



Human-Computer Interaction

Project Final Report

Raven - The news app

Team Name

Pixies

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Introduction

Motivation

We aim to build a news website namely 'Raven'. We see a lot of news sources such as tv channels, websites, and apps around but all of them have certain drawbacks that users might not like. We wish to build a website inclusive of the Universal principles of HCI, Design principles, and some aspects where current websites lag to provide an easy user interface.

We can observe from other websites that in today's age the news and incidents around us are not child friendly. But this does not imply that we should shut off kids from the global news. They must be provided with some environment where news reading becomes fun and frolic activity also keeps them updated. Older adults also encounter problems due to smaller fonts in the newspaper. To solve this issue the app can provide bigger fonts according to their needs.

Overview of project

Our app includes:

- Kids section
- News based on location
- News based on languages
- Can change the font size
- Tabs to select choice of news category
- Quick headlines
- Dark and light themes
- Read later(Bookmark) feature for keeping track of news to be read
- A listener mode for people who wish to listen the headlines rather than reading them
- News from various sources to read unbiased information
- User can filter the choice of trending topics to read related information

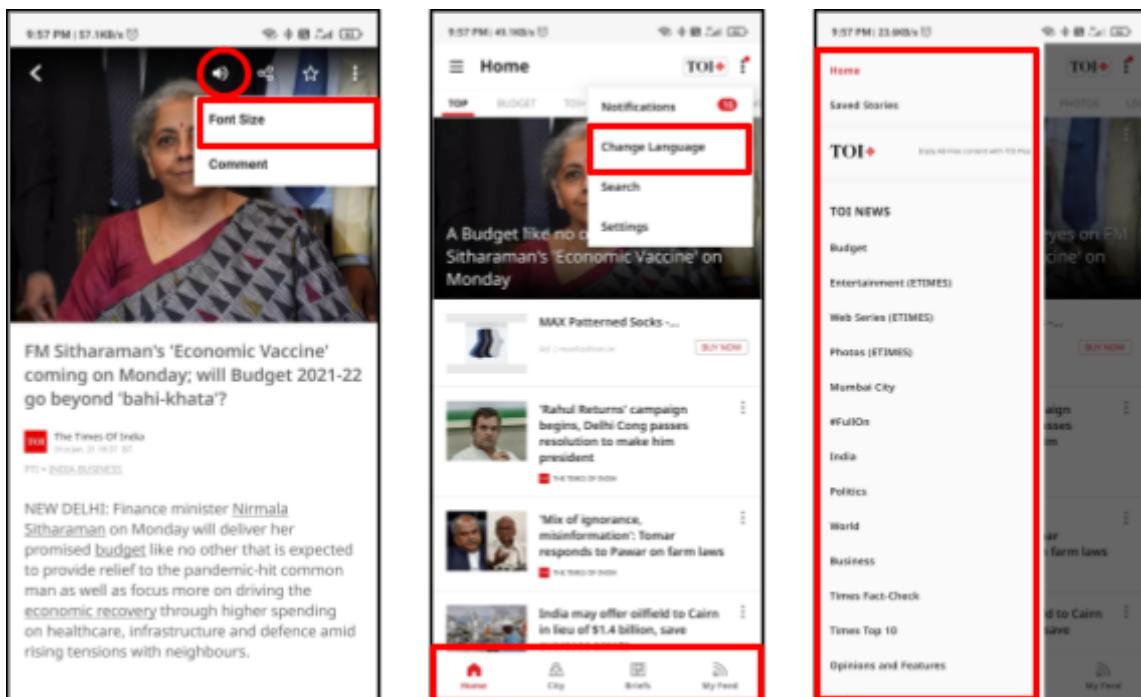
- Handy menu bar to have a look at current stock market information along with gold rates and weather information
- Share option to share articles with friends and family
- Summary under every headline to give the best overview of the news

Above mentioned all the features will be built on the standards of HCI principles.

Market survey

1) Times of India

“Times Of India” is one of the most trusted English newspaper and also has its mobile app which has various features:-

