SkillSync: A Campus Skill Exchange Android Application

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ABSTRACT

The SkillSync Android Application is designed to establish a structured peer-to-peer learning environment within a university campus. In modern academic settings, students possess diverse technical and non-technical skills such as programming, graphic design, communication, photography, and language proficiency. However, due to the absence of a centralized system, these skills often remain unutilized, and students rely heavily on external platforms for learning opportunities. SkillSync addresses this gap by providing a mobile-based platform that enables students to register, create profiles, and list the skills they can offer or wish to learn. The application is developed using Kotlin in Android Studio, with Firebase Authentication ensuring secure user access and Firebase Firestore providing real-time data storage and synchronization. The system allows users to discover peers based on shared skills, send structured exchange requests, and manage learning sessions effectively. seamless user interaction. By enabling real-time data updates and structured workflows, the

Problem Statement:

Students in educational institutions possess valuable skills that often remain unrecognized

due to the lack of a centralized platform. Traditional learning methods focus mainly on theoretical knowledge, limiting opportunities for practical peer-based learning. There is no structured system to connect learners with skilled individuals within the campus environment.

Students depend on external platforms to acquire new skills, even though capable peers are available within the same institution. This leads to inefficient utilization of internal talent and reduced opportunities for collaborative growth. Additionally, the absence of an organized digital environment makes it difficult to manage skill discovery, communication, and exchange processes.

Objective:

The main objective of this project is to develop an Android-based application
that facilitates structured peer-to-peer skill exchange within a campus. The system aims to provide a centralized platform for discovering skills, connecting users, and enabling knowledge sharing.

It focuses on secure authentication, real-time data management, and efficient user interaction. The application also aims to support structured workflows, including request handling and session scheduling, ensuring a complete and organized learning process.

Method Used:

The system is developed using Kotlin for Android application development and XML for designing user interfaces. Firebase Authentication is used to manage user login and session security, while Firebase Firestore is used for real-time database management.

A modular architecture is followed, where components such as authentication, profile management, skill handling, and session
management operate independentl
y. The system uses real-time listeners to ensure that updates in user data, skills, and interactions are instantly reflected across all devices.

Result: Users can easily connect with peers, exchange knowledge, and manage learning sessions.

The system reduces dependency on external platforms and enhances internal collaboration. It provides a user-friendly interface and ensures real-time updates, improving overall system performance and usability.

KEYWORDS

Android Application, Skill Exchange, Firebase, Peer Learning, Mobile Application

INTRODUCTION

In modern educational environments, students possess a wide range of skills beyond academic curricula. However, the absence of a structured system limits effective knowledge sharing and collaboration. Traditional methods of learning focus primarily on theoretical knowledge, leaving practical skill development underutilized.

SkillSync introduces a mobile-based solution that enables students to interact, share knowledge, and develop skills through peer collaboration. The system promotes a practical approach to learning and encourages active participation within the campus community.

LITERATURE REVIEW

Existing learning platforms provide access to global knowledge but lack localized peer interaction. Many systems focus on content delivery rather than enabling direct collaboration between users. Some applications offer communication features but do not provide structured workflows for skill exchange.

Previous research has explored digital solutions for knowledge sharing, but many systems lack real-time updates, scalability, and ease of use. These limitations highlight the need for a mobile-based, real-time, and user-friendly platform designed specifically for campus environments.

PROPOSED SYSTEM / METHODOLOGY

SkillSync provides a structured platform where users can create profiles, list skills, and connect with peers. The system follows a client-server architecture, where the Android application acts as the frontend, and Firebase serves as the backend.

The system allows users to search for skills, send exchange requests, and manage interactions

efficiently. Real-time data synchronization ensures that all updates are instantly reflected, providing a seamless user experience.

IMPLEMENTATION

The system is developed using Android Studio with Kotlin as the programming language. The application follows a modular design approach, ensuring that each component functions independently while maintaining integration with other modules.

The major modules include authentication, profile management, skill management, discovery, and session management. Firebase services are used to handle backend operations, including data storage and user authentication.

RESULTS AND DISCUSSION

The system successfully provides a platform for students to connect and exchange skills efficiently. It ensures smooth interaction between users and supports structured learning processes.

The performance of the system is optimized through real-time updates and efficient data handling. It reduces manual effort and enhances collaboration within the campus environment.

CONCLUSION

SkillSync successfully implements a mobile-based solution for peer-to-peer learning within a campus. The system enhances collaboration, improves student engagement, and promotes practical knowledge sharing.

Future enhancements may include advanced recommendation systems, improved user interface design, and integration with additional communication features.

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