

CBE Career Chatbot: Empowering Pathway Decisions through AI for Kenyan Students

Problem Statement

With the rollout of the **Competency-Based Education (CBE) system** in Kenya, students in **Grade 9 and Form 4** face critical decisions when selecting their career pathways (Arts & sports, Social science, Science, Technology, Engineering & Mathematics). However, many students struggle due to:

- **Lack of access** to career guidance resources.
- **Poor understanding** of their strengths and interests.
- **Confusion** regarding CBE pathways and subject combinations.
- **Language barriers**, especially in rural areas.
- **Peer pressure and societal bias** influencing choices.

This results in students selecting pathways that **do not align** with their natural talents and interests, leading to:

- ✓ Low motivation
- ✓ High dropout rates
- ✓ Careers that fail to fulfill their potential

There is a clear need for a solution that bridges the gap between students and **accessible, personalized career guidance** aligned with the CBE system.

Objectives

The **CBE Career Chatbot** seeks to:

1. Provide **real-time, personalized advice** to students on selecting CBE pathways.
2. Support **English and Swahili** language inputs for inclusivity.
3. Recommend careers aligned with students' **interests, strengths, and aspirations**.
4. Deliver guidance through an **intuitive chatbot interface**.
5. Ensure **accessibility** across devices (mobile & desktop).
6. Use **anonymous data ethically** to improve guidance over time.

Methodology

The chatbot will be developed using **modern web technologies and AI** for scalability and user-friendliness.

System Design

Component	Technology/Approach
Frontend	HTML, CSS, JavaScript, (responsive UI)
Backend	Fast API (Python) for efficient processing & NLP integration
AI & NLP	Swahili-English translation, GPT-based reasoning, personality-based recommendations
Career Assessment	Quizzes to evaluate skills & interests
Pathway Visualizer	Interactive CBE pathway flowcharts
Career Exploration	Gamified career scenario engagement

Testing & Validation

- **Pilot deployments** in selected schools.
- **Feedback collection** from students, teachers, and mentors.

Expected Impact

- ✔ **Empowers students** with **personalized career guidance**.
- ✔ **Reduces dropout rates** by improving pathway alignment.
- ✔ **Promotes equity** in career counseling (urban & rural).
- ✔ **Supports Kenya’s national education goals** alongside MoE initiatives.

