


DESIGN PROJECT

Design Solution to aid class 12 students in regional language-medium schools learn spoken English skills

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1. Introduction

Motivation

My motivation for this project was,

- To learn and develop an expertise in designing solutions for the **educational sector** (particularly **digital education**).
- To design a **deployable solution** for a **specific context** in the educational sector (**language**).

Background

Need of English in India

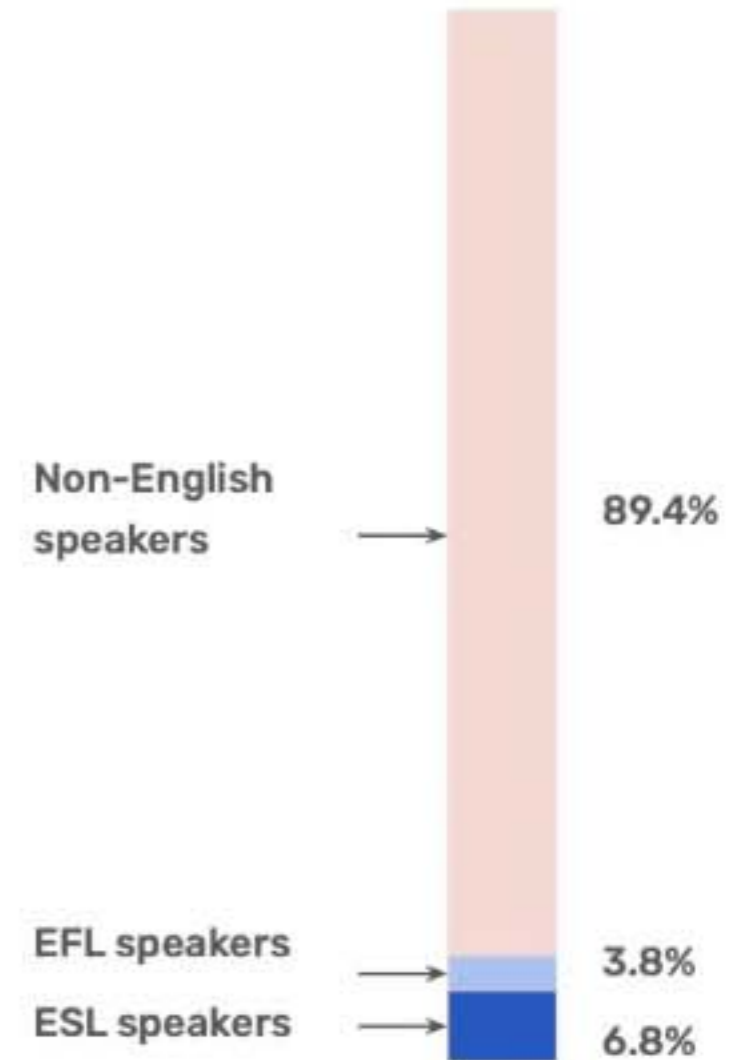
In India, English is taught both as a **second language** (ESL) and as a **foreign language** (EFL). [2]

Currently the English used in India is **Indian English** which is a non-native variety of English.

Indian English is officially recognised and adopted in India, a multilingual country as a means of **public communication**. English plays many functions in the Indian context in **academia**, **government affairs**, **maintaining unity in the country** etc. [1]

The increasing roles that English plays in the Indian context makes it an important skill for **higher education opportunities**, **career opportunities** and **increasing accessibility to foreign opportunities**.

Only about **10.6% Indians** speak some English according to the 2011 Census.



Percentage of English speakers in India (10%)

[1] Krishnaswamy, N., & Krishnaswamy, L. (2006). *The story of English in India*. Foundation Books.

[2] Omidvar, R., & Ravindranath, B. K. (2017). Position of English in India: Three-way Categorization. *Language in India*, 17(5).

Context

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NGO: Lend-A-Hand India

Program: Junior Rural Fellowship (JRF)

Users: Class 12 students (schools in Maharashtra)

JRF focuses on teaching class 12 students English language and soft skills (communication, teamwork etc) such that they can [get jobs](#) or [study further in English medium colleges](#).

The JRF classes are conducted [everyday after school](#) for 1.5 hours for a selected group of [class 12](#) students throughout their [final semester \(6 months\)](#),

- [2 days \(in a week\)](#) - English classes
- [3 days \(in a week\)](#) - Soft skills (communication, teamwork) classes

The classes are currently conducted [online](#).



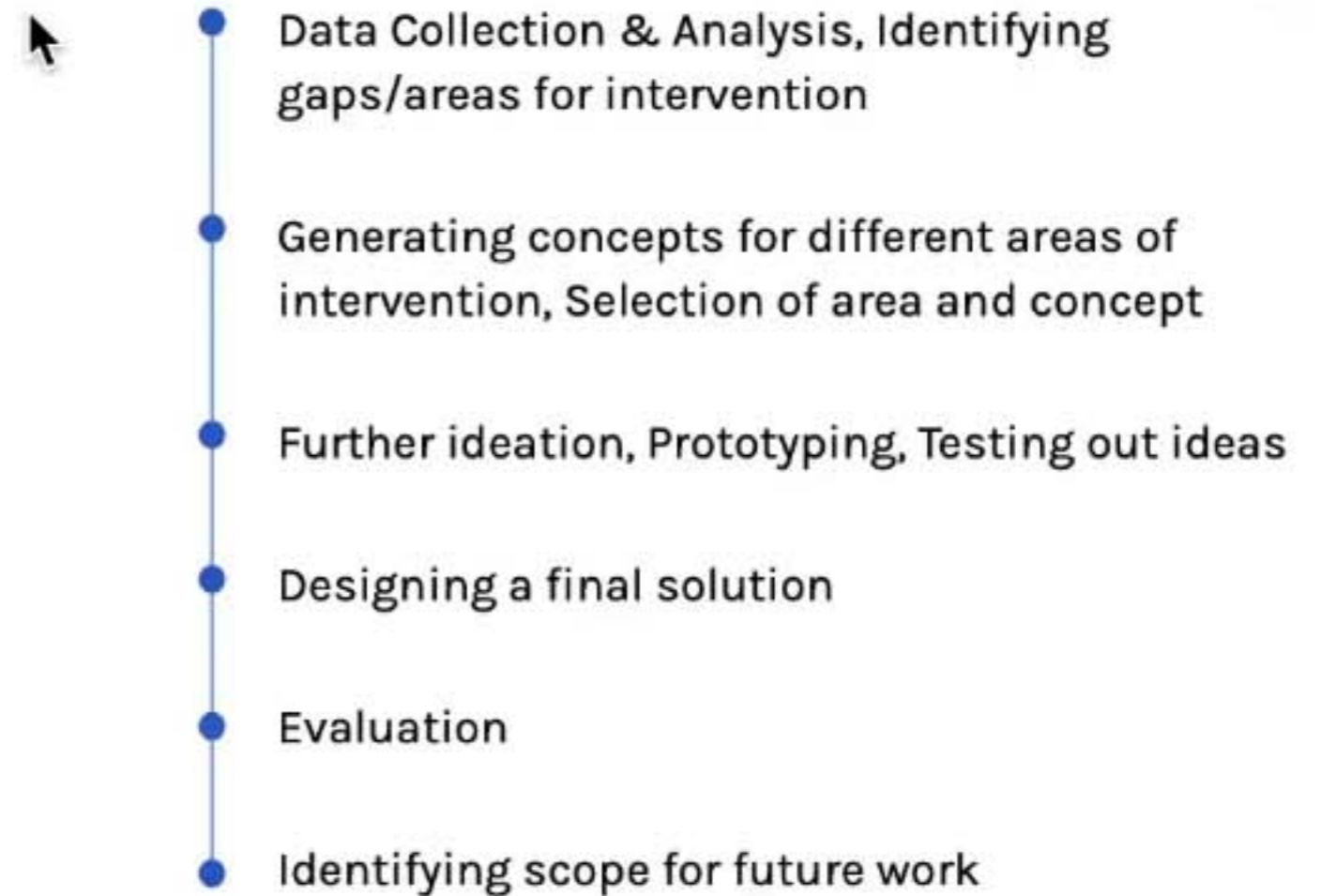
JRF English Class

2. Objective

The objective of this project was to create a design solution to **aid** class 12 students in regional language-medium schools to learn a particular **aspect** of **English language skills** which would help them get jobs or study further in English medium colleges.

Scope

The scope of this project is to identify and address **specific gaps/aspects** of learning English in the JRF program by creating a **design intervention** (in the form of an activity/platform etc.) for a **particular topic** and evaluating it.

- 
- Data Collection & Analysis, Identifying gaps/areas for intervention
 - Generating concepts for different areas of intervention, Selection of area and concept
 - Further ideation, Prototyping, Testing out ideas
 - Designing a final solution
 - Evaluation
 - Identifying scope for future work

3. Primary Research

Research Questions

1. How is **English** taught in this context? (different from the conventional way of teaching in school)
2. What are the **difficulties** faced by the students learning English in this context?
3. What are the possibilities for **design interventions** in this context?

Methods

- A. Background Reading
- B. English Textbook for JRF, Rapidex English Speaking Course Textbook
- C. Participant Observation of JRF classes
- D. Introductory videos of students, follow-up Questionnaires for students
- E. Follow-up Interview with teacher

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A. Background Reading

Gaps in learning a second/foreign language

- Students understand words separately but cannot [link](#) them.
- Difficulty in creating meaningful sentences for [communication](#).
- Differing [learning speeds](#) of students.

Learning a third language

- [Previous language-learning experiences](#) can be utilised to learn a third language.
- [School curricula](#) and teaching practices could benefit from relating the different languages.

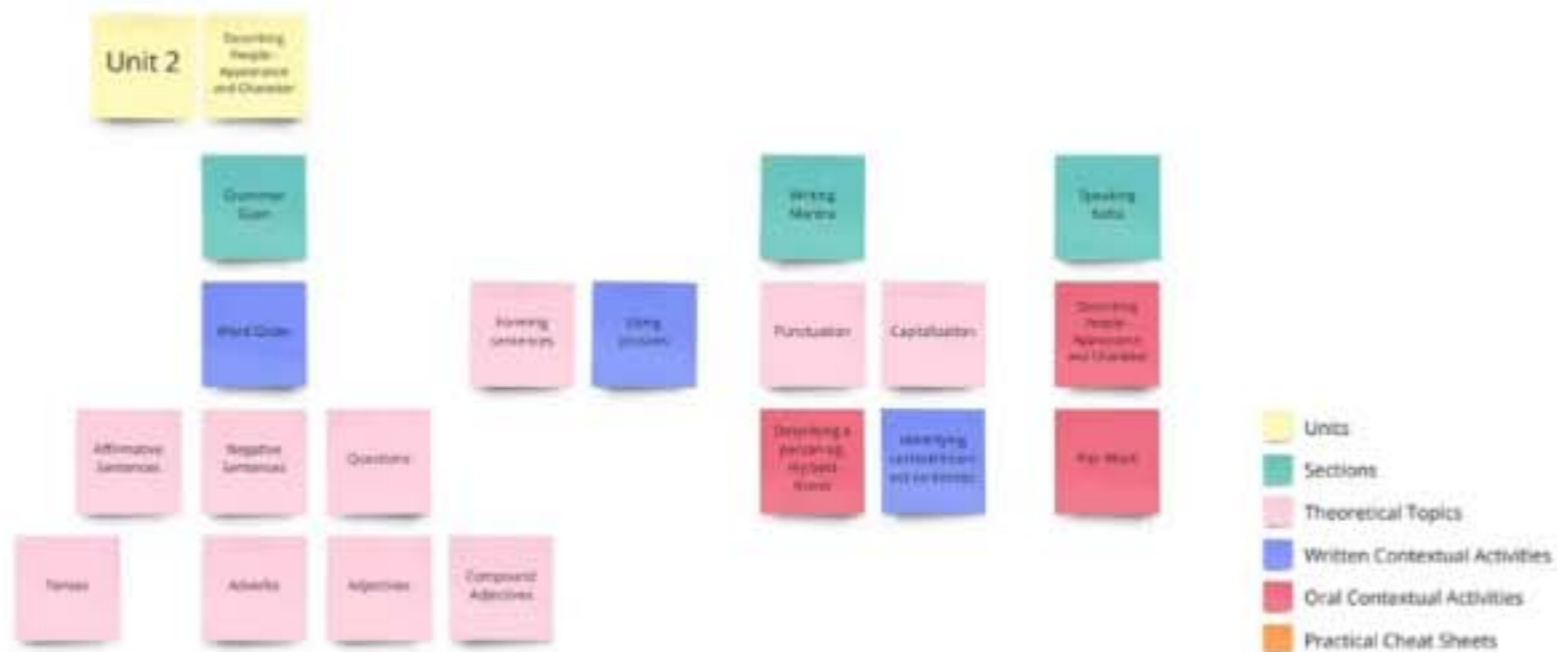
[1] Fazeli, S. H. (2010). Some Gaps in the Current Studies of Reading in Second/Foreign Language Learning. *Online Submission*, 10(4), 373-386.

[2] Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism: Perspectives of change in psycholinguistics* (Vol. 121). Multilingual Matters.

B. Textbooks

English Textbook for JRF

The textbook consists of 10 Units. Each unit consists of **practical and relevant topics** such as describing people, objects, events, experiences, everyday situations, business communication, facing interviews etc.



Analysis of a Unit

Rapidex English Learning Course Textbook

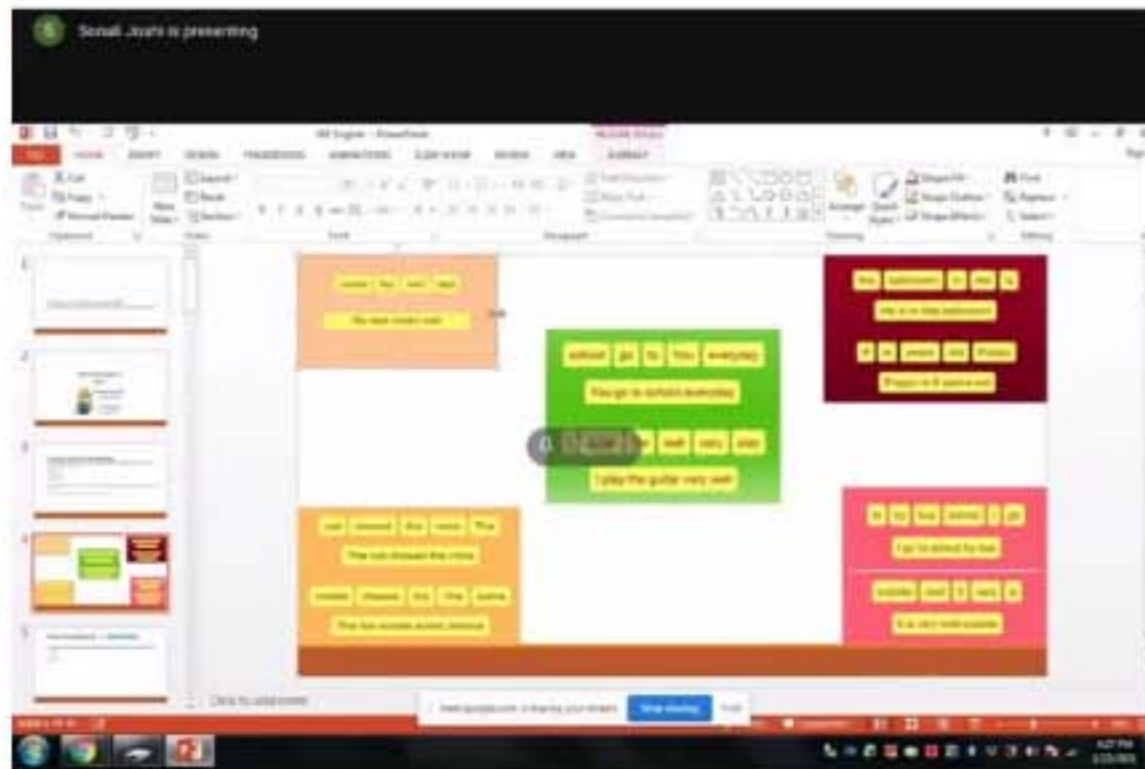
The Rapidex English Learning Course Textbook was based on a 60 day course to learn **spoken English** from **Marathi**.

- Basic grammar (tenses), **pronunciation**, commonly used **phrases, sentences** and **conversations** for particular situations.
- **Dictionary** to build vocabulary, **templates** for **letters** for official purposes and templates for **job application**.

This textbook serves like a crash course to learn the **minimum amount** of English required to get by through **specific situations**.

C. Participant Observation

Participant Observation as an **observing participant** was conducted as a part of the online JRF English classes by LAHI for **four weeks**.




Word Order Activity in Class



Example of English poster in class

Murder of English

- 
1. Pick up the paper and fall in the dustbin.
 2. Both of you stand together separately.
 3. Why are you looking at the monkeys outside when I am inside.
 4. Will you hang the calendar or else I will hang myself.
 5. I have 2 daughters both are girls.
 6. Give me a blue pen of any color.
 7. The principal is revolving in the corridor.
 8. all of u stand in a straight circle
 9. Open the Window - Let the AIRFORCE come in.

Funny Slides

D. Introductory Videos, Questionnaire for students

A questionnaire was formed to understand -

- the background of the students,
- their motivations,
- previous knowledge of English,
- preference of the way of teaching,
- interest in different topics and activities,
- difficulties faced in classes and solutions employed,
- their familiarity with digital devices and
- their ideas for an aid for English classes.

Pre-recorded introductory videos of students before joining the JRF program, expressing their **background** and the **goals** they wish to achieve through the JRF program were also analysed.

The interpretations were put on post-its and reorganised to identify **themes**.



Themes

E. Follow-up interview with teacher

“English language and confidence are both important to communicate in English. Some students already have that confidence, a lack of fear of making mistakes which make them better learners as well.”

“The students want to learn English for different reasons, one wants to become an air hostess - for her accent and pronunciation are also important, one wants to become a computer engineer but believes he would have better career opportunities if he could communicate in English.”

“Language topics cannot be learnt in a day, they need regular practice everyday.”

“The students are looking at English as a personality skill. Hence, just mugging up commonly used conversations in English will not help them. They know enough English to make do in situations. They need English skills to build on their confidence.”

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[1] Fazeli, S. H. (2010). Some Gaps in the Current Studies of Reading in Second/Foreign Language Learning. *Online Submission*, 10(4), 373-386.

[2] Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism: Perspectives of change in psycholinguistics* (Vol. 121). Multilingual Matters.

Analysis of Primary Research

1. Students

1.1. Demographics

- 12th grade, first year students around 20 years of age.
- 7 of 9 had studied EFL/ESL for at least 4 years.
- Most users felt uncomfortable speaking English, they had little to no practice of speaking English as a part of their education.
- Most of the users knew at least two other languages - Hindi and Marathi.



