

# Abhyasanand – A responsive app designed for regional students

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**Abstract** - "Abhyasanand" is a responsive mobile application developed with care to respond for the educational needs of school students primarily in the regional Marathi language. This modern system aims to give students an easy-to-use platform where they may improve their learning experiences by using interactive courses, tests, and educational materials. By utilizing current technology, the app takes a systematic approach to delivering curriculum-aligned content that is specifically personalized to each user, encouraging an improved understanding of the material. Higher levels of student involvement, better academic achievement, and a stronger foundation in the native language and other academic subjects should produce results.

**Keywords** - Learning, Quiz, Educational App, Regional language, User-friendly learning app.

## I. INTRODUCTION

In the contemporary educational landscape, the integration of technology has become a pivotal force, particularly in enhancing learning experiences for students across diverse linguistic backgrounds. Mobile subscriptions are forecasted to reach 9.3 billion by 2019, with 5.6 billion being smartphones. On average, Americans own four digital devices and spend 60 hours a week consuming content across them. Additionally, there are over 2.4 billion Internet users globally, with 1.5 billion accessing the Internet via mobile devices, indicating substantial growth in mobile device usage worldwide [1]. There are many advantages of online education such as it lets more people get education but in a cheaper way because some of the students can't afford to buy heavy books or support expensive study fees education apps can help those students [2]. Mobile devices offer numerous advantages such as high speed, lightweight design, touch screen interfaces for enhanced user interactivity, and long battery life, making them highly convenient for educational purposes. Their mobility allows students to seamlessly transition between indoor and outdoor settings

without needing to constantly open and close screens, providing flexibility in learning environments [3]. Recognizing this pressing need, "Abhyasanand" emerges as a responsive educational application meticulously designed for students primarily engaging with the Marathi language. This research paper embarks on an exploration of the app's development, its purpose, and the methodologies employed to create an innovative and user-friendly tool aimed at empowering regional language learners, specifically in the context of Marathi-speaking students.

The concept of "Abhyasanand" originates from a profound observation of the challenges faced by students in regional language mediums, particularly in the digital sphere. The internet is no more monolingual; contents of the other regional languages are growing rapidly. According to the 2001 census, there are approximately 1000 documented languages and dialects in India [4]. With an increasing emphasis on digital learning resources, the dearth of comprehensive and intuitive platforms in regional languages became conspicuous. To bridge the gap, this app undertakes meticulous approach, that not only facilitates academic growth but also cultivates a sense of cultural identity and pride among Marathi-speaking students. Methodologically, the development of "Abhyasanand" involved research into regional education, user-centric design principles, and an understanding of the nuanced requirements of students in regional language educational settings. This research paper focuses on the comprehensive journey of "Abhyasanand," stating its purpose, design principles, and the potential impact it holds for enhancing educational access and quality for Marathi-speaking students.

## II. LITERATURE REVIEW

The rapid expansion of mobile technologies has led to a heightened focus on mobile application development, with educational institutions worldwide integrating it into

their curricula. However, the evolving nature of the mobile development environment poses significant challenges for course development. A structured practice approach to enhance teaching effectiveness in mobile application development classes. This approach involves two levels of hands-on practice: initial foundational learning through instructor-led coding, followed by challenge-based learning where students autonomously develop applications of increasing complexity. Student feedback and performance attest to the efficacy of structured practice, not only improving teaching effectiveness but also fostering a positive learning experience. The paper details the course design, provides project samples, and emphasizes the focus on iOS development to broaden students' knowledge. [5] Another study showcases "EEapp" (Mobile Engineering Education application) facilitates teaching and learning processes, encouraging students to utilize educational mobile applications for long-term learning benefits. The application's core advantages include promoting effective learning, assisting with homework, assignments, and enabling online interaction with teachers. [6] Applications like EduApp designed for secondary education, emphasizes interaction and collaboration among teachers and students. Despite challenges such as device preferences. It serves as a step towards leveraging mobile technology to enhance the educational experience. It provides a flexible, collaborative learning environment in Greek secondary education. [7] Another proposed mobile application utilizes Moodle's web service function within a Client-Server architecture to provide an efficient e-learning platform. Key functions include accessing course content, participating in forums and chat rooms, taking quizzes, receiving event reminders, and exchanging messages, all designed to enhance user experience and facilitate interaction between students, teachers, and administrators [8].

