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An Easy Learning App for Kids Learning Disabilities

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ABSTRACT: This paper presents the development of an Android app for children with learning disabilities to improve their learning experience. The app includes features such as learning English alphabets and rhymes, math learning, and interactive storybooks. We visited the Composite Regional Centre for Persons with Disabilities (CRC) and received guidance from Dr. Raj Bollapalli on issues related to learning disabilities and how technology can aid the learning process. The app uses technology such as text-to-speech and dyslexia font and was developed using Android Studio, Java, and XML

KEYWORDS: Learning disabilities, Android app, text-to-speech, dyslexia font, Android Studio, Java, XML

I. INTRODUCTION

Education is a fundamental right of every child. In Asia, it was estimated that about 15 % of thechildren are having learning difficulties in some forms. Out of these children, 60 or 80 % of them are suffering from dyslexia. According to the Departmentof Biotechnology, the incidence of dyslexia in India isestimated at 10% and nearly 35 million children in thecountry are thought to have this learning disability.

Learning disabilities are due to genetic and/or neurobiological factors that alter brain functioning in a manner which affects one or more cognitive processes related to learning. These processing problems can interfere with learning basic skills such as reading, writing and/or math. They can also interfere with higher level skills such as organization, time planning, abstract reasoning, long or short-term memory and attention. A learning disability is not a problem with intelligence or motivation and kids with learning disabilities aren't lazy or dumb. In fact, most are just as smart as everyone else. Their brains are simply wired differently—and this difference affects how they receive and process information.

Learning Disabilities (LD) usually falls into four broadcategories:

- Spoken Language - listening and speaking
- Written Language - reading, writing andspelling
- Arithmetic - calculation and concepts
- Reasoning - organization and integration ofideas and thoughts

The most common types of learning disabilities are-

Dyslexia- An individual with dyslexia has average to above average intelligence but has deficits in visual, auditory or motor process which interfere with reading and writing comprehension. It is a disability that affects reading and language based processing skills. The individual may also have difficulties with learning to translate printed words to spoken words with ease.

Dyscalculia- Dyscalculia affects a person's ability tounderstand numbers and learn mathematical facts. The individual may also have poor comprehension of mathematical symbols, may struggle with memorizing and organizing numbers,

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have difficulty telling time, or have trouble with counting. Some people may also reverse numbers.

Dysgraphia- Dysgraphia is a specific type of learning disability that affects a person's handwriting ability and fine motor skills. Problems may include illegible handwriting, inconsistent spacing, poor spatial planning on paper, poor spelling, and difficulty composing writing as well as thinking and writing at the same time. Handwriting of a kid with learning disability.

II. LITERATURE SURVEY

Learning disabilities is one of the most difficult problem that is faced by the school going children or kids and recovering process is relatively slow for learning disabled children. Computers and educational multimedia courseware have the strength to help these children in their educational multimedia courseware have the strength to help these children in their education and also for self- development and will help for motivation as well. Web portal can be used to help the dyslexic children to solve

their respective problems and as a result it help child to grow individually and boost their confident as well. Authors [2] suggest the mobile application's to mainly focusing on the arithmetic and language development of the children with learning disabilities. In recent years, animation has occupied a large part of film and television and entered into the people's vision. Author [3] hopes that kids like classroom as they like animation, for which the idea of combining animation and education is produced. To combine joyful flash animation and difficult learning to help children with mental retardation in learning and alleviate their difficult conditions. Dyslexia is one of the most common learning disability, Here authors [4] attempted to design the application for children, which encourage the learning process. Author provide methodology, environment setup, design choice, implementation and the results of there preliminary evaluation and assessment on mobile application "EasyLexia". E-learning can offer great opportunities to students with disabilities, but still few barriers prevent special needs to participate in educational activities, barriers that relate to the characters play important role to prevent student from their educational right.

III. BACKGROUND AND RELATED WORK

Several apps and software programs are available in the market for children with learning disabilities. Some of these apps provide learning tools for specific disabilities, while others offer a range of features for various disabilities. Some of the popular apps in this category include "Learning Ally," "Read &Write," and "SnapType." However, there is a need for a comprehensive and user-friendly app that provides an alternative and interactive learning experience for children with learning disabilities.

IV. METHODLOGY

Development of the app involved visiting the Composite Regional Centre for Persons with Disabilities (CRC) and receiving guidance from Dr. Raj Bollapalli on issues related to learning disabilities and how technology can aid the learning process. The app was developed using Android Studio, Java, and XML.

The app includes features such as learning English alphabets and rhymes, math learning, and interactive storybooks. The app uses technology such as text-to-speech and dyslexia font to aid the learning process for children with learning disabilities. The app features a user-friendly interface with colourful graphics and animations to make learning more engaging for children.