1.2. The English needed

Users also want English to be a part of their lifestyle - read English books, understand English conversations, talk correctly and fast and travel the world.

2. Classes and teaching

2.1. Content Taught

The JRF course had an English Textbook with 10 Topic-wise Units.

2.2. Conduct of Classes

4 Sections of the class -



2.3. Aspects of teaching

The teacher -

1. Repurposed activities from the textbook to encourage speaking.
2. The teacher contextualised activities to increase engagement.
3. Introduced funny slides and jokes.
4. Used creative activities to engage the students in learning.
5. Prompts Marathi when students were stuck.

Students felt responsible for attending class.

3. Learning by students

3.1. Aspects of learning

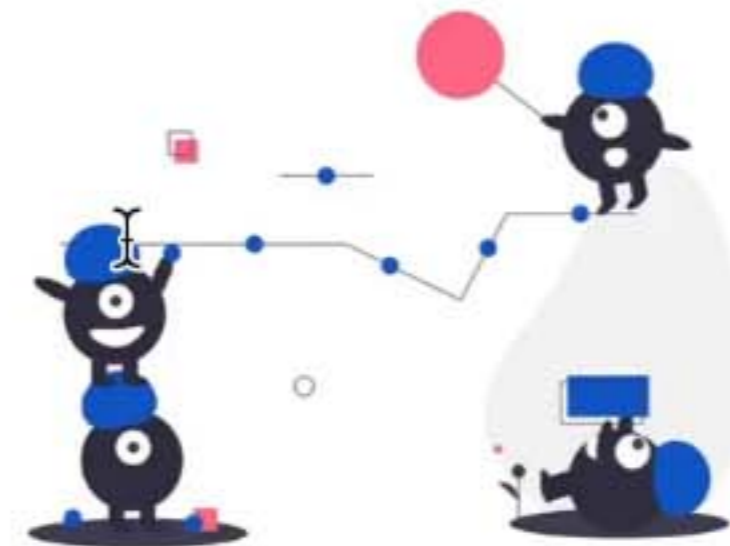
1. Students enjoy the newspaper reading activity, movies with English subtitles - activities using **translation**.
2. Students realise **making mistakes** while speaking is an important part of learning.
3. A **template** to start speaking greatly helped the students.

3.2. Difficulties faced

1. Unable to use **theoretical knowledge** in practical situations.
2. Using the **smaller words** involved in **sentence formation**.
3. Topic of **tenses**.

3.3. Collective Learning

1. Students found **opportunities at home** to practice with their siblings.
2. Students wanted to **connect** with other English learners.
3. A **community of people** to answer doubts would be more suitable than overloading the teacher.



4. Technology

- The students were **familiar** with the technology.
- They owned personal smartphones which they used daily for search, social media and games.
- The students **trusted** the digital medium for learning - note-taking on phone, watched learning videos, used online dictionary etc.

An **interactive mobile application** can be designed for this context.



Student learning through online videos on phone

4. Secondary Research

Mobile Applications



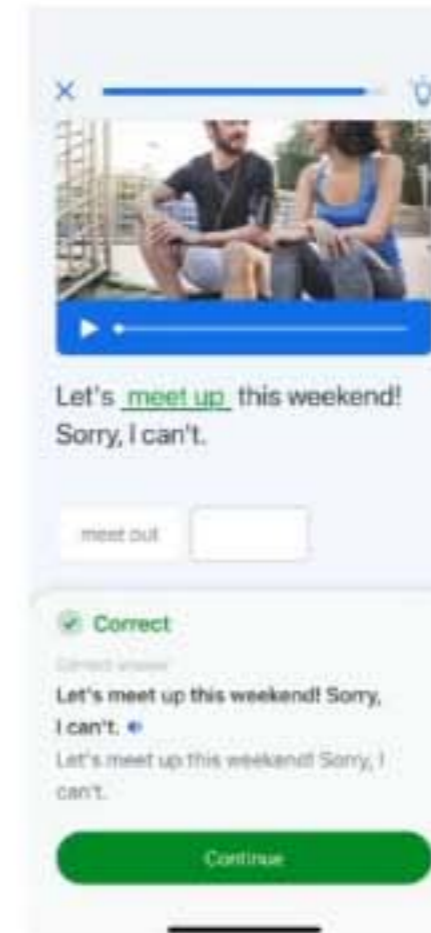
Duolingo -
Words to form a sentence



Hello English -
Common mistakes



English Conversation Practice -
Read, Quiz, Practice Record



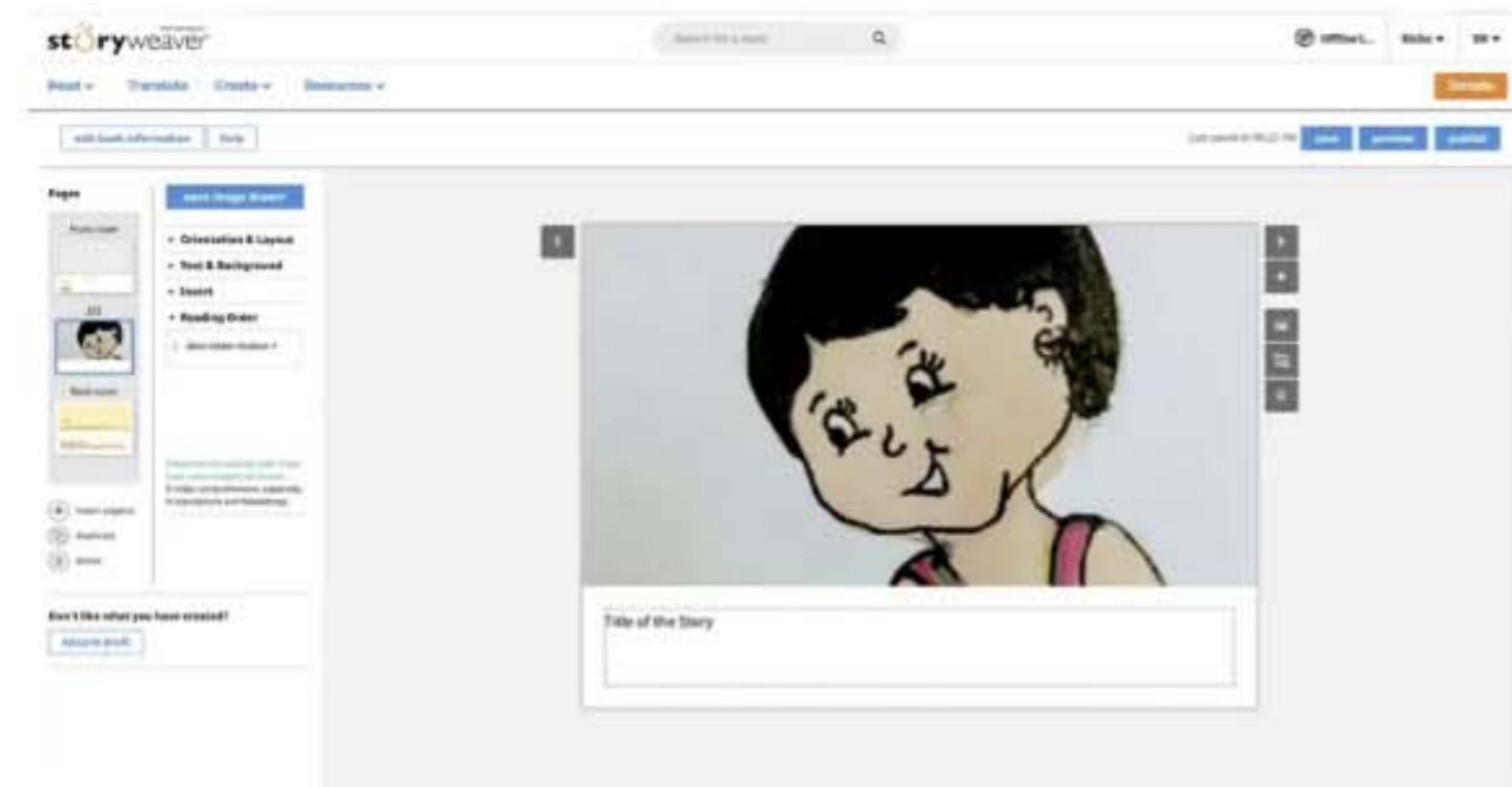
Busuu -
Conversations with options



Andy -
AI Chat

Web Platforms using digital books

Pratham's Storyweaver Project consists of a **book design digital tool** which allows creators to design their storybooks by uploading their **images** and **text**.



Pratham's Storyweaver Project for Book Design

Eklavya Books are educational books present as both **flip storybooks** and **audio storybooks**.



Eklavya Audio Storybooks

LETS (Learn English Through Stories) Program

The LETS Program used **participatory design** by involving the students to narrate and visualise short stories in their regional languages which would be later translated to English.

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Summary of Secondary Research

The existing digital applications consisted of activities like -

1. **Rearranging words** to form a sentence (by utilising translation abilities)
2. Identifying correct sentences/eliminating common errors (through **multiple-choice questions** using Hindi script)
3. Conversation (through **AI chat** and multiple-choice questions)
4. **Word Meanings** (by utilising translation abilities and through multiple-choice questions)
5. Creating books using text and images
6. Listening to audio stories

The existing digital applications did not focus on -

1. Activities that could be done using **speaking** or **speech input**
2. Utilisation of **voice technologies** (except for reading)
3. Collaborative or **collective learning** activities

5. Design Brief

To design a solution for class 12 students in the JRF program to aid in **learning spoken English language skills** for a particular topic.

The design solution -

- Would serve as a tool to **practice speaking** in addition to the JRF classes by possibly addressing some of the shortcomings of the classes.
- Would utilise the aspects of teaching (findings section 3.1), aspects of learning (findings section 3.1) and difficulties faced (findings section 3.2) identified to design an **engaging interactive** activity.
- Would focus on the aspects not addressed or utilized by existing solutions.

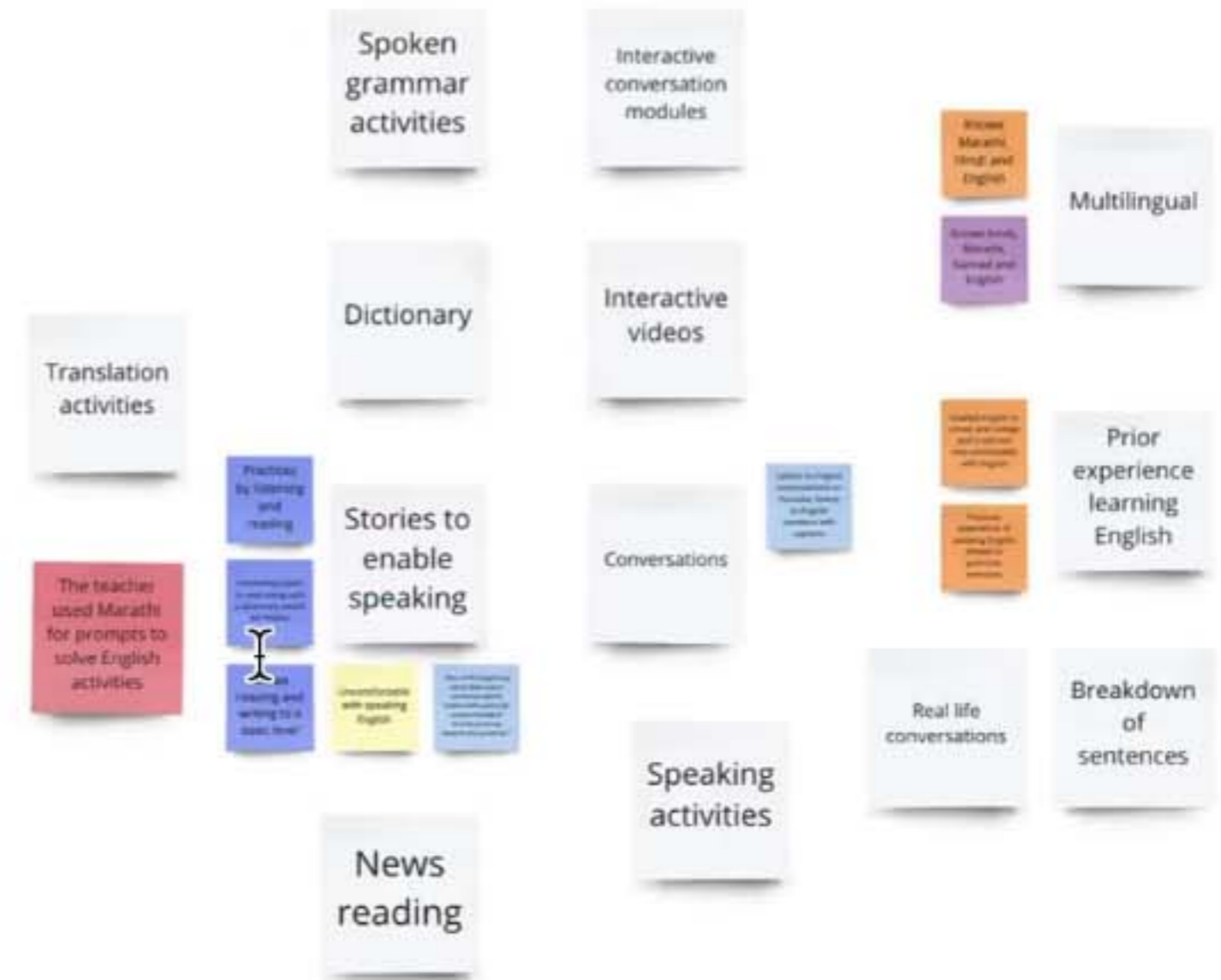
The design solution can be prototyped for a particular topic ongoing in the current JRF batch such that it can be evaluated with the batch.

6. Ideation

An **interactive voice-based mobile application** was considered to aid online classroom teaching.

Brainstorming was done based on the data collected and analysed.

3 Directions were detailed.



Initial brainstorming

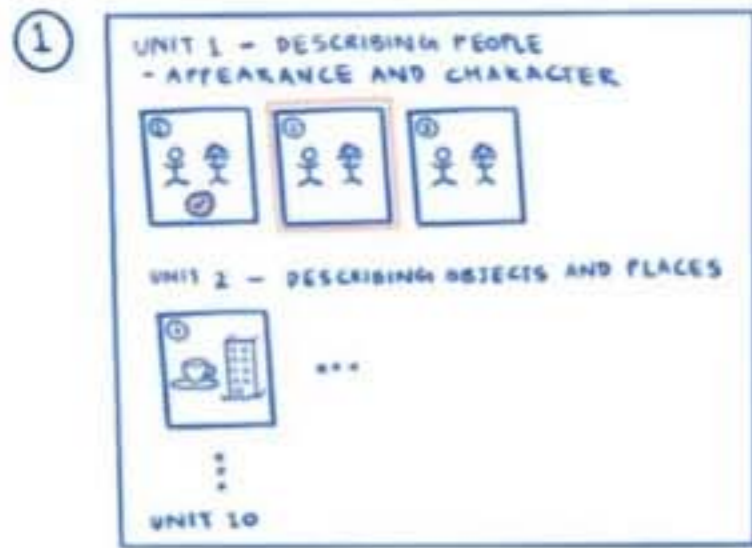
Concept 1 - Creating Audio Stories

- Students would **build a story** by **speaking** using **image prompts**.
- The image prompts would be based on Topic-wise Units from the JRF English textbook. The image prompts would be designed to enable **creativity**.
- Grammar topics covered in the Topic-wise Unit eg. sentence structure, vocabulary of descriptive words, prompts for describing appearance etc would be included to guide the students to speak.
- The output would be an **audio recording** of the **story**. The audio story can be shared with **peers** for **feedback**. The student can also listen to audio stories created by their peers and give feedback or **build on them**.
- Conversation based stories can be built by speaking using image prompts in a similar manner, by introducing a conversation partner who would also control the story. This type of dialogue can be introduced to increase complexity.

In-class activity:

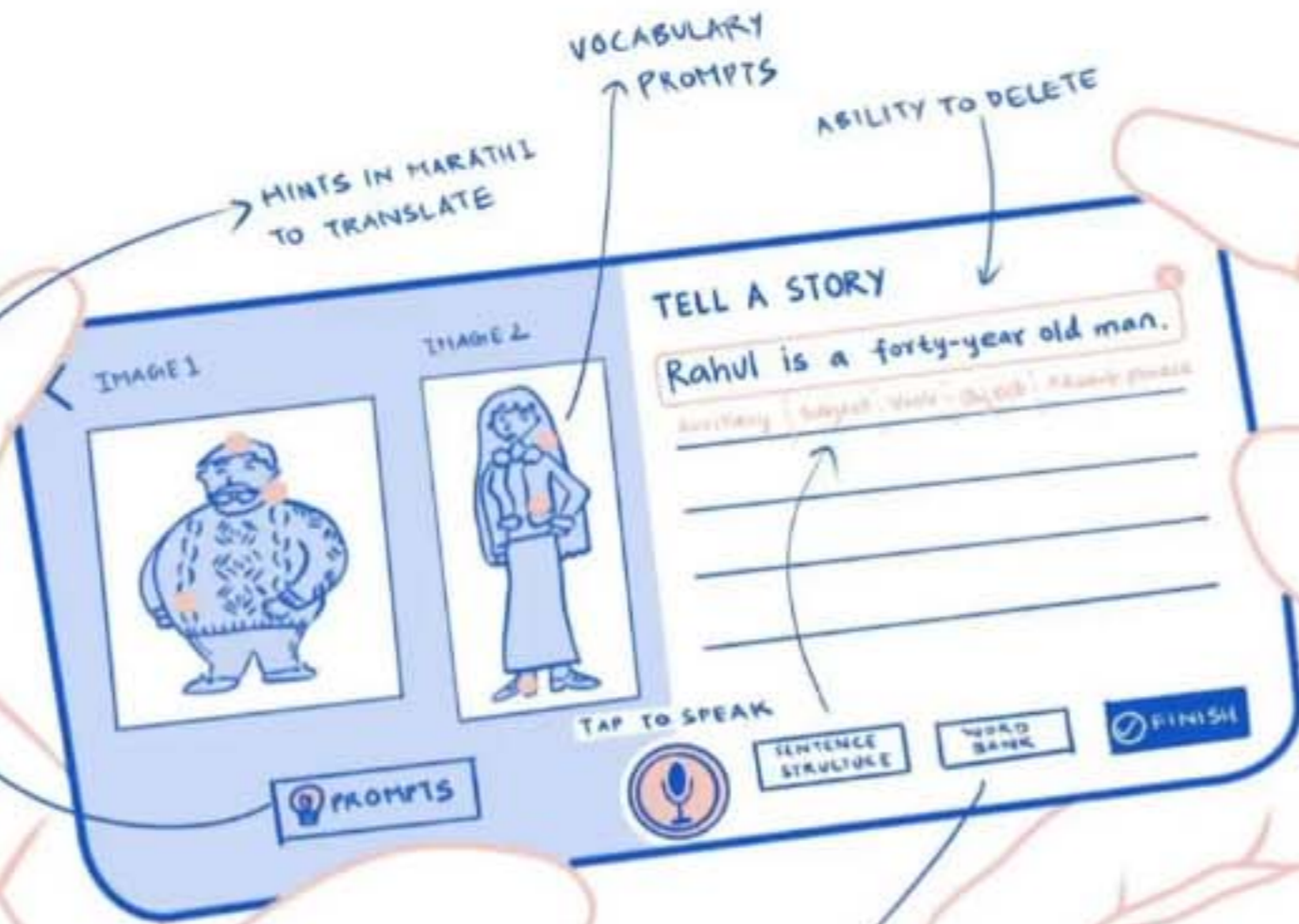
Narrating an existing story by students, turn by turn, with the help of image prompts.





