American college of Technology (ACT)

Department of Computer Science

Undergraduate Project proposal

Title: Tutoring Platform

Group Members

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1. Introduction

1.1 Background

Ethiopia faces a significant challenge in connecting students with qualified tutors, making quality education inaccessible for many learners. Existing tutoring platforms in Ethiopia are often limited in scope, focusing only on either primary, secondary, or university-level courses, or offering only online tutoring services.

Our proposed tutoring platform seeks to address this gap by providing a comprehensive solution that caters to students from grade 1-12, college, and university levels, as well as offering basic courses such as English for all age groups. The platform will facilitate both online and in-person tutoring, ensuring accessibility and flexibility.

By integrating advanced features such as AI-powered course recommendations, progress tracking, and a seamless booking and payment system, this platform will offer an enhanced learning experience for students and tutors alike. The goal is to create a centralized, user-friendly, and effective tutoring solution that meets the diverse educational needs of Ethiopian learners.

1.2 Statement of the Problem

Finding qualified tutors is a major challenge for students and parents in Ethiopia. The current tutoring options are fragmented, making it difficult to find structured and high-quality support. Many existing platforms offer limited services, catering only to specific educational levels or focusing solely on online tutoring, leaving those who prefer in-person tutoring without viable options.

Additionally, students lack access to AI-powered learning enhancements, progress tracking, and structured assessments, which are key to effective learning. There is also no unified system that allows students to compare tutors based on qualifications, ratings, and experience, leading to inefficiencies in selecting the right tutor.

Our tutoring platform aims to solve these issues by providing a holistic, AI-supported, and structured solution where students can easily find and connect with tutors for online and in-person learning, access learning materials, and track their progress effectively.

1.3 Objectives

1.2.1 General Objective

To develop a comprehensive and accessible tutoring platform that connects students with qualified tutors for online and in-person learning, covering all education levels and integrating advanced features to enhance learning efficiency.

1.2.2 Specific Objectives:

- To provide a seamless online and in-person tutoring experience for students from grade 1-12, college, and university levels.
- To implement AI-powered recommendations that suggest relevant courses based on student progress and interests.
- To enable live video and audio classes with screen sharing, file sharing, and session recording features.
- To integrate an efficient scheduling and booking system that allows students to easily find and book tutors.
- To offer secure multiple payment options using mobile banking technologies.
- To facilitate tutor ratings and profiles for transparency and better tutor selection.
- To provide multilingual support, ensuring accessibility for both English and Amharic speakers.
- To implement automated notifications and reminders for class schedules and homework deadlines.
- To enhance student engagement through quizzes, assessments, and progress tracking features.

This platform will bridge the gap in Ethiopia’s education system by offering an all-in-one solution that makes tutoring accessible, effective, and adaptable to students' diverse needs.

1.4 **Methodology**

To develop a comprehensive tutor platform that addresses the educational challenges in Ethiopia, we will follow Agile methodology because of its flexibility, iterative approach, and focus on delivering value quickly. By breaking the project into sprints, gathering feedback, and adapting to changes, we can ensure a high-quality, user-friendly platform while meeting our project deadlines. Agile will also allow us to prioritize features based on user needs and continuously improve the platform through regular testing and feedback.

1.4.1 Investigation (Fact-Finding) Methods

To understand the current issues and needs of Ethiopian students and tutors, we will conduct two different fact-finding methods:

1. **Online Research**:
    - Study the current landscape of tutoring platforms in Ethiopia to understand their limitations and gaps.
    - Analyze existing challenges such as the lack of qualified tutors, fragmented services, and accessibility issues in rural areas.
    - Explore global tutoring platforms to identify best practices and innovative features that can be adapted to the Ethiopian context.

2. **Comparative Analysis**:
    - Compare our proposed platform with existing tutoring solutions to identify competitive advantages and areas for innovation.
    - Focus on features such as AI-powered recommendations, payment systems, tutor selection, and user experience.

3. **Feedback from Educational Institutions:** Collect insights from schools, colleges, and universities to understand how the platform can meet institutional needs and align with educational standards.
4. **Interviews:** We will conduct interviews with key stakeholders to gather insights into their pain points, expectations, and preferences for both online and in-person tutoring.

1.4.2 System Development Tools

For the development of the tutor platform, we will use a variety of technologies and tools that will ensure the platform is scalable, secure, and effective. These tools include:

Frontend Development:

- HTML
- CSS
- JavaScript and together with frontend frameworks such as React to develop a seamless and user-friendly interface.

Backend Development:

- We will rely on Python (Django framework).

Database Management System:

- A suitable database management system MySQL will be employed to store and manage the data within the platform.

Payment mechanism:

- To enable seamless and secure online payments, we will integrate **mobile banking payment connections** into the platform like CBE Birr, telebirr.

1.5 Scope and limitation

Our Tutoring platform aims to bridge the educational gap in Ethiopia by providing a comprehensive solution for students across different levels such as primary, secondary, and university. The platform's scope includes:

- **Educational contents:** Covers educational content and tutoring services from grade 1 through university level.
- **Online/in-person tutoring:** Facilitates both online and in-person tutoring.
- **Courses:** Offers basic courses in English for all age groups.