An application to assist students in accessing specific topics is also developed for better understanding, thereby eliminating the need for daily travel to institutions and saving both students' and teachers' time [9]. Smartphone apps in the recent years aim to teach programming skills to high school students through gamified lessons. It indicates positive impacts on student learning, especially for first-year students. [10] Newly developed interfaces are user-friendly, engaging, and culturally unbiased. They facilitated skill development, tracked progress, and encouraged decision-making. The study underscores the potential of mobile applications to enhance primary

education when thoughtfully integrated into classrooms. [11] Another system proposes a mobile application to connect students with tutors, utilizing GPS and recommender systems for convenience and trust-building. It features user, tutor, and admin modules, facilitating communication, course browsing, requests, reviews, and administrative oversight [12].

### III. METHODOLOGY

The design and development of "Abhyasanand," a responsive application tailored for school students predominantly in the regional language Marathi, involved a meticulous methodology integrating various crucial elements. Recognizing the target demographic of regional school students, the application was conceptualized to cater to their educational needs effectively. The primary features encompassed within the application include sections dedicated to homework, doubts, and quizzes, meticulously structured to enhance the learning experience for the students. The development process commenced with an in-depth analysis of the requirements, considering the educational curriculum prevalent among Marathi-speaking school students. This initial phase involved extensive research into the syllabi, prevalent teaching methodologies, and the unique challenges faced by students in this demographic. Understanding the importance of user-centric design, the app was crafted with a keen focus on intuitive navigation and accessibility, ensuring a seamless experience for its users.

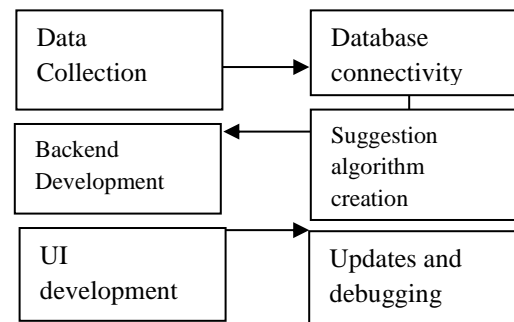


Figure I: App methodology

The homework section was meticulously designed to allow students to access and submit their assignments conveniently within the app, thereby fostering a more organized approach to their studies. Additionally, the doubts section was integrated to facilitate students in seeking clarification on concepts directly from the app, promoting a self-paced learning environment. A notable

feature of "Abhyasanand" is its quiz section, which not only evaluates students' knowledge but also provides personalized recommendations based on their performance. Through a sophisticated algorithm, the app identifies chapters or topics where students have scored low, thereby directing them towards areas that require further attention. The technological framework of the application relied on Firebase as the database, chosen for its robustness, scalability, and real-time capabilities. Capitalizing on its features, such as real-time synchronization and cloud messaging, ensured efficient data management and enhanced user engagement within the app. Java was selected as the primary programming language for app development, owing to its versatility, extensive libraries, and cross-platform compatibility. This choice facilitated the creation of a responsive and feature-rich application, catering to the diverse needs of the target audience.

The app's user interface was designed with a clean, minimalist approach, focusing on readability and visual appeal. User testing was conducted throughout the development phase to gather feedback and iteratively refine the interface for optimal user experience. The iterative development approach allowed for continual improvements, ensuring that "Abhyasanand" remains relevant and effective in meeting the evolving needs of its users.

#### IV. RESULTS AND DISCUSSION

The app showcases a range of features aimed at enhancing the learning experience for users, including interactive quizzes and a comprehensive database of regional language study material. Through a user-friendly interface, Abhyasanand facilitates easy access to educational resources, thereby bridging the gap between traditional learning methods and modern technology.

Despite its promising features, the project reveals several notable gaps that warrant attention for further improvement. Firstly, the absence of robust security measures within the app raises concerns regarding data privacy and protection for its users. This gap underscores the critical need for implementing stringent security protocols to safeguard sensitive user information effectively. Additionally, while Abhyasanand offers a commendable array of features, the research identifies potential avenues for expansion and enhancement. The incorporation of more interactive learning tools, personalized study plans, and real-time progress tracking

mechanisms could significantly enrich the app's educational utility. Looking ahead, the research outlines a promising future scope for the project. One proposed avenue involves conducting extensive testing and implementation of Abhyasanand within on-ground school settings. Such real-world trials would provide invaluable insights into the app's effectiveness, user engagement, and areas for refinement. Moreover, collaborating with educational institutions and local communities can foster a more tailored approach to addressing the specific needs and preferences of regional students.



In conclusion, the research underscores the significant strides made with Abhyasanand as a responsive app tailored for regional students. While highlighting its impressive features, the study also points towards critical gaps in security measures and potential for further feature expansion. By leveraging these insights, the future development and refinement of Abhyasanand hold promise for revolutionizing educational accessibility and learning outcomes among regional student communities.

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