→ SETS OF IMAGES PRESENT AS A PART OF THE DIFFERENT UNITS IN THE TEXT BOOK

②

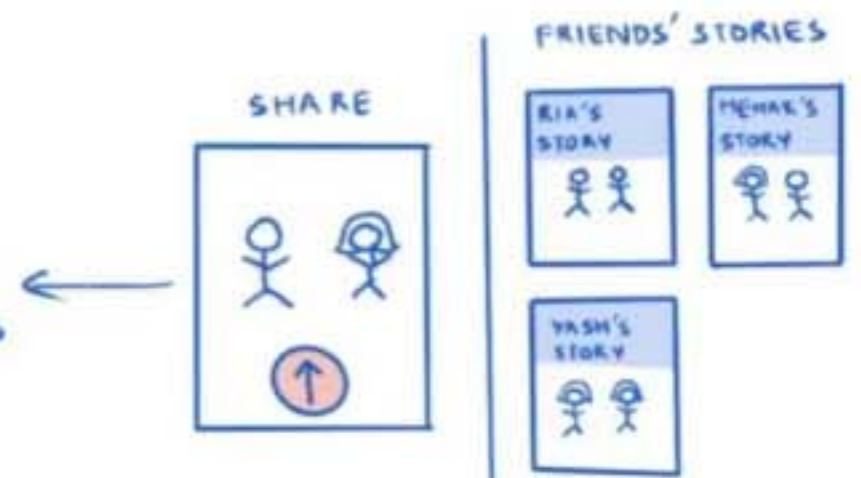


POP-UP TO SHOW RELEVANT WORK BANK

AGE, HEIGHT, BUILD, HAIR/FACE, CLOTHES, DISTINGUISHING FEATURES

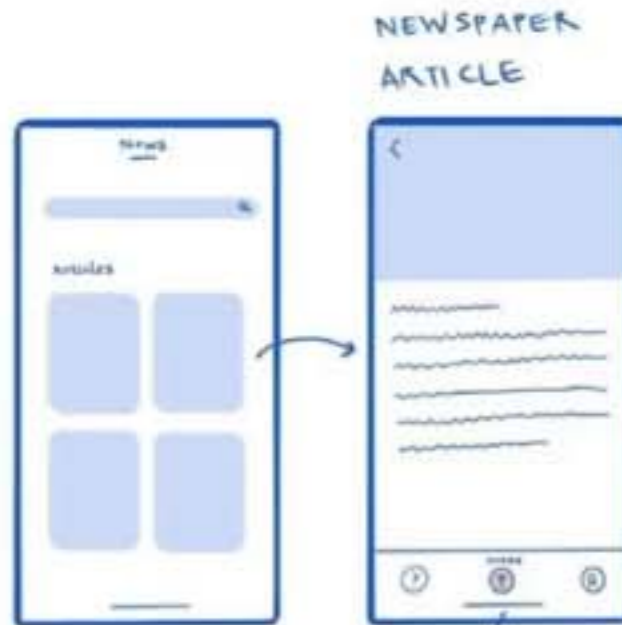
CREATING AUDIO STORIES

③ ABILITY TO SHARE YOUR STORIES WITH FRIENDS, LISTEN TO YOUR FRIENDS' STORIES - PEER EVALUATION & FEEDBACK



Concept 2 - Newspaper Reading + Discussion

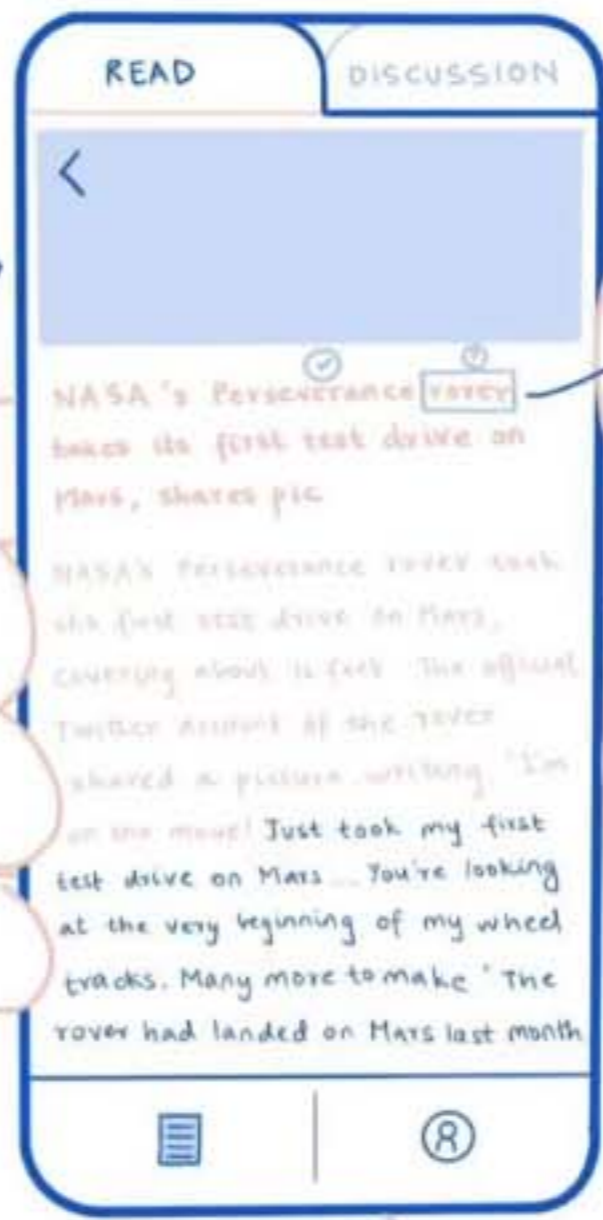
- Using the newspaper reading activity to lead to speaking. This utilizes the skill of reading which students are comfortable with to lead to speaking and usage in conversation.
- Some students already use their mobile phones to read the newspaper in English, as they only receive regional language newspapers at their homes. This tool would introduce a discussion activity after the reading activity to enable students to speak and present the knowledge they have gained by reading.
- The discussion activity can include vocabulary, translation, question and answers, opinions in a group discussion depending on the level of difficulty. The group discussion can be made more complex by increasing the number of characters in the discussion.
- A transcript would be provided to help identify mistakes and learn from them. A reward based point system can be introduced to keep the students motivated.
- Reading the news and being aware of the events happening add to the students' general knowledge. The students in the JRF program want to be able to speak English as a part of their lifestyle. Going a step further, and using the general knowledge in a conversation in English would benefit the students in two ways.



SHARING WITH THE NEWSPAPER ARTICLE READING + DISCUSSION TOOL

VOCABULARY TRANSLATIONS

DISCUSSION/DEBATE A LEVEL OF EXPERTISE — QUESTIONS, OPINIONS, CONTRASTING OPINIONS



- POINT SYSTEM
- PERSONAL POINT OF VIEW
 - GENERAL POINT OF VIEW
 - AGREEING WITH AN OPINION
 - DISAGREEING WITH AN OPINION
 - ASKING FOR AN OPINION
 - INTERRUPTIONS
 - SETTLING AN ARGUMENT

NEWSPAPER ARTICLE READING + DISCUSSION

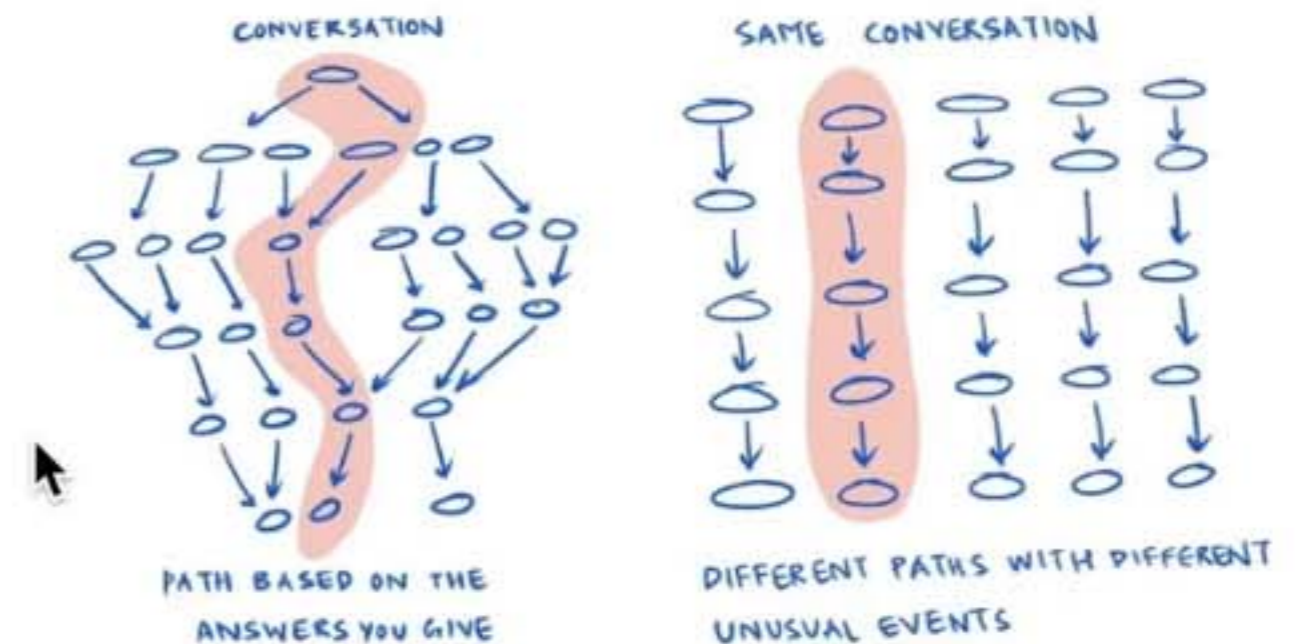
(R) PROFILE WILL CONTAIN READING + DISCUSSION STATS, REMINDERS (PROGRESS)

Concept 3 - Unusual Situational Conversations

- Situational Conversation for a **particular topic**. Different conversations can be created based on different answers/randomly chosen questions by the digital partner.
- An **unusual event** would be introduced (based on the Topic-wise Unit) to force the student to think and frame sentences which haven't been covered in the situational conversation example.
- **Prompts** to help come up with possible answers would be present. Students would also be allowed to **translate** their thoughts from Marathi to English and then repeat the English sentence.
- The students would be able to gain **confidence** by practising the conversation with a digital partner instead of mugging up sentences to make do in particular situations.

Different answers/randomly chosen questions leading to different conversations (L)

Different unusual events introduced in the same situation leading to different conversations (R)



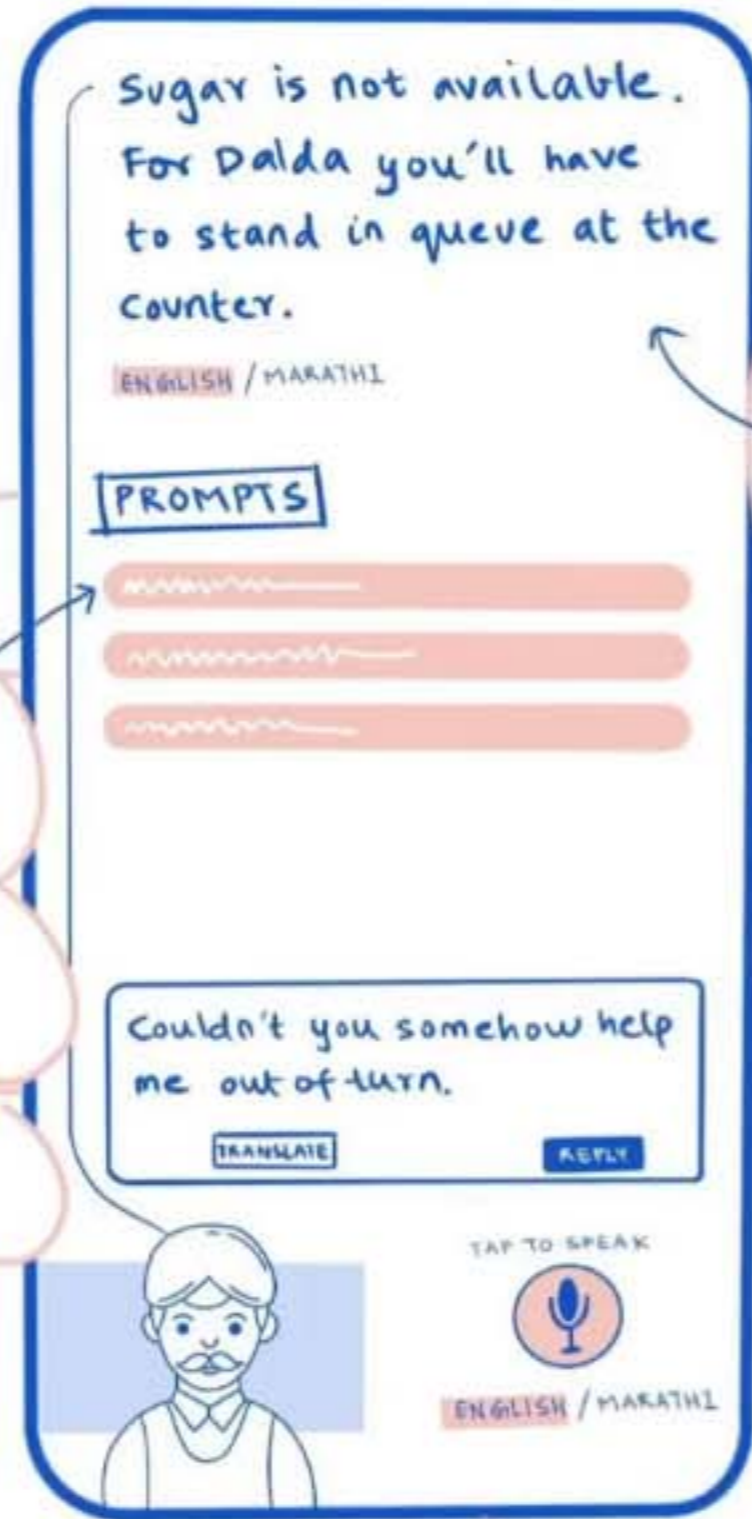
DEVIATION FROM THE REGULAR CONVERSATION CAN BE INTRODUCED BASED ON THE ONGOING UNIT IN CLASSES

→ E.G. UNIT 1 - DESCRIBING PEOPLE: APPEARANCE AND CHARACTER

USUAL SITUATIONS :-



SUGGESTING ALTERNATIVES



साखर तर नही. डालडासाठी त्या काउंटरच्या लाइनीत उभ्या रहा.

ENGLISH / MARATHI

UNUSUAL EVENT
PERSON CUTS THE QUEUE
↓
DESCRIPTION OF PERSON

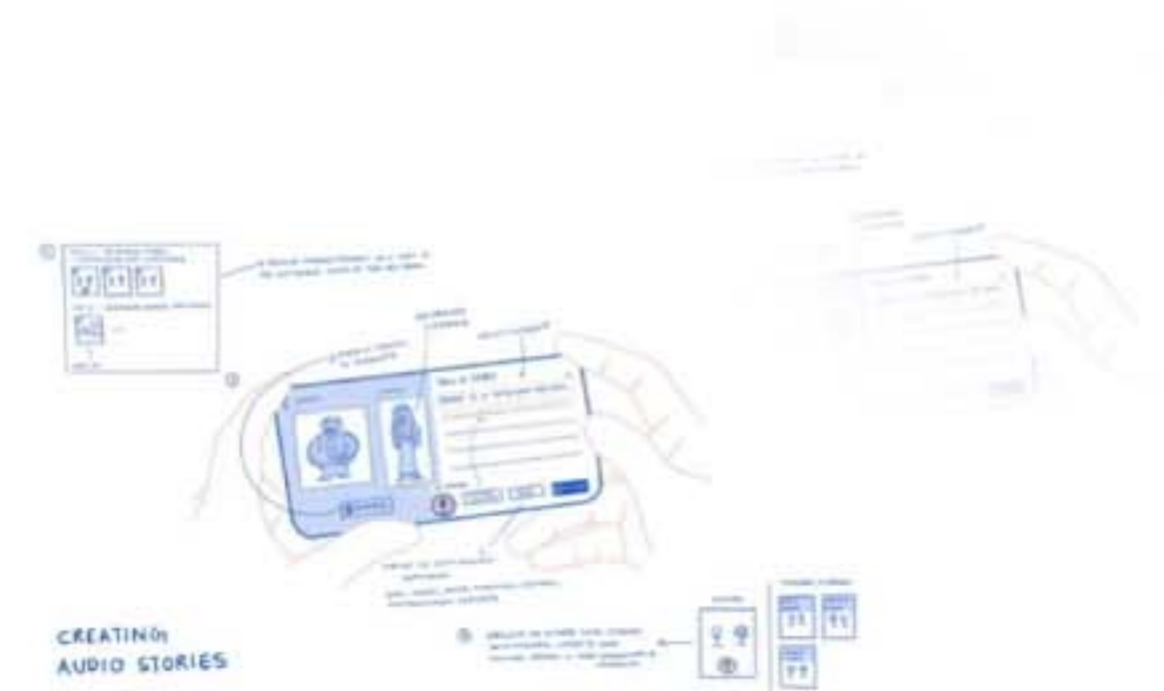
USING KNOWLEDGE OF CONVERSING IN MARATHI

UNUSUAL SITUATIONAL CONVERSATIONS

Feedback for Final Direction

Feedback was collected from teachers, experts and professors.

- **Creating Audio Stories + Unusual Situational Conversation + Acting/Dialogue.** To enable creativity, knowledge to speak, confidence to speak.
- Creation in **pairs/groups/with an AI partner.** This would help create uncertainty in the story, collaborate and speak.
- Introducing **characters** in the story. Speaking **dialogues**, using the language as it would be used in real life.
- **Image prompts** to guide the story based on the ongoing chapter wise topic in class.
- **Peer review** to distribute responsibility of checking the audio stories created.
- **Acting** out a few randomly selected audio stories created by students, in class to incentivise creation and cross check.