- **AI-powered Recommendations**: Integrates AI-powered course recommendations, progress tracking, and assessments.
- **Multilingual support**: Supports both Amharic for Ethiopian consumers and English language for international students.
- **Multiple Payment Options**: Secure payments via platform like CBE Birr, and tele birr for paid tutoring.
- **Progress Tracking and Reports**: Detailed reports for students, parents, and tutors to monitor performance.
- **Homework Assistance**: Tutors can assign, review, and provide feedback on homework.
- **Session Recording & Playback**: Students can re-watch classes for better understanding.
- **Tutor Profiles and Ratings**: Browse and select tutors based on ratings, experience, and expertise.
- **Scheduling and Booking System**: Easy booking of available slots and automated reminders.
- **Group and Private Sessions**: Options for one-on-one or group tutoring.
- **Automated Notifications and Reminders**: Emails/SMS for class schedules and homework deadlines.
- **Mobile-Friendly and App Support**: Available on desktop and mobile for learning on the go.
- **Content & Course Management**: Admins can approve course listings and manage categories.

Limitations:

Technical Limitations:

- **Internet Dependency**: Requires a stable internet connection for real-time classes, which may be a barrier in areas with poor connectivity.
- **Initial Cost**: Development and maintenance can be expensive, involving server hosting, AI development, and security measures.
- **Technical Issues**: Potential for bugs, system outages, and technical glitches that may disrupt learning sessions.

- **Scalability**: High user traffic may affect performance without proper infrastructure and may require significant server resources to handle growth.
- **Privacy and Security**: Ensuring data protection and preventing unauthorized access is critical to maintain user trust and comply with regulations.
- **Device Compatibility**: Some features may not function optimally on older devices, limiting accessibility for some users.

AI and User Experience Limitations:

- **Limited AI Capabilities**: AI-based recommendations and assessments may not always be accurate, affecting the learning experience.
- **Language Barriers**: Despite multilingual support, some students may face challenges in communication, especially with complex subjects or nuanced language.
- **Limited in-person tutoring**: In-person tutoring availability might be limited to certain geographic areas
- **User Adaptability**: Training tutors and students to effectively use the platform's features may require time and effort, impacting initial adoption.
- **Feedback & Iteration**: Incorporating user feedback and continuously improving the platform is necessary to meet evolving needs and preferences.

1.6. Significance of the Project

- **Improved Access:** Bridges the gap in finding qualified tutors, providing a centralized platform that enhances accessibility to quality education for Ethiopian students.
- **Enhanced Learning Experience**: Integrates advanced features like AI recommendations and progress tracking to offer a more personalized and effective learning process.
- **Flexibility:** Offers both online and in-person tutoring options, catering to various learning preferences and schedules.
- **Efficiency:** Streamlines the process of finding, booking, and paying for tutors, making it easier for students and parents.
- **Transparency**: Tutor ratings and profiles help in making informed decisions, ensuring students find the best match for their needs.

1.7. Beneficiaries of the system

- **Students:** From grade 1 to university level, students will have access to qualified tutors and learning resources.
- **Parents:** people who can find reliable and qualified tutors for their children easily.
- **Tutors:** people who have ability to help students will have a platform to connect with students and expand their tutoring business.
- **Educational Institutions:** They can recommend a trusted platform for their students.
- **Community:** By promoting education and skill development, the platform supports the overall growth and development of the community.

1.8. Feasibility Study

Technical Feasibility:

- **Infrastructure**: Utilizes existing technologies for online tutoring, AI recommendations, and payment processing.
- **Requirements**: Requires a backend to manage user data, course content, and session recordings.
- **Interface:** Needs a user-friendly front-end interface that supports Amharic and English languages and seamless navigation.

Market Feasibility:

- High demand for tutoring services from Grade 1–12, university students, and skill learners.
- **Competitor analysis**: Existing platforms (e.g., local tutoring centers, online courses) lack a unified system that offers both online and in-person tutoring with AI-powered recommendations.

Unique selling points (USPs):

- Multiple learning levels (school, university, skill-based).
- AI-driven recommendations.
- Both online & in-person tutoring options.

Operational Feasibility:

- **Operational Model:** Combination of online platform management and localized in-person tutoring coordination.
- **Infrastructure**: Reliable server hosting for online platform, secure data management, and user support systems.
- **Scalability:** Platform designed to handle increasing user base and expand to other regions if successful.

Economic Feasibility:

- **Initial Investment**: Cost of development, testing, deployment, and marketing, including server hosting, AI development, and security measures.

Legal & Security Feasibility:

- **Compliance**: Compliance with Ethiopian education and data protection laws
- **Data Security**: Secure user authentication and data encryption.
- **Contracts and Agreements**: Establish clear contracts with tutors, outlining terms, responsibilities, and payment agreements.
- **User Consent:** Implement comprehensive user consent forms for data collection and use, ensuring transparency.

1.9. Project Schedule

Phase	Task description	Duration
Planning	Initial project planning, requirements and team formation	1-2 week
	Conduct user research (customers, tutors, parents). Define user roles (customers, tutors, admins).	
	Prioritize core functionalities and create the product backlog. Assign team roles and set development milestones.	
System Design	User interface, system architecture design.	3-4 weeks
	Database schema design, Develop wireframes & low-fidelity prototypes.	
	Define API structure & user authentication flow.	
Core Development	Implement user authentication (customers, tutors, and admins). Develop basic user interfaces (dashboard, profile, tutor search, booking system)	2-4 weeks
	Implement backend for user management.	
Development	Implement AI-powered tutor & course recommendations.	6-8 weeks
	Backend development (API database integration)	
	Add progress tracking & reporting features. • Optimize group and private session functionalities. Conduct usability testing with tutors & students.	
	Ai module integration (recommendation, progress tracking)	
	Add multilingual support (English & Amharic). • Implement admin dashboard for platform monitoring	
	Payment gateway (CBE, telebirr)	
Testing	Unit testing, integration, testing, and bug fixing	4weeks
	Collect feedback and fix usability issues, Optimize performance.	