

K-ESign Learn: A Visual Learning App

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Abstract:

Deaf and mute students will find it hard to learn because most of the apps are made for students who can hear and speak. Many of the learning apps do not show Indian Sign Language properly, and very few support both Kannada and English together. Because of this, many children are struggling when they want to practise any lessons at home after school. We used Android Studio to make this app. The app teaches basic letters, numbers, words, and small sentences in Kannada and English, and also shows matching sign actions through pictures or small clips. A writing pad is added so students can try writing on their own. Teachers and parents can also look at simple progress information inside the app. Everything works on the device without needing of any outside tools, so students can use it easily anywhere. Our main aim of this project is to make learning friendlier for deaf and mute children by giving them a clear visual help, simple practice screens, and language support.

Keywords: Deaf and mute learning, Sign language support, Kannada and English learning, Android Studio app, School-friendly design.

I. INTRODUCTION

Learning is not the same for every children. Many of the deaf and mute students find school lessons harder because of most teaching methods are made for children who can hear the teacher and speak back. In many classrooms, teachers try to support these students with patience and special teaching methods, but once the child leaves school, they usually do not have the right tools to continue learning at home. Parents also get confused because they may not know sign language, and they cannot always help their child the way a trained teacher can. Because of this, many deaf and mute students slowly fall behind or lose confidence, even if they are very smart and interested in learning.

A big problem is that most of the mobile apps that most of them are using are created only for children who can hear. Most of the apps give sound instructions or voice, which do not help deaf children to their learning.

Many of the deaf and mute students find school lessons harder because of most teaching methods are made for children who can hear the teacher and speak.

We understood that internet access is not available everywhere. Because of this, we made everything inside the app. One time it gets downloaded, the app will work fully offline. This will make it more useful for students in villages and semi-urban areas where the network will be very unavailable.

In many of the class rooms, teachers are trying to support these type of students with patience and different teaching methods, but once the child completes his school, they are not having the good tools to continue learning at their home.

Seeing these types of issues, we felt there should be a very simple tool for those of deaf and mute children and who can actually use without getting confused. We just wanted an app that explains things slowly and clearly. So we planned a small learning app in Android Studio that shows Kannada and English letters, numbers, and a few basic words in a neat and easy way. We used clean layouts and simple pictures so the child understands what they see without getting lost. For some words, we added small sign visuals to help the student know the

meaning even without sound.

We have added a speech recognition for the deaf students who can speak into it and they will get a translated version of it in a text format and those who are mute we are giving them to type as they cannot speak and translate it to voice or speech type.

Overall, this is a project that is meant to make learning easy for deaf and mute students. We have focused on keeping everything simple and friendly and comfortable. The app supports both of Kannada and English languages and some of the basic sign visuals so that students will feel confident while studying at home or at school.

II. LITERATURE REVIEW

The education of deaf and mute students have been debated widely by teachers and organisations for long time. Most of the previous work discusses how students who are deaf rely more on their eyes and hands to comprehend lessons. A lot of them, according to many of the stories, learn better when things are demonstrated through pictures or actions or clear visual steps rather than long verbal explanations. Researches also indicate that sign language is the primary means of communication for these students, however apps that support Indian Sign Language are too few and scarce.

A. Government platforms :-

1. PM e-Vidya ISL

2. Department of Empowerment of Persons with Disabilities (DEPwD)

Some government and educational organizations in India have made efforts to produce sign language resources. The Indian Govt too had made efforts to popularize Signs and include in learning. But much of this material is either in English or accessible only in certain schools. Many of them are not built in mobile app format, so students can't use them at home on a daily basis. Some platforms also offer sign language lessons, but they primarily focus on American Sign Language. This is unhelpful for Indian pupils where the symbols are quite different and may

B. Private platforms:-

1. Deaf Enabled Foundation (DEF)
2. Signing Hands Foundation.

Other private apps in the market mostly focus on the spoken lessons. They depend heavily on audio instructions and a fast animations that require listening. These apps looks smooth and colourful but they do not support children who cannot hear. Some apps also include voice-based quizzes.