Concept 1 - Creating Audio Stories

+



Concept 3 - Unusual Situational Conversations

7. Focused Design Brief

To design a solution for class 12 students in the JRF program to aid in **learning spoken English language skills** for a particular topic. The design solution would be used in addition to the JRF classes.

Goals

The goals that would be addressed by the design solution were specified.

Learning Goals

1. Students would learn English as used in **day to day communication** (JRF textbook consisting of topic-wise units could be used as reference).
2. Students would **practise speaking** English through the activities designed in a safe space at their own pace.

Design Goals

1. Students would be able to utilise the **theoretical knowledge** learnt in the JRF classes according to the topic-wise units (eg. sentence structure, vocabulary etc) in **practical situations** involving **conversation** in English.
2. The design solution would enable **collective learning** as well as self-learning.

The design solution can be prototyped for a particular topic ongoing in the current JRF batch such that it can be evaluated with the batch.

8. Final Concept - Redefined Goals

1. Communication



- Students would be able to form **full sentences**.
- **Uncertainty** to facilitate students to form new sentences.

2. Speaking



- **Supporting features** to encourage speaking.
- Provision to **make mistakes** as a part of learning speaking.

3. Theory



- Ability to use **theoretical knowledge** learnt in the classes in **practical situations**.
- **Word bank** and **translation** features would be designed.

4. Collective Learning



- Collaborating with peers and giving feedback to peers (**collective learning**).
- Recording voice-overs of audio stories (**self-learning**).

Users

Students



Want to develop the **confidence** and **knowledge** required to speak English as a part of their day to day lives.

Self-motivated and comfortable with **technology**.

- Would use CoSpeak every week to **create** 1 story with a peer.
- Would use CoSpeak every alternate week to **review** 1 story.
- Can use voice-over recording (self-learning) any time.

Teacher



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Occasionally administer **activities** in class to help students **speak** English, do not have enough time to give **individual attention**

- Would **update** the image prompts based on the weekly topic.
- **Allocate pairs** for collaborative story building informally in class every week.
- Could randomly pick a story every week for students to **act**.

Content

Image Prompts

The image prompts would be selected based on the chapter taught in class from the [JRF textbook](#) for creating audio stories.

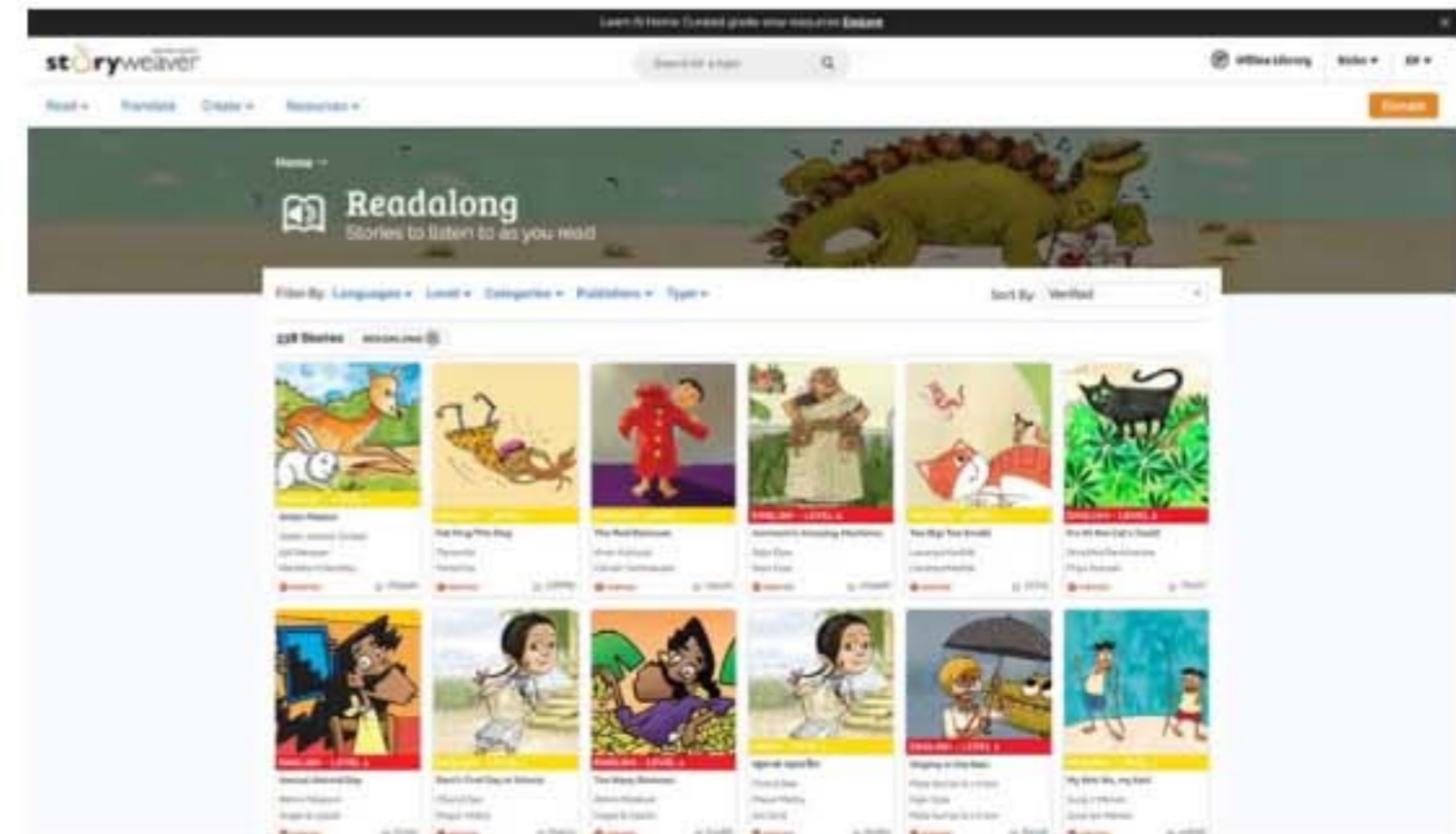


Images from JRF Textbook

Image Source: JRF Textbook

Audio Stories

For practising through recording, existing audiobooks with dialogues from [Pratham books](#) would be used.



Pratham Read along books



Features

- Automatic mode + **Create story** with your friends mode
- **Activity** - Image prompts, characters to make audio stories
- Features to **aid speaking** - translation features, sentence structure guide, word bank
- **Library** to access one's own audio story, audio stories of peers and the whole collection of audio stories
- Features to enable **peer feedback**
- Feature to **re-record** and act out existing stories multiple times to practise perfection
- Portal to enable teacher to check the work done
- Portal for content creators to keep updating the content

Card Sorting

From features to Information Architecture.



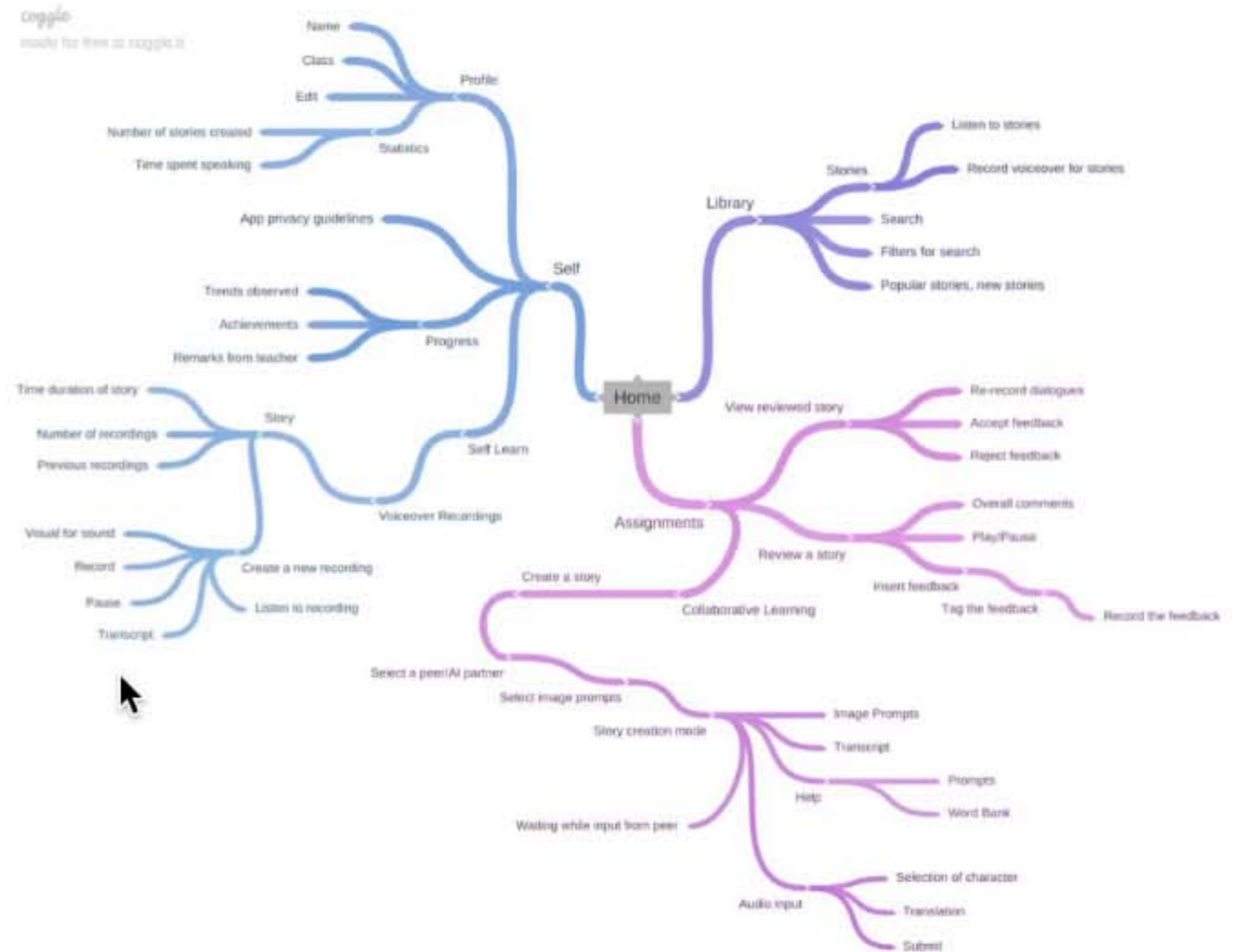
Information Architecture

3 Chucks identified:

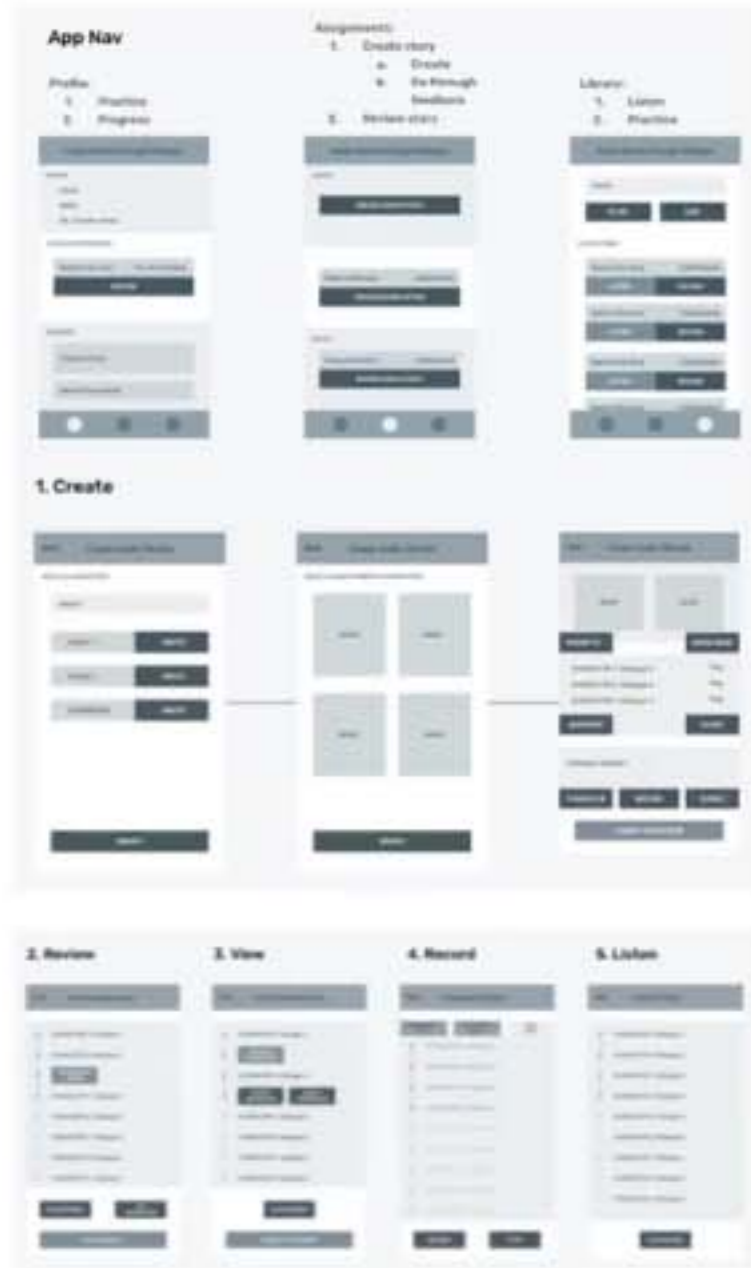
1. **Collaborative learning** (class assignments through JRF) - Create a story, view reviewed story and review a story
2. **Library** - Stories created by students, existing audio story books
3. **Self Learn** - Voice-over recordings, profile, progress, achievements, remarks from teachers

5 Types of activities:

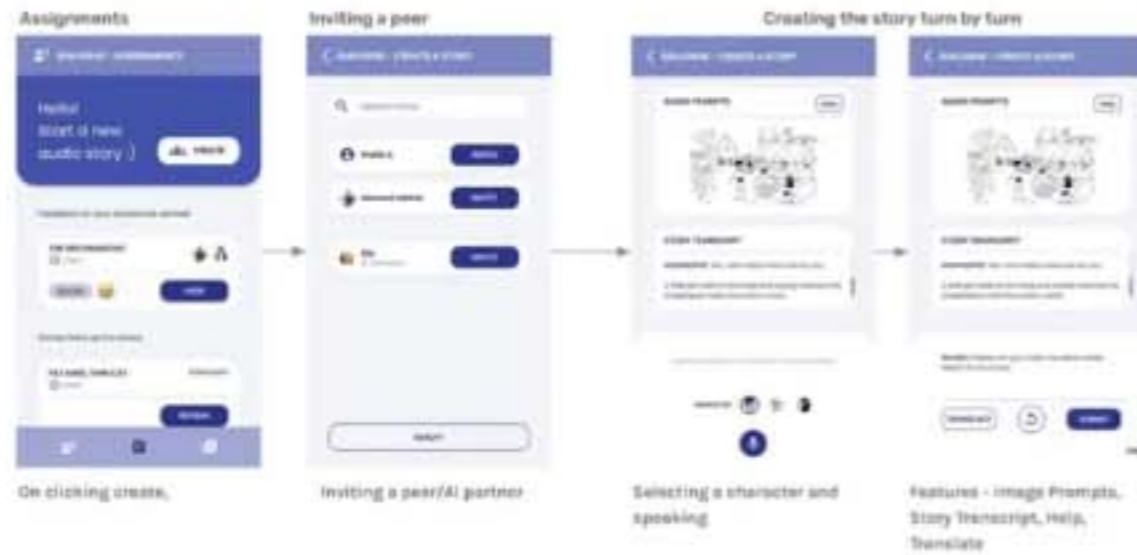
1. **Create** a story
2. **Review** (check/add suggestions in a) peer's story
3. **View** (accept/reject suggestions in a) reviewed story
4. Voice-over **recording** for existing books
5. **Listen** to a story



Wireframing, Scenarios



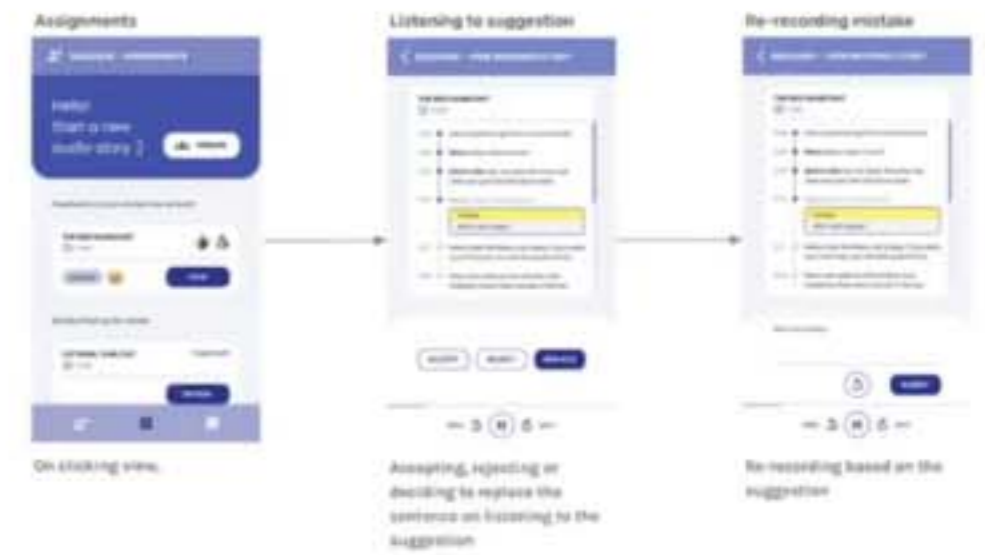
Create a story (Activity 1)



Review a story (Activity 2)



View a reviewed story (Activity 3)



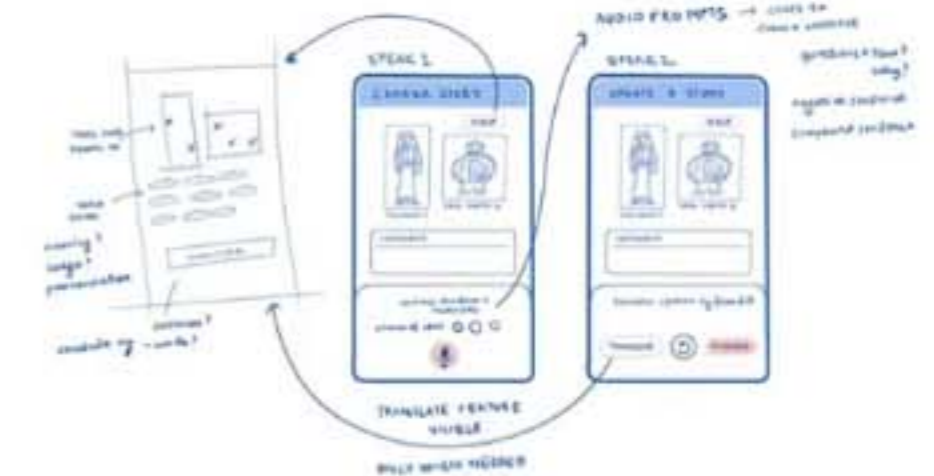
Listening (Activity 5), Voiceover recording (Activity 4)



Feedback and Improvements

Feedback was received from peers, the guide, a panel of professors and the teacher on the scenarios. **Gaps** were identified and **suggestions** were made -

1. Information of the **peer's perspective** while creating a story was lacking.
2. The process of creating a story with an **AI partner** could be differentiated.
3. The **interactions** of using the word bank feature, vocabulary feature - design guiding the use of theory for practical aspects could be detailed. }
4. Creating **consistency** in the cards, differentiating titles and improving the overall visual design was advised.
5. Adding **tags, colours, visuals** to represent the audio as it is **invisible** was suggested.
6. **Enlarging** the image prompt to view the image clearly and focus on it was also suggested.
7. Designing an appropriate **name** and **logo** for the application was suggested.



