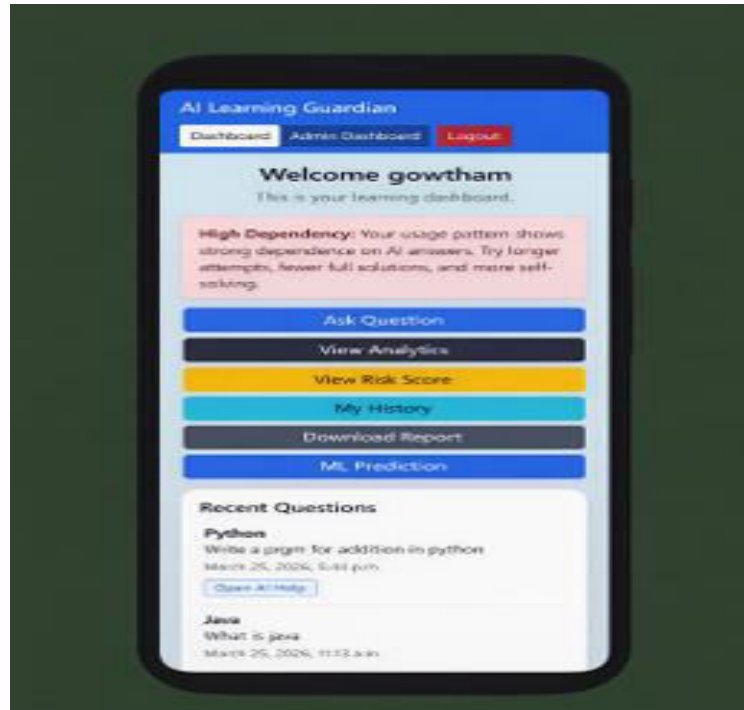


Figure No: 3. Dashboard

Fig:1 The Login Page is the entry point of the EduVerity system where users securely access their accounts. It allows students to enter their username or email and password to log in. New users can register through the signup option, while existing users can quickly access the dashboard. The page is designed to be simple, user-friendly, and secure for smooth access to the learning platform.

Fig:2 The Ask Question page allows students to enter academic questions and submit their own answers or attempts. It is designed with a simple and user-friendly interface where users can select the subject, type the question, and provide their response. After submission, the system processes the request and provides AI-generated solutions, explanations, and feedback. This page encourages active learning by making students attempt the problem before viewing the correct answer.

Fig:3 The Dashboard page is the central control panel of the EduVerity system where users can manage their learning activities and monitor their progress. It provides a personalized welcome message along with a summary of recent questions, performance scores, and study history. Important features such as Ask Question, View Analytics, Risk Score, History, Download Report, and ML Prediction are available through quick access buttons. The dashboard also displays alerts related to responsible AI usage, low performance, or learning risks. In addition, it provides recommendations, feedback, and progress updates in an easy-to-understand format. This page helps students stay organized, track improvement, and make better learning decisions efficiently.

## VI. CONCLUSION

The EduVerity system successfully demonstrates the integration of generative AI and machine learning in the field of education to create an intelligent and responsible learning platform. The system addresses the major challenges of existing AI-based tools, such as over-dependence, lack of interaction, and absence of personalized learning. By encouraging users to attempt solutions before accessing AI-generated answers, the system promotes active learning and enhances critical thinking skills. The inclusion of step-by-step explanations improves conceptual understanding and helps students learn effectively. The machine learning module plays a significant role in analyzing user performance, identifying weak areas, and predicting important questions. This enables personalized learning and improves overall academic performance.



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Additionally, features such as usage tracking and risk analysis help in monitoring student behavior and promoting responsible use of AI. Overall, EduVerity bridges the gap between traditional learning methods and modern AI technologies by providing an adaptive, interactive learning environment. The system proves to be efficient, scalable, and beneficial for students, educators, and self-learners.

### VII. FUTURE ENHANCEMENT

The EduVerity system can be further improved with several future enhancements to make learning more advanced and effective. Voice-based learning can be added so that users can ask questions and receive answers through speech interaction. More advanced AI models can be integrated to provide faster responses, higher accuracy, and better understanding of complex queries. An offline mode can also be introduced to support students with limited internet access. Gamification features such as rewards, badges, and leaderboards can increase student motivation and engagement. Real-time collaboration can allow students and teachers to interact, discuss, and solve problems together. The system can also be connected with school or college databases for assignments, attendance, and academic records. Advanced analytics dashboards with graphs and reports can help users track progress more effectively. Improved risk detection can monitor stress levels, overuse, and learning behavior more accurately. In addition, mobile app optimization can enhance speed, responsiveness, and user experience. These future enhancements will make EduVerity more powerful, interactive, and beneficial for next-generation learning.

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