III. OBJECTIVES

The primary objective of this research are to

1. To develop an easy-to-use online platform.
2. To support deaf students with text translation.
3. To support the mute by speech translation of their text.
4. Extra activities for the students to engage.

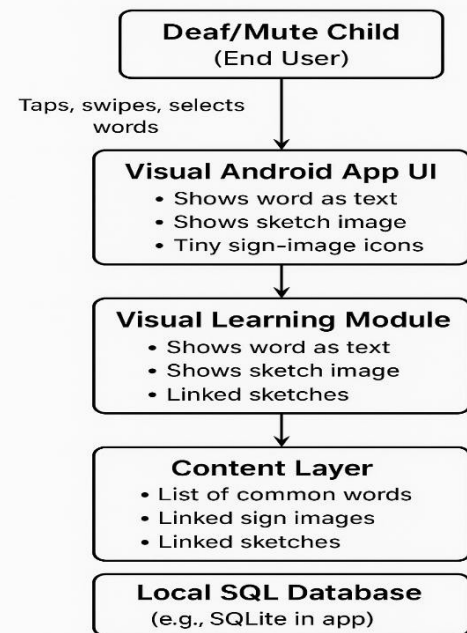
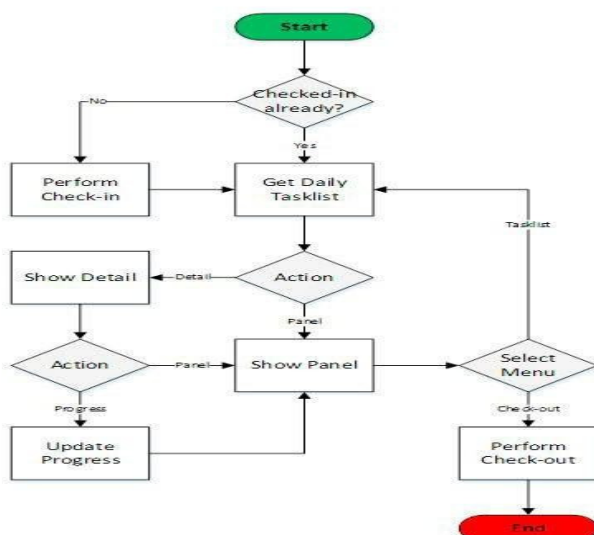
III. METHEDOLOGY

For this project, we kept the whole process very simple because the app is meant for children who need clear and easy learning support. We didn't follow any complicated steps or advanced tools.

Since they depend more on seeing things rather than hearing, we decided that our app should be fully visual. This idea became the base of our plan. After discussing the requirements, we made rough sketches on paper to see how each screen should look. We tested this part many times to make sure the lines were smooth and easy to erase.

For a few common words, we also included tiny sign images. Because they rely more on visual cues, these images aid students in rapidly grasping the meaning.

We didn't try to adhere to any extensive or complex development methods because the app is primarily intended for kids who require clear visuals.



We just began with what the students could understand. Since sight is the primary method of learning for the majority of deaf and mute children, we made that the focal point of everything we did.

Not very fancy, the idea of this project was to make it simple and presentable and moreover we actually used just android studio and some sql code to build it.

The above fig shows the methodology of how our project was built.

To sum up the methodology we mainly tried to keep things straight forward and simple.

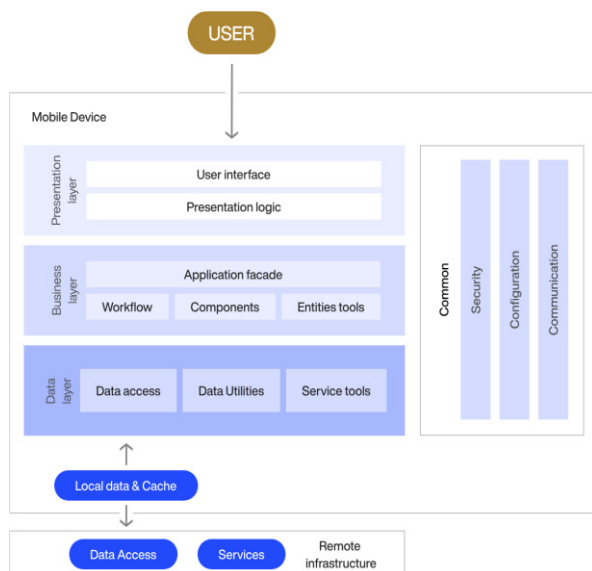
IV. SYSTEM DESIGN AND ARCHITECTURE

Even though this looks simple, it covers everything the app needs to work smoothly.