Visual Design

Logo and Name



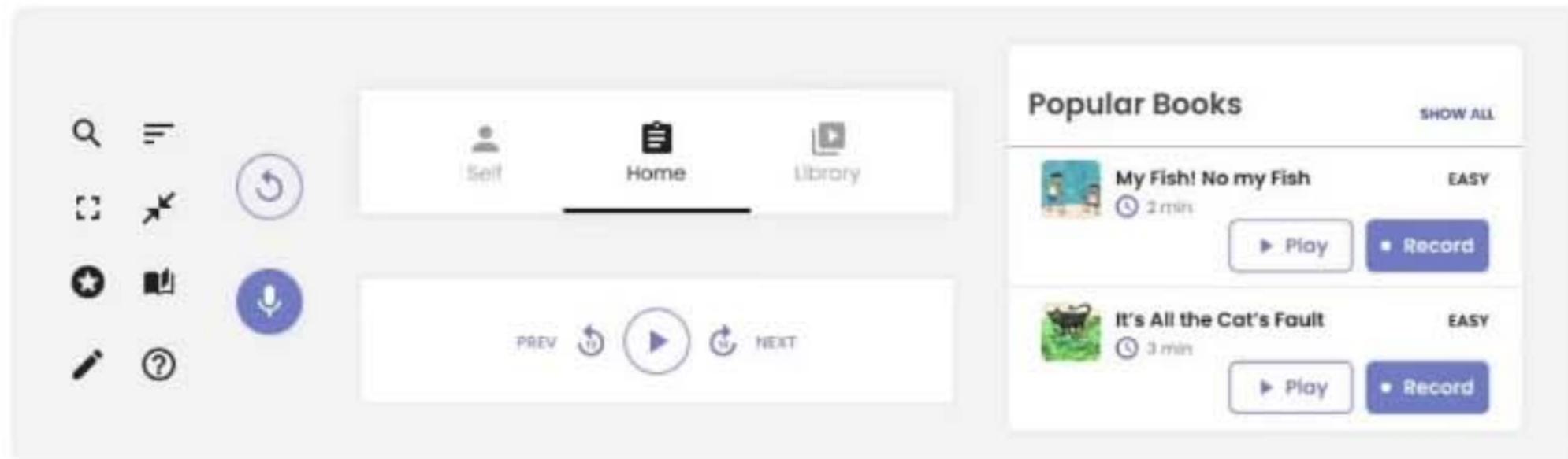
Colours



Typography

Scale	Typeface and weight	Size
H1	Poppins Semibold	24
H2	Poppins Semibold	18
Subtitle 1	Poppins Semibold	12
Body 1	Poppins Regular	12
Button 1	Poppins Semibold	12
BUTTON 2	Poppins Semibold	9
Caption 1	Poppins Regular	10

Elements



Technology and Prototyping

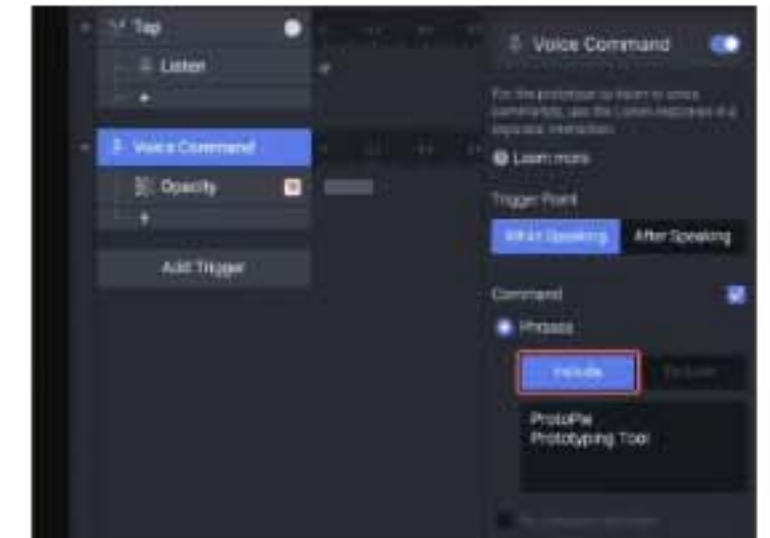
- **Speech recognition** for inputting sentences spoken by the students.
- **Speech to text** to create the transcript of the stories.
- **Text to Speech** for audio prompts.
- The **Google API** can be used for creating these functionalities.



Google API (Indian English)



Google API (Marathi)

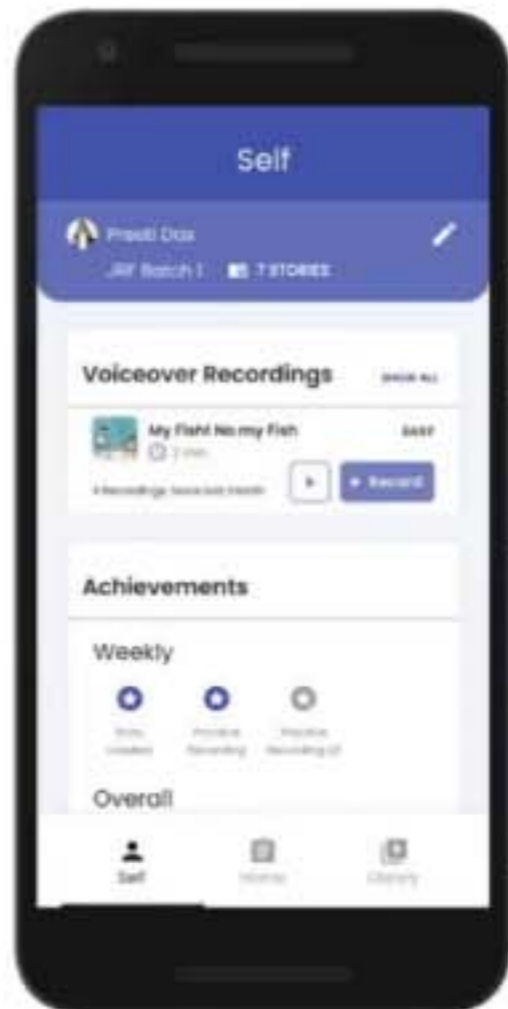


Protopie - Prototyping voice commands using Google APIs

Application Navigation

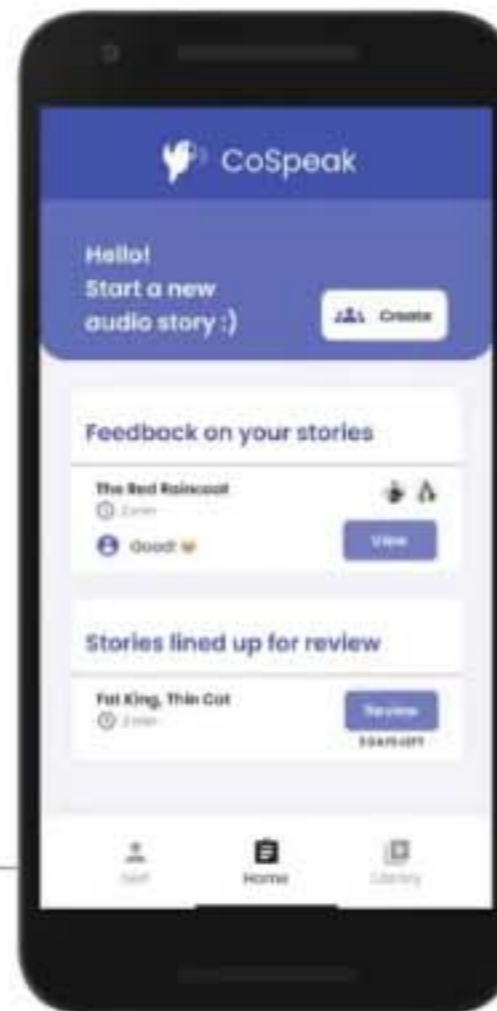
Self

Profile
Voiceover recording (Activity 4)
Achievements, Remarks



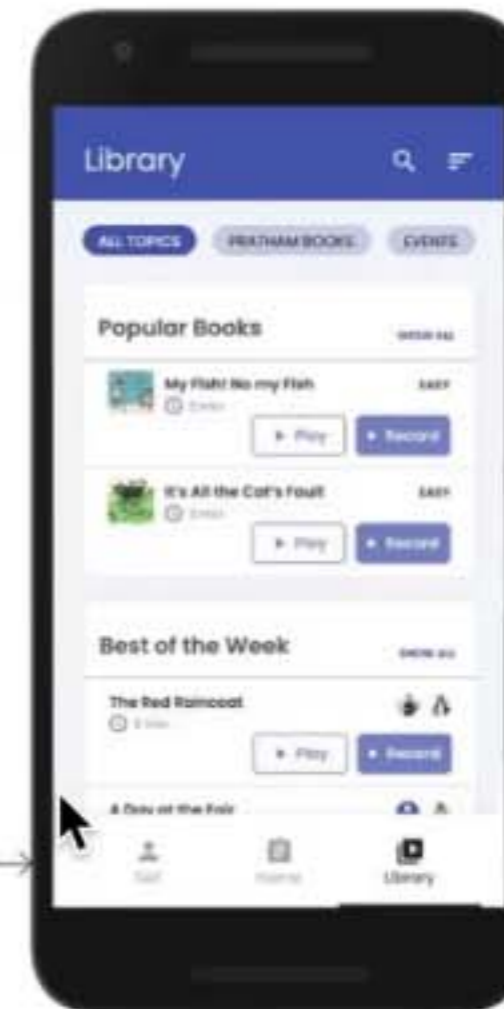
Home

Create a story (Activity 1)
View a reviewed story (Activity 3)
Review story (Activity 2)



Library

Search a story
Listen to a story (Activity 5)
Voiceover recording (Activity 4)



On clicking self/
swiping right

On clicking library/
swiping left

1. Co-create a story

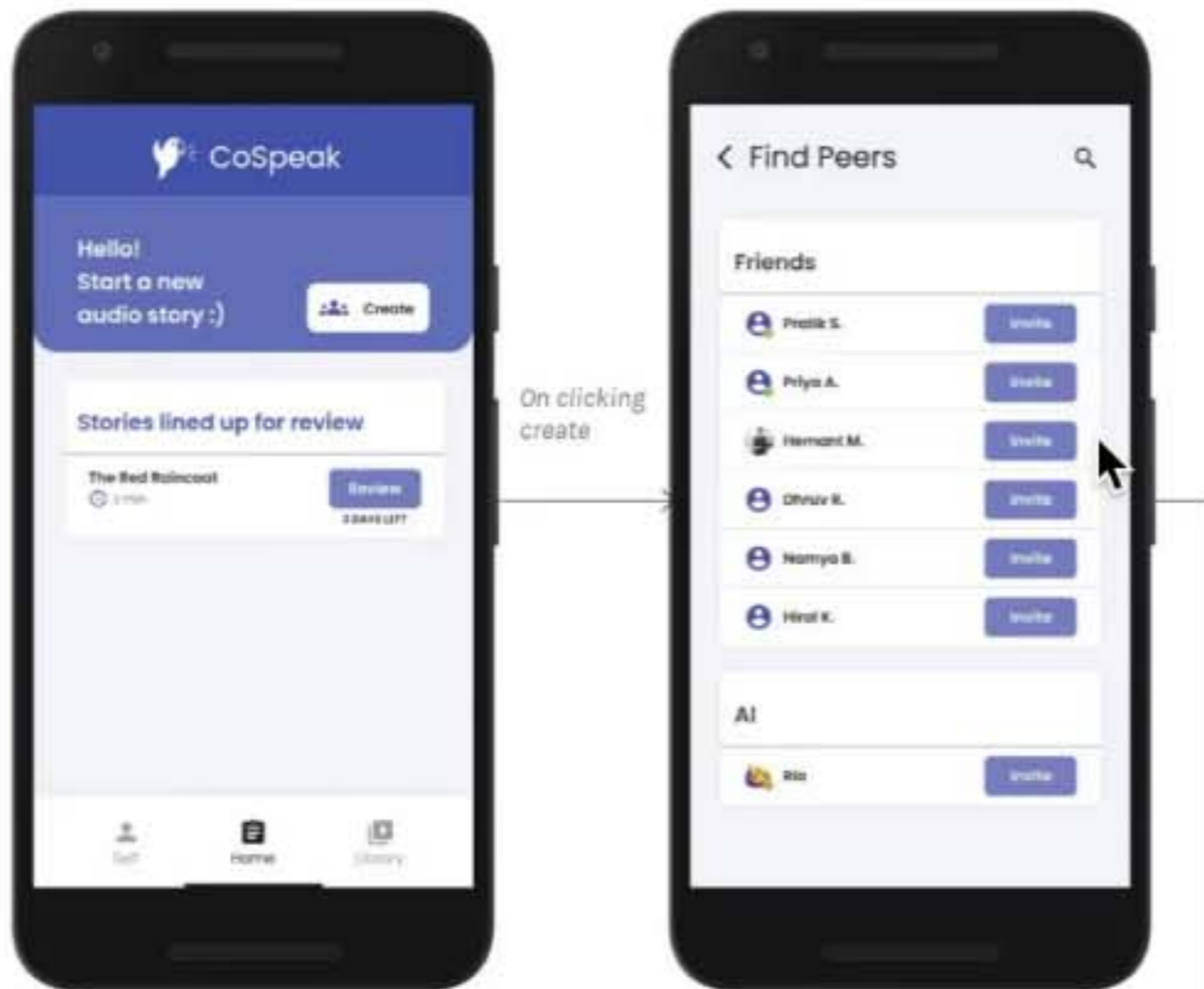
This week Unit 4 - Describing events in going on in class. The topic of Present Tense and Present Continuous Tense is the focus. The teacher has paired Preeti and Hemant to create a story this week.

Preeti and Hemant have decided to meet online by 7 pm on tuesday to create the story. Preeti will send Hemant an invite as soon as she finishes her house chores around 7.



Preeti's Mobile

Preeti clicks on create and invites Hemant



Hemant's Mobile

Hemant is not online and gets a notification on his mobile.



On Preeti clicking invites

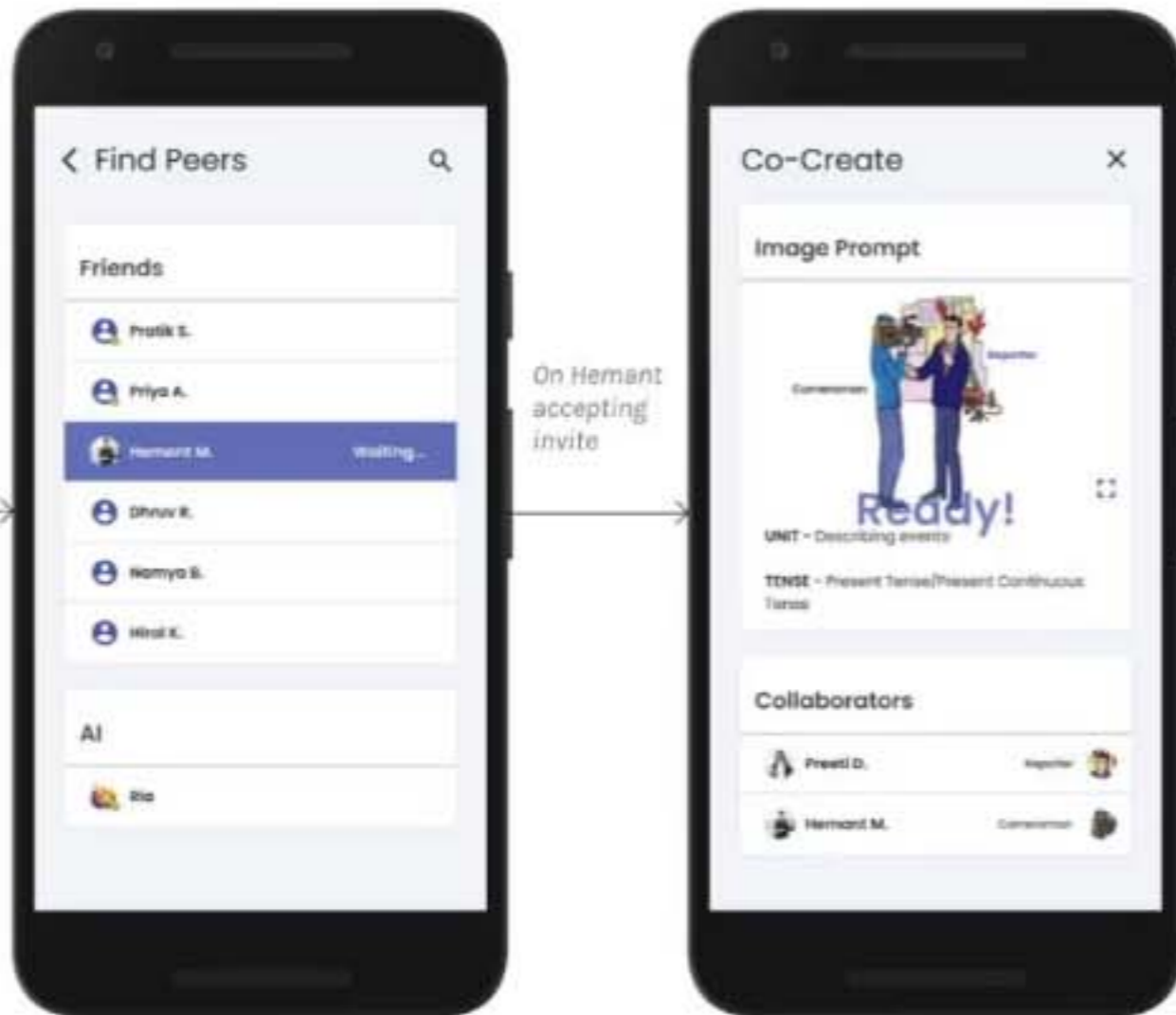


On clicking invite

Preeti waits for Hemant to accept the invite.