A. Phases Of Project

The Project is divided into five phases they are

1. Define the App Concept
2. Planning Phase
3. Analysis Phase
4. Design Phase
5. Development Phase

1. Define the App Concept:

In this phase, We had define the purpose and objectives of your app. This will include identifying the target audience,

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definingthe features and functionalities of the app, and outlining the app's value proposition. We have also consider the competitionand assess the feasibility of the app concept.

2. Planning Phase:
In the planning phase, we had developed a comprehensive plan for the app development process. This will include identifying the project scope, setting timelines and milestones, estimating costs, and determining the resources required for the project.

3. Analysis Phase:
In the analysis phase, we had gathered and analyzed data to identify user requirements, user preferences, and pain points. We had conduct market research to determine the app's viabilityand determine the technology requirements for the app. This phase also involves defining the functional and non-functional requirements of the app.

4. Design Phase:
In the design phase, we had created the app's architecture, user interface, and user experience. We had also developed wireframes and mock ups to visualize the app's design. In this phase, we had considered the app's usability, accessibility, andperformance. The design phase will also include creating a prototype of the app and conducting user testing to gather feedback and refine the design.

5. Development Phase:
In the development phase, We had developed the app's functionality and integrate the various components functioning as intended. In this phase of the app. We had also performed unit testing and integration testing to ensure that the app is working properly.

These five phases provide a structured approach to app development and ensure that your app is developed in a comprehensive and efficient manner. By following these phases, you can ensure that your app meets the needs of your target audience and delivers value to your users.

V. TECHNOLOGIES USED TO DEVELOP ANDROIDAPP

There are several technologies and tools available for developing Android applications that cater to children with learning disabilities. Here are some examples:

Accessible UI Design: The user interface (UI) design of the application should be accessible to children with learning disabilities. This may include the use of large fonts, clear and simple language, and appropriate color schemes.

Text-to-Speech (TTS): TTS systems work by converting written text into an audio signal that can be played through speakers or headphones. The text can be input using a variety of methods, including typing, copy and paste, or uploading a document. Once the text has been input, the TTS system

analyzes the text and applies a set of rules to convert it into spoken words

Java: is a general-purpose programming language that is widely used for developing a variety of applications, includingdesktop applications, web applications, mobile apps, and enterprise software.

Android Studio: Is the official integrated development environment (IDE) for developing Android apps. It is developed by Google and is available for free download on theAndroid developer website.

Dyslexia font:, also known as "OpenDyslexic" is a font designed to make reading easier for people with dyslexia, a learning disorder that affects the ability to read accurately and fluently.

XML: stands for eXtensible Markup Language. It is a markuplanguage which is a way of describing data using a text-based document. Because XML is extensible and very flexible, it's used for different things including defining the UI layout of android apps, It a popular choice for data exchange between different systems and platforms.

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VI. RESULTS

The app has been developed based on simplicity and easy to use interference for the user. The app contains following categories based on conducted research

1. Learning English
   a. Learning Alphabets
   b. Rhymes
   c. Text to speech
2. Learning Mathematics
3. Playing Story
4. Test

1. **Learning English feature**:

It include following sub features such as:

a. **Learning Alphabets**: The app could provide interactive lesson that help users learn the letters of the alphabet, their sounds, and how to write them.

b. **Rhymes**: It include popular nursery rhymes, along with lyrics and illustrations to help users follow along and learn the words. The English learning featurecould be designed for children or for anyone who wants to improve their English language skills.

c. **Text To Speech**: The TTS feature can be used to helpusers learn a new language. The app could provide a text-to-speech feature that reads out words and phrases in the target language, allowing users to practice their pronunciation and listening skills.

2. **Learning Mathematics feature**: This feature allows users to learn numbers and practice basic math operations using a calculator. The app provides interactive lessons that teach users how to read and write the numbers. It also include a calculator feature that allows users to perform calculations within the app, such as addition, subtraction, multiplication and division. The math learning feature designed for children or for anyone who wants to improve their math skills.

3. **Playing Story**: This feature allows users to read or listen to story. The app provide a story, from classic fairy tale. The storycould be accompanied by illustrations or animations to make the reading experience more engaging. The story feature couldbe designed for children or for anyone who enjoys reading stories.

4. **Test:** The test page in the Easy Learning app is designed to evaluate the progress of the children using the app. It can contain tests related to the categories in the app, such as identifying letters, numbers, shapes, colors, and objects.

Overall, the app would provide a range of educationalcontent, designed to help users learn and practice important skills in a fun and interactive way. The three features would complement each other and provide a comprehensive learning experience for users.

VII. CONCLUSION

In conclusion, Mobile technology offers learning solutions for students with learning disabilities. Easy Learning App is helpful but not a complete solution for re- education. Technology should only serve as a supplementary aid for traditional teaching methods.

VIII. FUTURE SCOPE

Easy Learning app can add more languages to cater todiverse linguistic backgrounds of students. Artificial intelligence and machine learning can be integrated for personalized learning. Interactive features like quizzes, games, and challenges can be added to make learning more engaging and fun for students.

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