The first layer is the User Interface Layer. made sure the buttons were big, the text was clear, and the colours were soft so that the app does not look crowded.

Children should feel comfortable while learning. When they use the writing pad, this layer handles the drawing actions.

For words that have sign support, this layer shows the pictures or small clips



. Everything in this layer works silently in the background to make the app feel smooth and responsive.

We also have a layer that will deal with the learning materials that we have used for this project , it consists of:

1. Storage for the images that are used for letters, numbers and some of the basic words
2. loading the the emojis or the pictures in this app very fast and even offline
3. We also have managed the drawing surface of the writing pad very neatly .

This app also has an interaction and learning layer and this layer will control how each of the students will interact to the lessons and extra activities like quizzes and emoji learning.

This is the layer which is responsible for the smooth transition of the two languages kannada and english. Since our project is offline, we used simple local storage instead of online databases.

The data stored here is used to show the basic progress page for parents and teachers.

All these layers work together in a clean and organised way.

Our design supports the main goal of the project—to help deaf and mute students learn in a friendly and comfortable way without any confusion.

VI. RESULTS

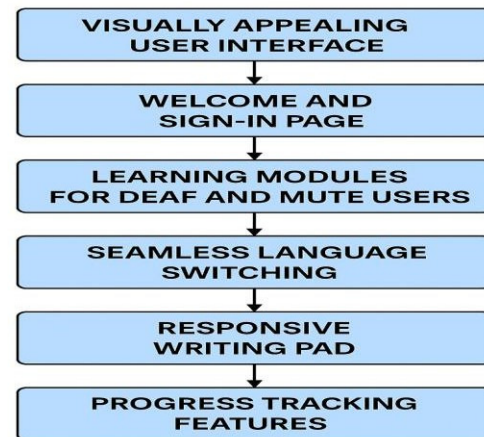
The final result of this project is that we can expect a colourful userinterface throughout the app and also it will be visually appealing especially for kids . we mainly have the welcome page a sign-in and a login page for authorizing the users, the next we will have all the necessar learning modules for both deaf and mute people respectively.

Switching between Kannada and English felt natural, which was important because many students move between both languages during their lessons.The writing pad surprisingly worked better than we thought during the early development stages.

We also checked the sign images that appear for a few common words. When students tapped on the words, the related image popped up instantly. The feature is simple, but during testing we realised it actually helps children understand the meaning much faster, especially when they are familiar with sign language at school.

The lessons opened properly, the writing pad responded well, and the small progress counters updated without any trouble

RESULTS



VII. CONCLUSION

Working on this project made it clear to us how crucial it is to create educational resources that truly suit the learning styles of deaf and mute pupils. Because the majority of apps are designed for students who can hear and follow spoken lessons, many of these kids have difficulty.

All we wanted to do was create a small, straightforward device that would be easy for students who learn best visually to use. We discovered during the app's development that even simple concepts, when implemented correctly, can greatly benefit students. We combined English, Kannada, and some sign language support into one app.

To avoid making students feel under pressure, the lessons are kept light.

The writing pad proved to be very helpful because it lets kids practice at their own pace and at a slower pace. Another significant benefit was that the app could function without internet, which was especially helpful for families who don't always have a reliable connection.

The app offers students a straightforward and peaceful environment in which to practice their lessons, despite its lack of sophisticated features.

As of right now, it encourages consistent practice and serves as a good starting point.All things considered, this project forced us to consider the viewpoint of the students more.

The solutions we develop naturally gain greater significance when we make an effort to comprehend their everyday struggles.

VIII. REFERENCES

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