Once he accepts the invite, they are assigned the **image prompt** of the week and **characters** for the story creating activity.

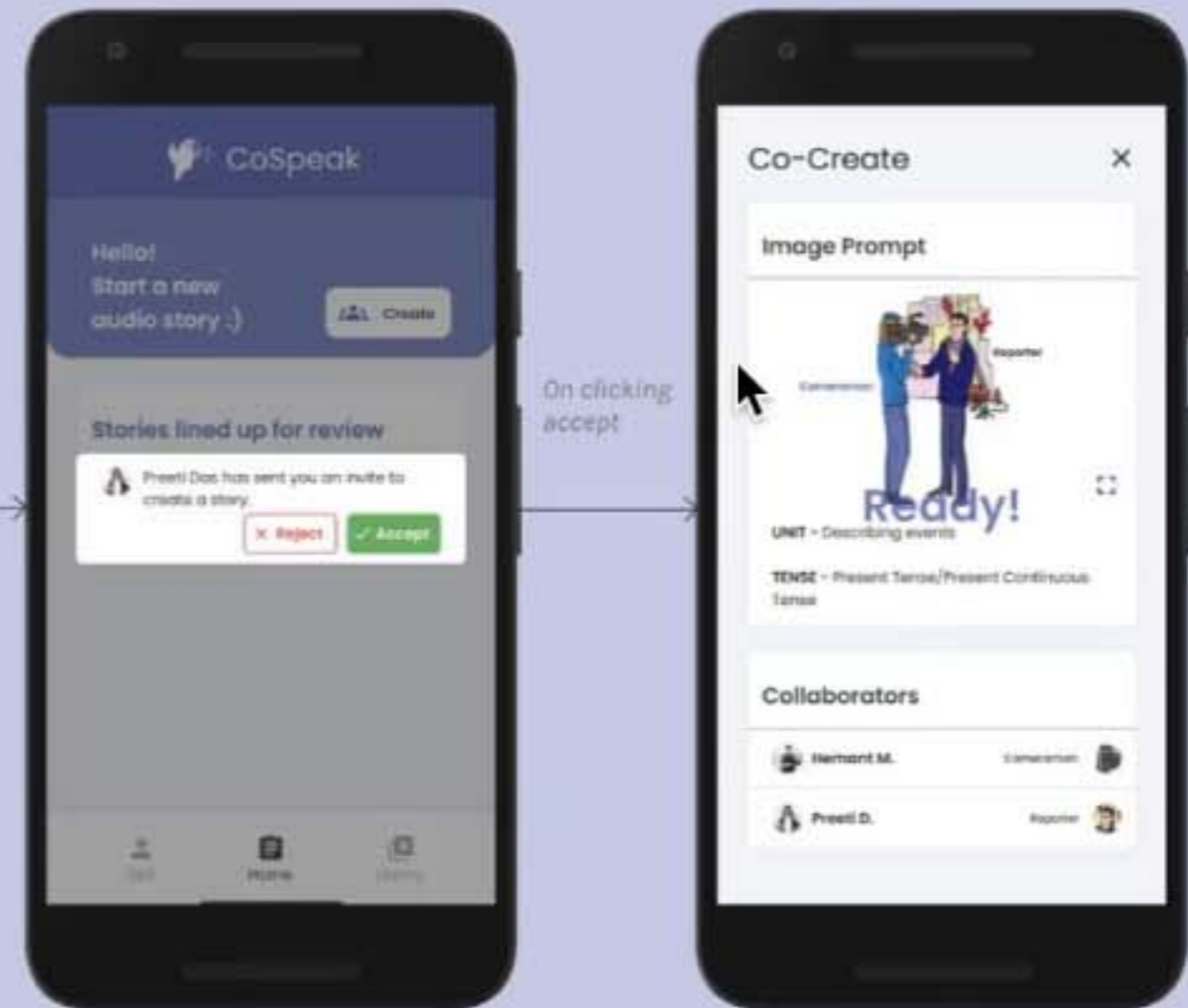
Preeti is assigned the character of the **Reporter**.



On opening the notification

Hemant accepts the invite.

Hemant is assigned the character of the **Cameraman**.

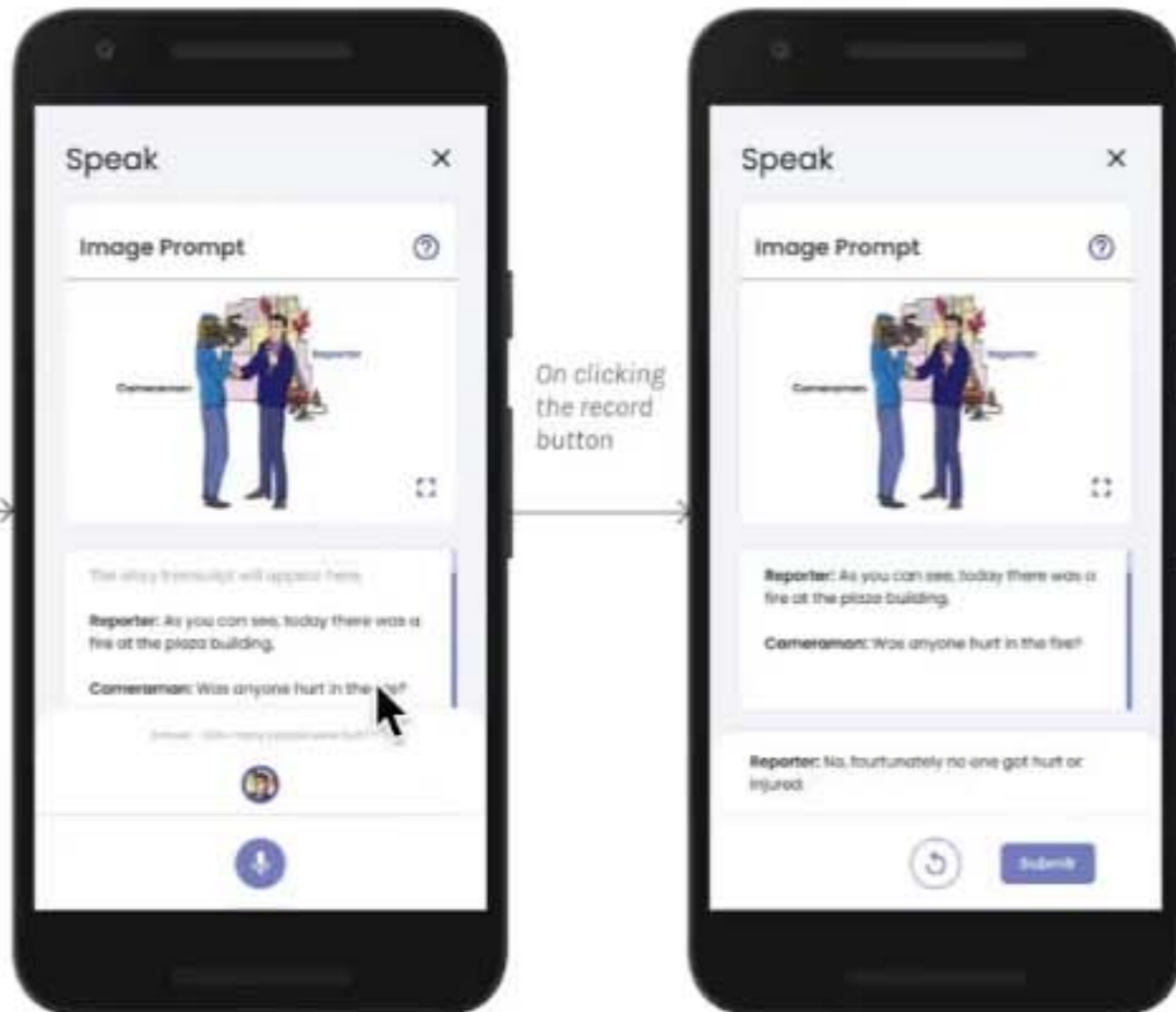


In 3 seconds

The story has a few starting dialogues which are **transcribed** and **spoken** by the application to help the student get started.

An **audio prompt** to continue the narrative is made as well as written to help Preeti continue the conversation - "Answer how many people were hurt"

Preeti uses the prompts and records a sentence answering as the reporter to continue the conversation.

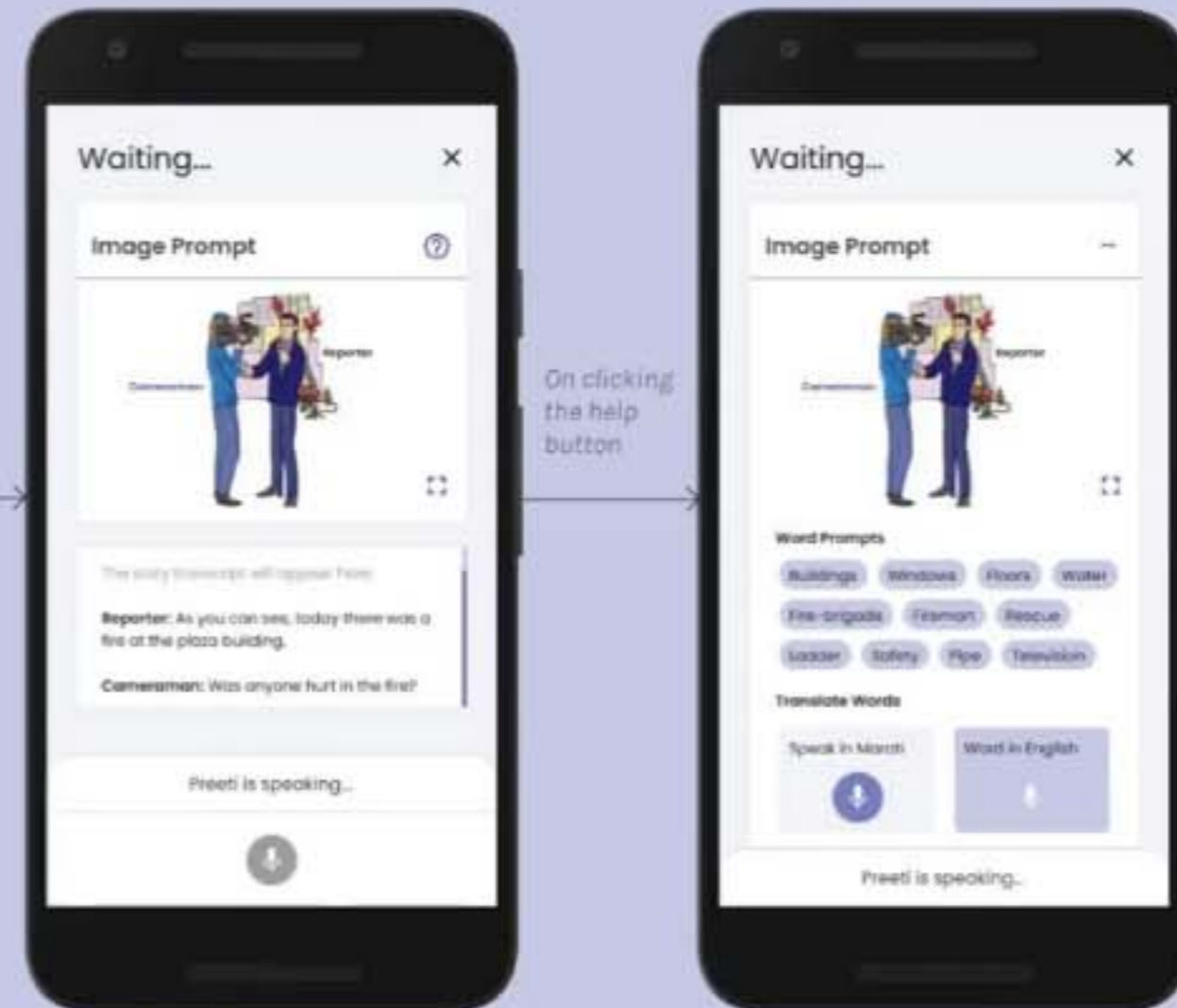


On clicking the record button

In 3 seconds

It is Preeti's turn to speak first and Hemant **waits** for his turn. He can also hear and see the beginning of the story mentioned by the application.

While waiting he explores the **help** feature. On tapping the words under **word prompts**, he hears an audio prompt on how to pronounce the word and use it in a sentence. He can also translate a word from his native language to English using the **translation** feature.

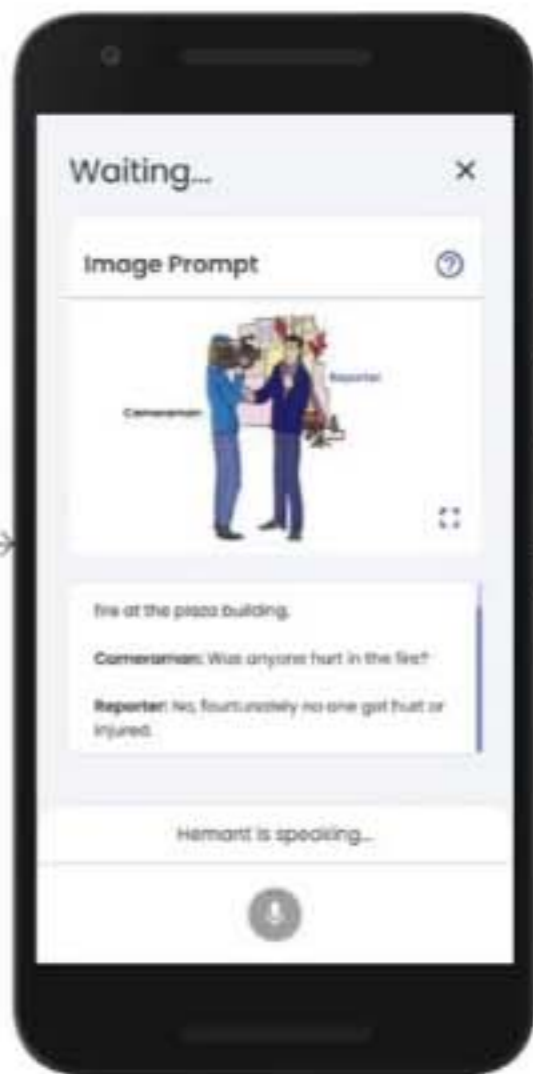


On clicking the help button

On clicking submit

It is Hemant's turn to speak and Preeti's turn to wait.

Preeti clicks on the fullscreen button to get a **bigger view** of the image while she is waiting.



On clicking
fullscreen
button



There is **no time limit** to speak or prompts to fasten the speaking process. The students can take their time to speak. If Preeti feels that she has been waiting for too long for Hemant to speak, she call him up and ask him the problem.

On clicking minimize, Preeti clicking submit

Hemant is also given an audio prompt to continue the narrative and uses it to speak.

The narrative goes on in a similar **turn by turn** manner.

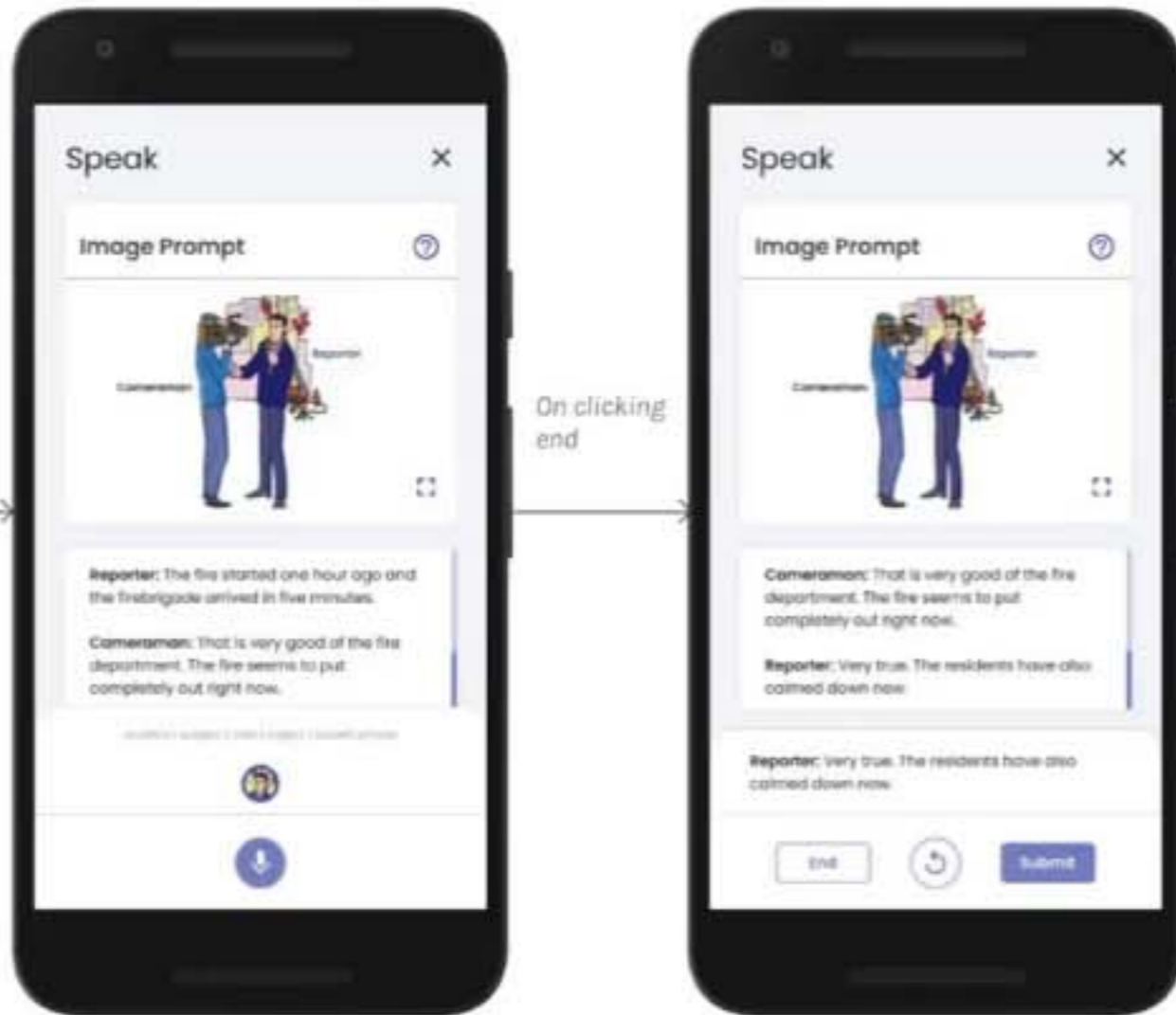


The **directional audio prompts** to help speak eg. Answer a number, ask a how question etc are stopped after 2 turns each. After this only a written prompt guiding the **sentence structure** and formation is provided.

After 9 more turns



After finishing 10 sentences, an option to **end** the story appears. Preeti clicks on the end button after speaking the last sentence.



The story can go on for as long as the students want. The end button is created to ensure a **minimum** number of sentences as decided by the teacher for that week.

In case the students have to leave in between, they can press the close button and their **progress** is saved on the home screen which can be continued at a later time.

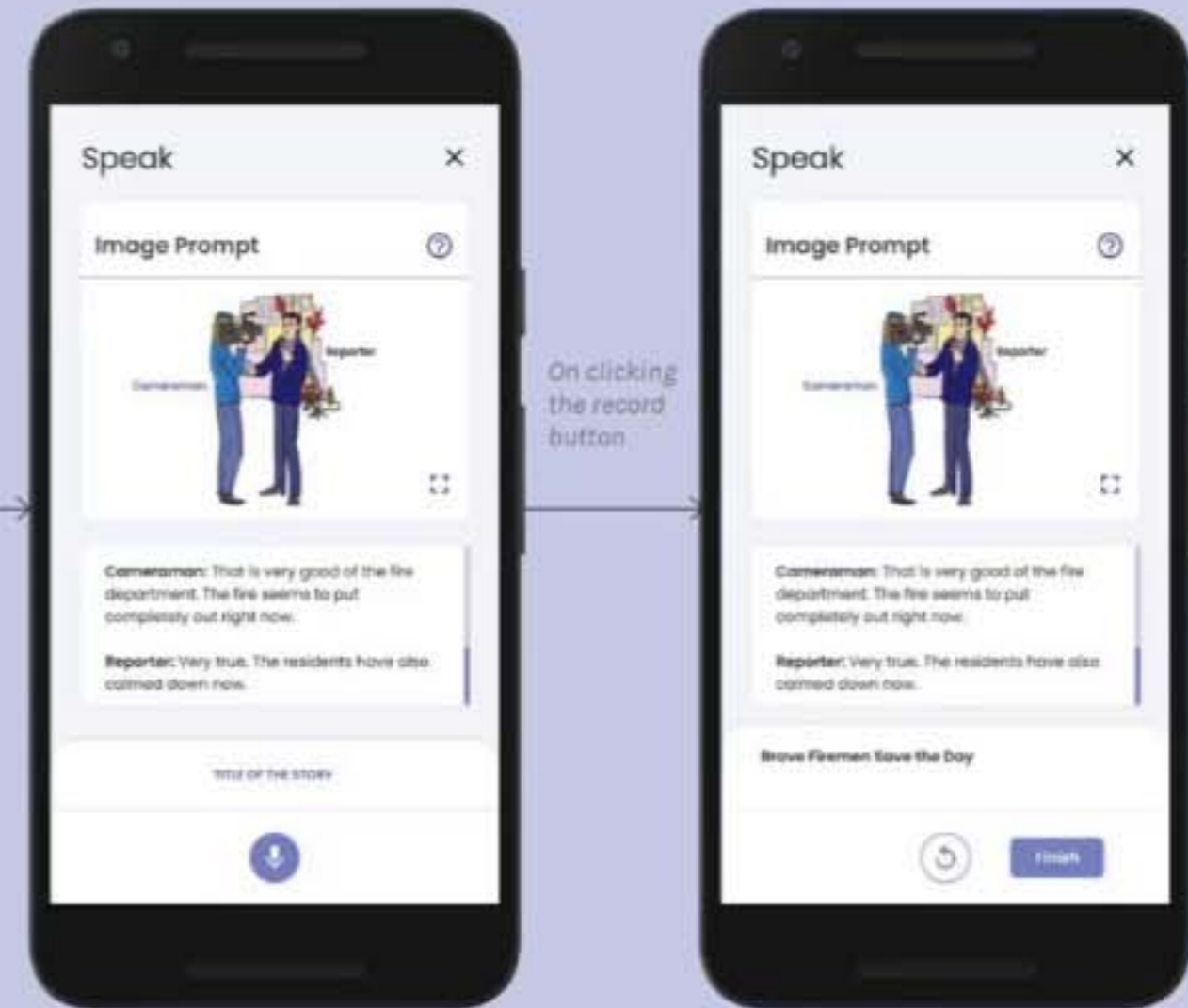
After 9 more turns



After Preeti ends the story, Hemant has to **title** the story.

Hemant titles the story and finishes it.

Once it is finished, it is sent to another classmate for **review**. The classmate will have 3 days to review the story and send it back to Preeti and Hemant with **suggestions** which they can incorporate before adding the story to the library.



2. Review a story



Just how Preeti and Hemant sent their story for review after finishing it,

Preeti had also received a story "The Red Raincoat" for review.

Preeti decides to review the story. Preeti **tags** and **records suggestions** for the story which are added in the story transcript. Finally, she gives some **overall comments**.

This is a **double-blind review** to prevent biases and to protect both the authors and the reviewer.

The story transcript appears as the story plays. This is to encourage students to give feedback by **listening** to the audio and using their reading skill only to cross check.

The controls on the bottom bar would be used to **navigate** through the story.



3. View a reviewed story



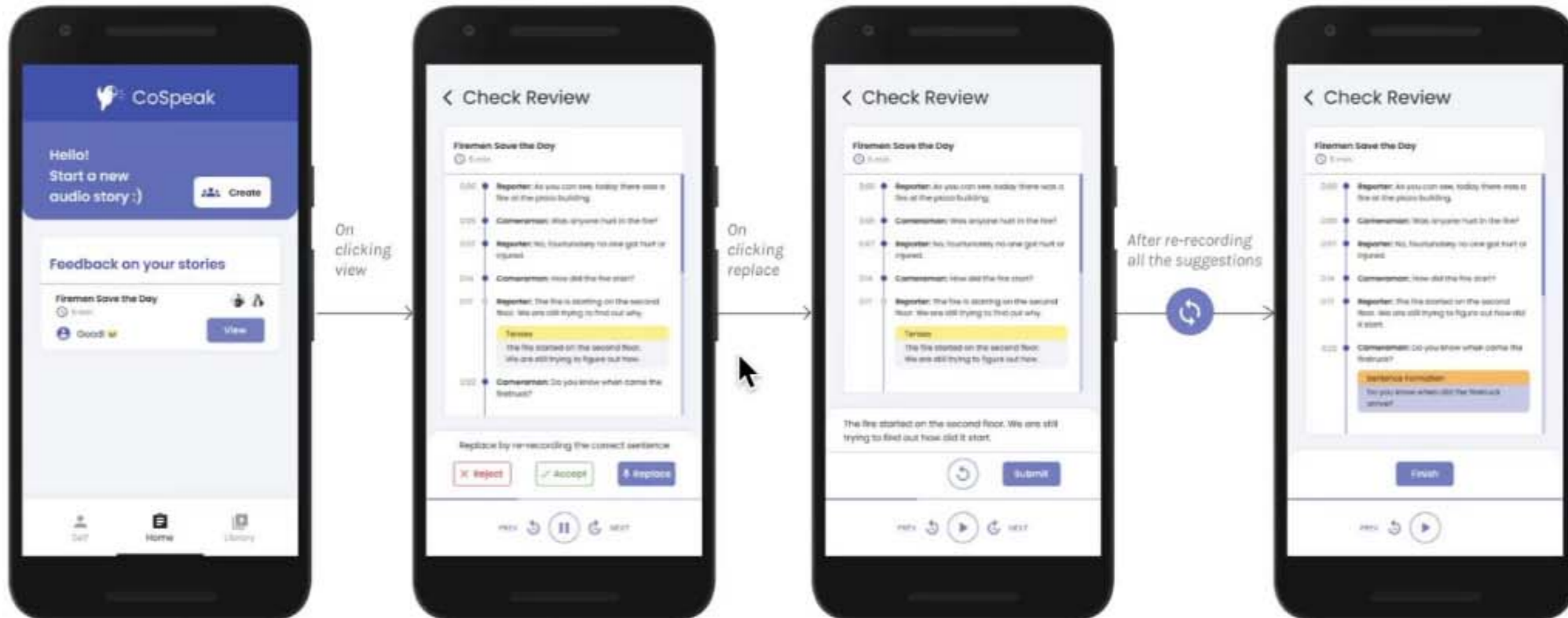
Preeti and Hemant's story "Firemen Save the Day" has been reviewed and they can view the suggestions.

Preeti is able to view all the suggestions but address only the suggestions made to her sentences.

Preeti has the choice to accept, reject or re-record using the suggestion and replace the sentence.

Once Preeti and Hemant both address the suggestions, their audio story would be added to the library and be available for listening to everyone.

The **replace** feature enables the student to re-record the sentence with the corrections in their own voice so that the voice of their character is **consistent** while listening to the story by others.



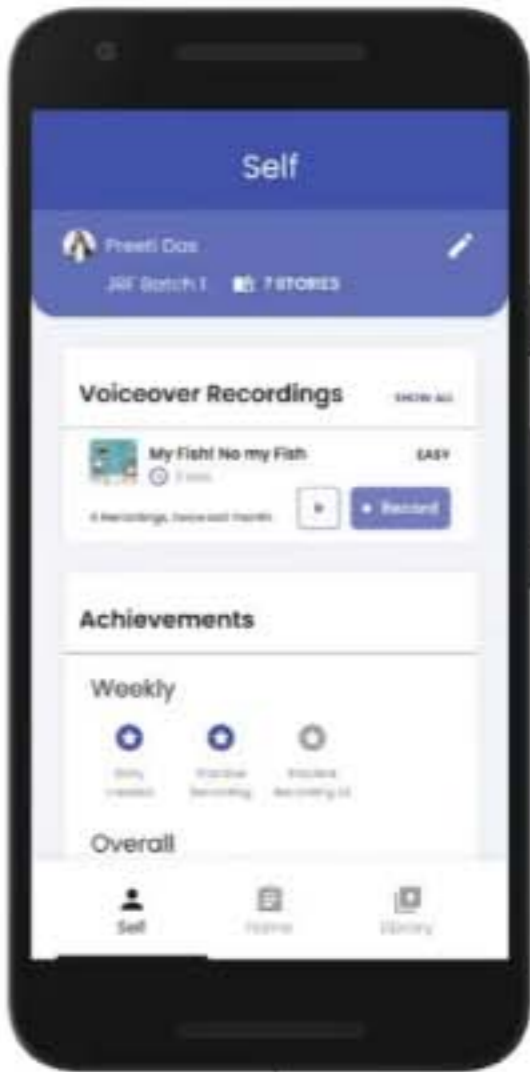
4. Voiceover Recording



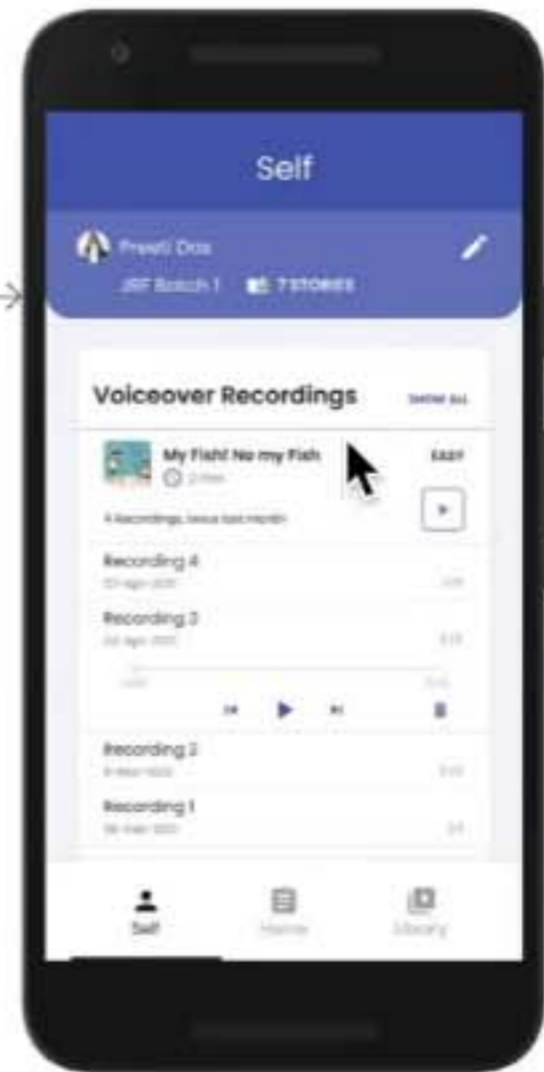
Self

Voiceover recording is a self-learning feature which enables students to read out loud existing stories and practise their pronunciation skills.

Preeti has been recording the same story "My Fish! No my Fish" to track improvements.



On clicking the Voiceover Recording Card

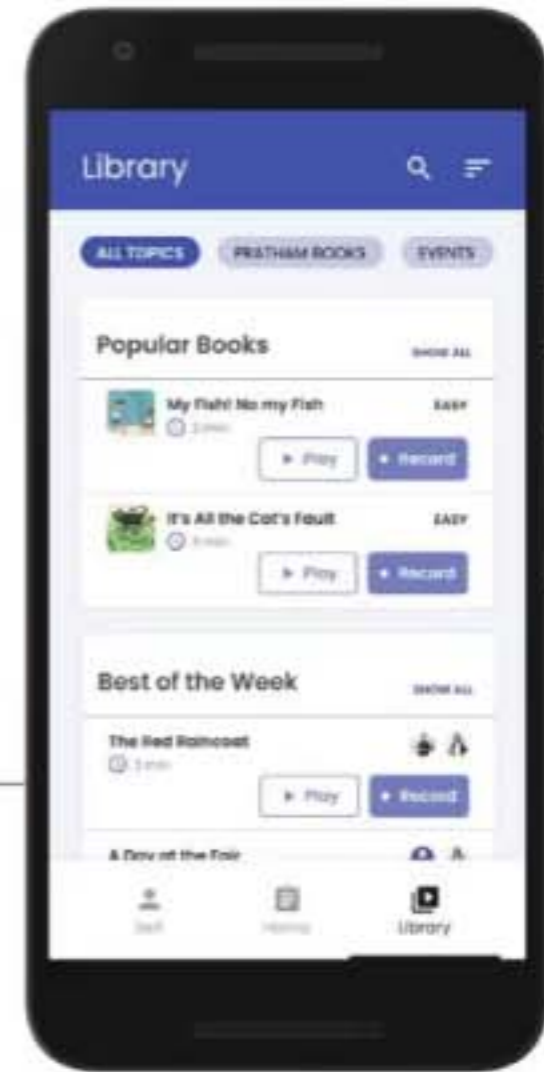


On scrolling and clicking record



On clicking record

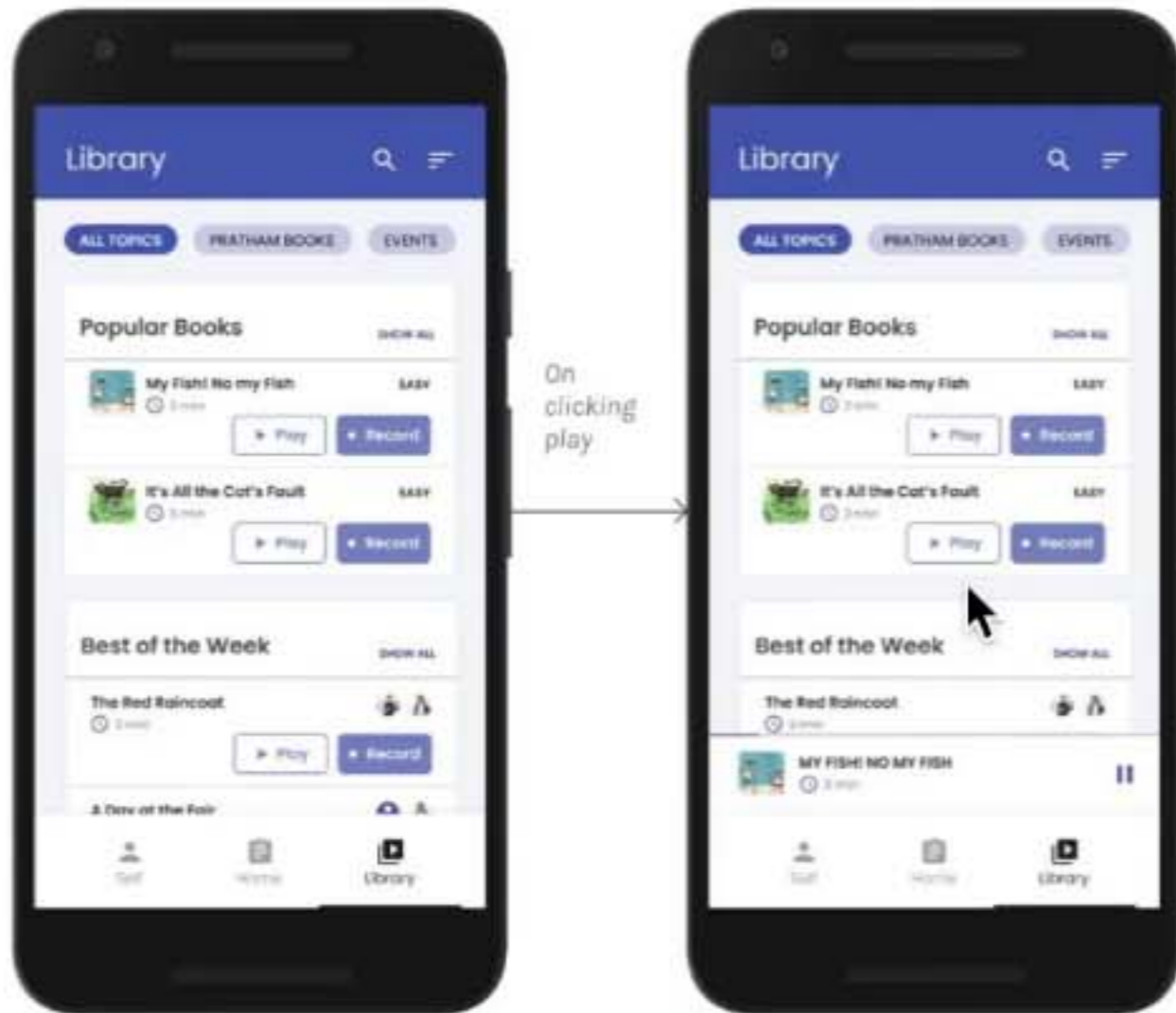
Library



5. Listening



Existing audio story books as well as audio stories created by students can be listened to from the library.

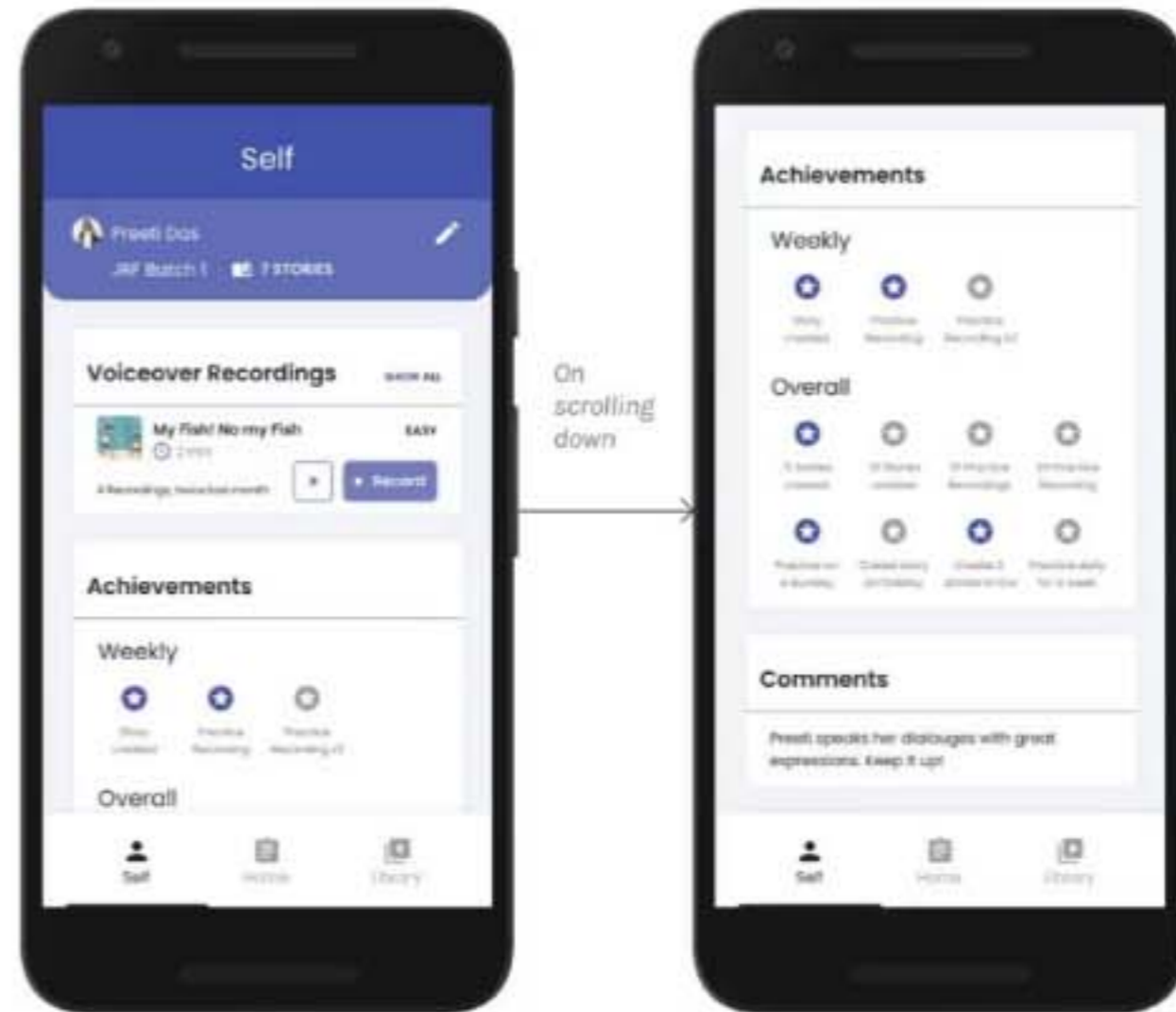


Profile, Achievements, Comments

The profile of the student consists of their name, class and stories created. Their personal details can be edited.

The achievements section consists of weekly and overall achievements to incentivise the students.

Comments given by the teacher are also shown in the self section.





Teacher's role

The teacher would be responsible for creating **different pairs** of students every week to co-create a story.

The teacher would be able **view** the **students** who finish the weekly story creation and review.

The teacher would also be able to view the **stories** created by the students.

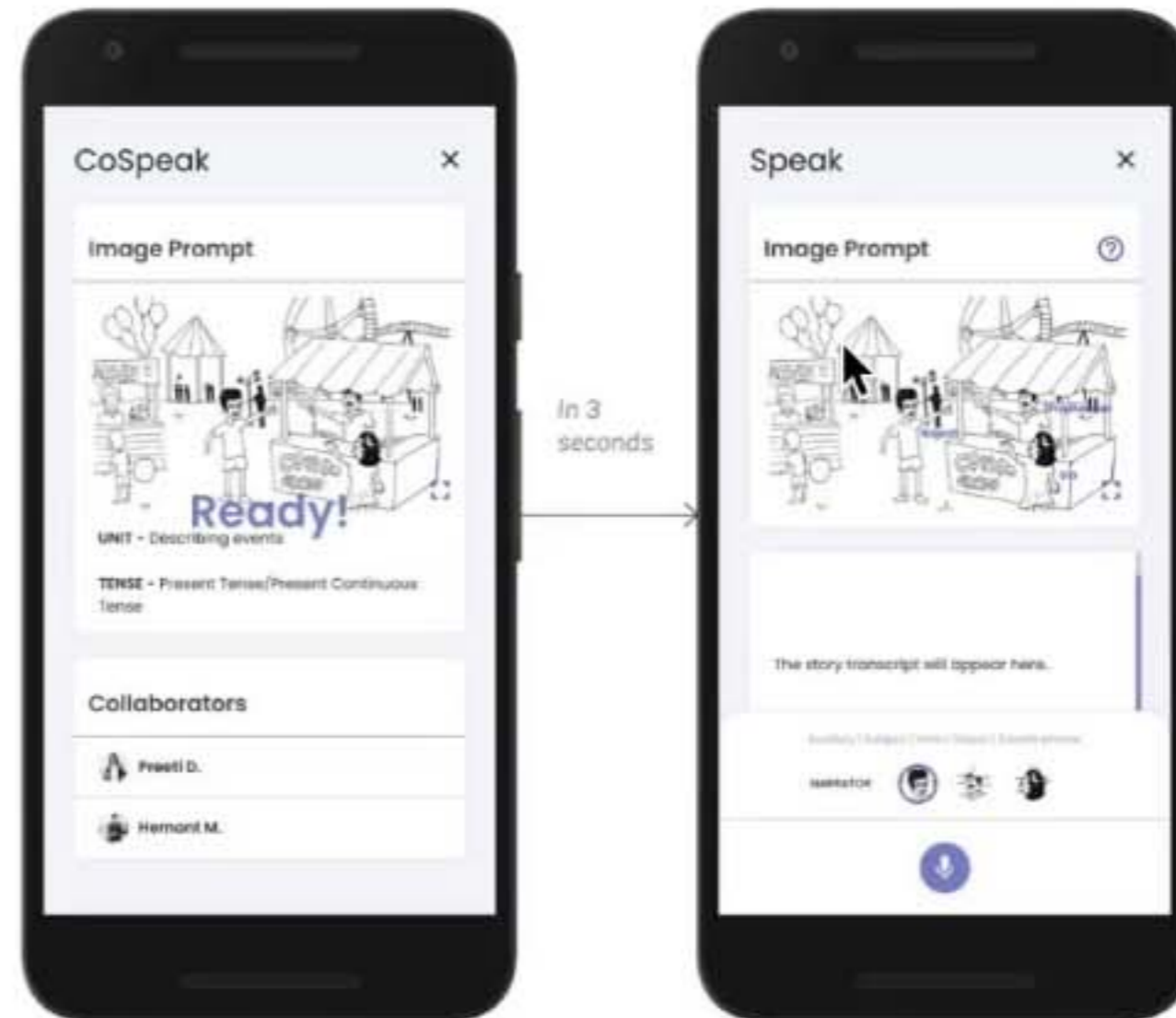
The teacher would randomly **pick** a story every week and ask the creators to **act** it out in class to keep the students motivated about the activity.

The teacher would also be responsible for **informing** the content creator of the ongoing unit and topic in class to help the selection of the images and creation of prompts for the activity.

Co-create a story - alternative

An alternative version for co-creating a story is also prototyped which uses an image prompt with **multiple characters** and allows to students to **chose** and speak on behalf of any character during their turn.

This version of storytelling allows **greater freedom** to create a narrative.



9. Evaluation - Parameters

1. Communication



- **Creativity** used to form the sentences.
- **Uniqueness** in the stories created.
- **Long-term learning** to help speak in daily conversations.

2. Speaking



- Level of **comfort** using the app.
- Usage of the **re-record** feature.
- Ability to speak at one's own **pace**
- **Usability, aesthetics.**

3. Theory



- Usefulness and **usability** of the
- Story beginning prompts,
 - Audio prompts,
 - Sentence structure,
 - Word prompt,
 - Translation feature,
 - Tags for the suggestions.

4. Collective Learning



- Usefulness of **peer feedback.**
- Usefulness of the self-learning feature.

Method

Evaluation was done with the teacher and 4 students in 2 sessions which consisted of -

- Presentation,
- Activities 1 and 2 using image prompts 1 and 2 as shown in the example Wizard of Oz prototype,
- Discussion, follow-up interview and questionnaires.



Image Prompt 1



Image Prompt 2

CoSpeak

Example Story
Characters:
1. Manu
2. Manu's Ma
3. Narrator

Image Prompt:

Story:
The Red Raincoat

Manu's parents bought him a red raincoat.

Manu: Can I wear it now?

Manu's Ma: No, my dear, the rains are near, but just now the sky is clear.

Manu: Will it raining today?

Manu's Ma: No Manu, not today. If you wear your raincoat, you will look quite funny!

Manu sat sadly by window and suddenly there were clouds in the sky.

Manu's Ma: Look outside Manu!

It was a miracle, it was raining!

Manu was very happy to wear his new red raincoat outside.

STORY TRANSCRIPT

SUGGESTIONS

↓

Richa Agrawal 4:00 PM May 11
Tenses: Will it rain today?

Richa Agrawal 4:02 PM May 11
Article: Manu sat sadly by the window and suddenly there were clouds in the sky.

Example

Results

1. CoCreate Activity

1.1. Image Prompts and characters and acting

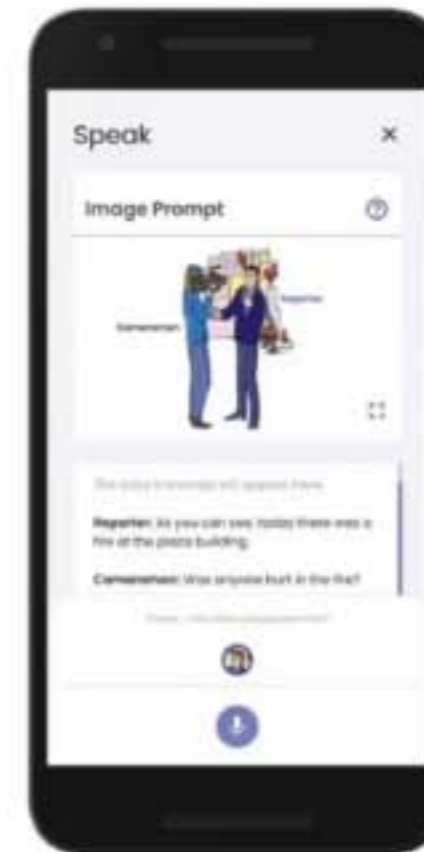
- Students used the **voice** and **expressions** of a character.
- Embody a character **assigned** at the **beginning** and continue with it, turn by turn.
- **Choosing** a character **every turn** was confusing. This method can be used for only one student creating a story.

1.2. Prompts/Guidance while speaking

- Required **leading audio prompts** for the first few turns.
- Found the word bank, translation features useful.

1.3 Making mistakes and Re-recording

- **Made mistakes** while speaking, some immediately realised it and **re-spoke** it.



Assigned characters



Selecting characters

2. Review, Viewing the review Activity

2.1 Identifying mistakes

- Students were able to **identify** their peer's mistakes in sentences.
- Apart from grammatical mistakes, they also made **suggestions** to improve sentences.
- The student who had initially formed the sentence wanted the suggestion to **build** on it.

2.2 Collective learning

- The activities enabled collective learning as the students could learn **with** each other and **from** each other.
- The teacher appreciated the idea of **collaboratively** creating stories.
- The students were also able to learn from **listening** to others' stories during the review activity to set a **benchmark**.



Tagging mistakes, suggestions

3. Voice-over Activity

The students found it helpful to improve their **pronunciation** of words and increase **vocabulary**.

4. Application Design

The teacher and students appreciated the design of the application and understood the usage of the features. Most of them rated the **aesthetics** and **usability** as **very good**.

The students found the idea to be **novel** and easily understandable.

Overall

The teacher and all the students thought that the application would help students learn to **speak** English in daily conversations and increase their **confidence** to speak.

The application successfully addressed the **goals** in a creative and fun way.



Voice-over Activity

10. Future Possibilities

In the context of the JRF program

- Expansion of the JRF Program to more schools in Maharashtra - Creating a larger community of students.
- Creating an **English Club** - Involving **ex-students** - They also need regular practice otherwise they would lose the flow of speaking.
- The ex-students could play the role of **reviewers** for current students.
- **Experts** can discuss **ambiguities** in reviews in the weekly club meets.

Designing supporting features

- **AI characters** can be developed to collaborate with by designing long term interactions and the turn-taking behaviour (Cambre et. al, 2020).
- Make your own story by embodying different characters.

Repurposing the activity

- The co-creation and review activity can be redefined to be appropriately used in **physical classes**.
- The application can be scaled to create a larger **community** of students learning to speak English from different backgrounds.

Consolidation

Problem Identification	Redefined Goals	Existing solutions	Proposed solutions	Evaluation parameters	Evaluation Results
<p>1. Opportunity to practice English as used in communication</p>	<ul style="list-style-type: none"> Enabling formation of complete sentences as they would be used in a conversation Creating uncertainty as present in real conversations 	<ul style="list-style-type: none"> AI-driven chats - type and converse with an AI bot Conversations based on multiple-choice questions 	<ul style="list-style-type: none"> Enabling formation of new sentences based on the situation Uncertainty created by collaborating with friends 	<p>With students</p> <ul style="list-style-type: none"> Uniqueness in sentences/stories produced <p>With experts</p> <ul style="list-style-type: none"> Learning communication by producing sentences in this manner (over a long period) 	<p>With students</p> <ul style="list-style-type: none"> Unique sentences/stories produced <p>With experts</p> <ul style="list-style-type: none"> Would help to gain knowledge for day to day communication with practice

Problem Identification	Redefined Goals	Existing solutions	Proposed solutions	Evaluation parameters	Evaluation Results
<p>2. Creating a comfortable environment (safe space) to speak English</p>	<p>Opportunity to speak English with the support of guidance while allowing students to make mistakes as a part of learning to speak</p>	<p>Read out loud apps - voice recognition to read a given text with mistakes identified and suggestions for corrections</p>	<ul style="list-style-type: none"> Opportunity to speak English at one's own pace, ability to re-record in case of many mistakes while speaking Audio prompts to help in speaking 	<p>With students</p> <ul style="list-style-type: none"> Comfort while speaking as experienced by the student through this method of speaking Usability of the feature 	<p>With students</p> <ul style="list-style-type: none"> Felt comfortable speaking, making mistakes, re-recording sentences <p>With experts</p> <ul style="list-style-type: none"> Helps users gain confidence
<p>3. Application of theoretical knowledge as learnt in the JRF classes in practical situations</p>	<p>Ability to easily use the theoretical knowledge eg. word banks of vocabulary, in practical situations while speaking</p>	<ul style="list-style-type: none"> Ordering words correctly to form a sentence Multiple choice questions - select the correct answer from common errors while speaking 	<p>Easily usable word bank and translation features as and when required while sentence formation</p>	<p>With students</p> <ul style="list-style-type: none"> Usability of the features as experienced <p>With experts</p> <ul style="list-style-type: none"> Long term learning benefits of the features 	<p>With students</p> <ul style="list-style-type: none"> Found the features to be very helpful <p>With experts</p> <ul style="list-style-type: none"> Found the features helpful, suggested adding class notes

Problem Identification	Redefined Goals	Existing solutions	Proposed solutions	Evaluation parameters	Evaluation Results
<p>4. Collective learning, evaluation of learning</p>	<ul style="list-style-type: none"> • Peer learning - Creating a community of learners who can learn collectively through collaboration and feedback • Self-learning to practice alone and observe improvements over time 	<ul style="list-style-type: none"> • Classroom learning • Quiz to evaluate the knowledge learnt 	<ul style="list-style-type: none"> • Peer feedback - tagging the errors and providing suggestions • Practise speaking the same text multiple times over some time to observe improvements 	<p>With experts</p> <ul style="list-style-type: none"> • The usefulness of peer feedback • Effectiveness of collective learning and self-learning • Visibility of improvements <p>With students</p> <ul style="list-style-type: none"> • Usability of the features 	<p>With experts</p> <ul style="list-style-type: none"> • The mistakes will be identified, suggestions may not be correct • Ex-students as reviewers • Appreciated collective learning <p>With students</p> <ul style="list-style-type: none"> • Found the features useful

Conclusion

- A context was chosen, [English learning for class 12 students](#).
- On conducting primary and secondary research, [Speaking English in daily conversations](#) was the prioritised problem area.
- A design Brief was formed, ideas were brainstormed and a direction was finalised based on feedback.
- “[CoSpeak](#)”, an interactive mobile application was detailed out and designed.
- The design solution was [evaluated](#) with students and the teacher by employing a [Wizard of Oz](#) type prototype.

My Contribution

My contribution to the domain of [adults learning English](#) is the [design](#) of the [novel activities](#) - co-creating an audio story through dialogue, peer review of the story and incorporating improvements in the reviewed story for an [interactive mobile application](#) using voice recognition to aid learning speaking in daily conversations.

Reflections and Learnings

- Through this project, I was able to follow all the steps involved in the design process of an **educational solution** for the selected context by focusing on specific goals.
- I was able to connect with an NGO, and form a **relationship** with the teacher and the students which helped me receive feedback at multiple stages leading to an active involvement of the teacher and students in my project.
- I was able to use technological aspects to support the ideas for the design solution rather than the technology dictating the ideas.
- With the constraint of the project being **online**, I had the opportunity to create a method for an online evaluation. I was able to do a **Wizard of Oz** type testing online and receive feedback based on it to validate and improve the design solution.
- Data collection, testing with students was done in the **presence** of the teacher and follow-up information could be collected only through questionnaires was a limitation due to the online constraint.

Thank you!

I