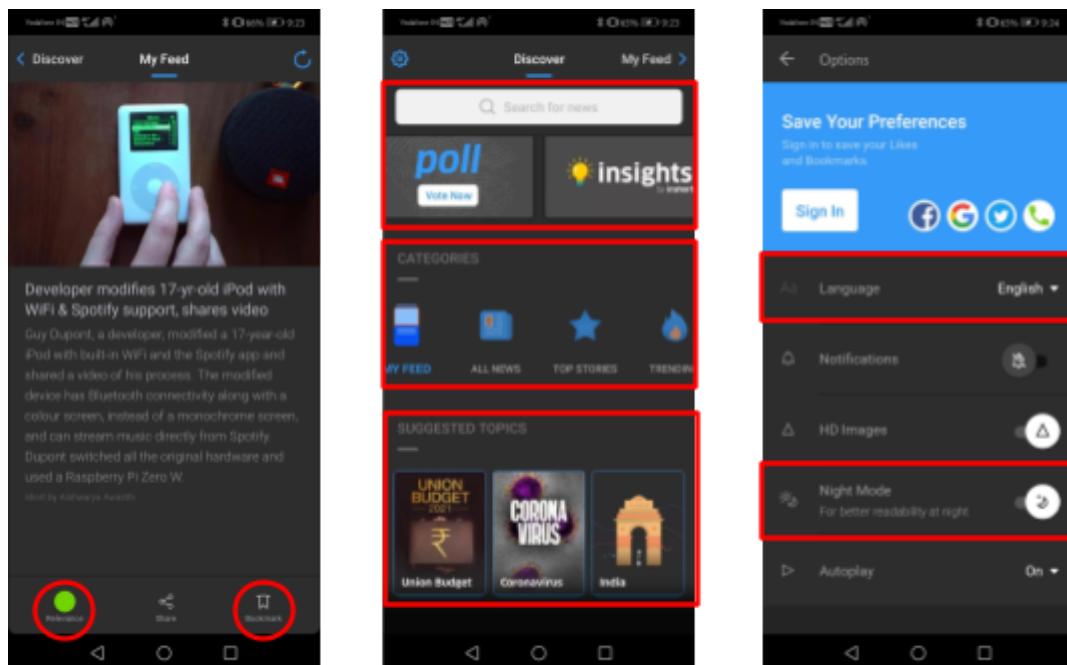


- It has 4 tabs Home - Home page of the app, City - news of the city you have selected, brief - News conveyed in a shorter format, Feed - the type of news you have subscribed for all with the same font and color. This all shows the **consistency** of the app.
- There is a side menu that opens by pressing a tile icon and it provides news by category like sports, events, science, etc.

- It also has an option for changing the language of the app, thus showing the principle of **cultural diversity**.
 - You can also save Stories or news you want so that you can refer to it later,
- Reducing the memory load.**
- It has a read-aloud feature where a voice assistant reads the news for you and you just have to listen to it and we can change the fonts as well, thus **helping disabled and aged people**.
 - It **does not support** voice search and adult content filtration for the use of visually impaired people and kids respectively.

2) Inshorts

Inshorts is the news-reading app where they give the short briefing of the news in around 60 words and below that news, they provide the link of that news if anyone wants to read more about that news because nowadays no one likes to read each and every news in detail.



- It gives the option to bookmark the news which shows the principle of **Reduce short-term memory load**.
- It has provided the categories like my feed, all news, top stories, trending, bookmarks, and unread. Below that it has suggested some topics like business, technology, entertainment, fashion, etc so by choosing that we can directly see the news of that topic. Above the category, it has also given the option to see insights and news that contain audience polls. This all is arranged in proper format which shows the **consistency** of the app.
- In this app, everything is visible easily so also has a **visibility** principle and by seeing it we can easily predict what this does so also satisfies the **affordance** principle.
- It has given only two standard options of language (English and Hindi) so it should give options for more regional languages to satisfy cultural diversity. It should also include the video news feature in this app.

3) The Hindu

The Hindu is considered to be one of the most eminent newspapers in India. Their mobile application is simple, yet intuitive.

- The application displays journalistic reports on the home page itself. It highlights the top news stories while also displays other stories in the sub-columns. This satisfies the **affordance** principle

The screenshot shows the mobile application interface for The Hindu. At the top, there is a navigation bar with a menu icon, the "THE HINDU" logo, and a search icon. Below the navigation bar, there is a horizontal menu with links to "Home", "COVID-19", "Wellbeing", "National", and "International".

The main content area displays several news cards:

- Top News:**
 - A large card featuring three COVID-19 vaccine vials with the text "Vaccine COVID-19". Below it is the headline "The Hindu Explains | Can SARS-CoV-2 mutations undercut the efficacy of vaccines?" and a timestamp "Top News • 9 hrs ago".
 - A smaller card featuring a portrait of a man and the headline "India running world's biggest COVID-19 vaccination programm..." and a timestamp "Top News • 46 min ago".
 - A smaller card featuring a portrait of a man and the headline "Sourav Ganguly discharged from hospital after second angioplasty" and a timestamp "Top News • 13 hrs ago".
- Editorials & Opinion:** A section containing three editorial cards with titles like "In search of malice: On FIRs against journalists", "Wide aisle: On 2021 Budget session of Parlia...", and "A fo...". Below this section is a link "VIEW ALL EDITORIALS & OPINION".
- Cartoons:** A section featuring a cartoon strip and a call-to-action button "Become a Premium member now! Enjoy member benefits and more...".

At the bottom of the screen, there is a navigation bar with icons for "Home", "Briefing", "My Stories", "Suggested", and "More". The "More" icon has a red notification badge with the number "7".

- On scrolling down, we can see other content like editorials, opinionated articles, etc which is based on the principle of **consistency**. It also allows users to customize the home screen to show the content of their preference.
- Overall, the app is quite simple yet intuitive. But, this app is plagued with bugs, regularly intrusive advertisements, no offline mode, no syncing for bookmarks, and no dark mode.

Details of the tools

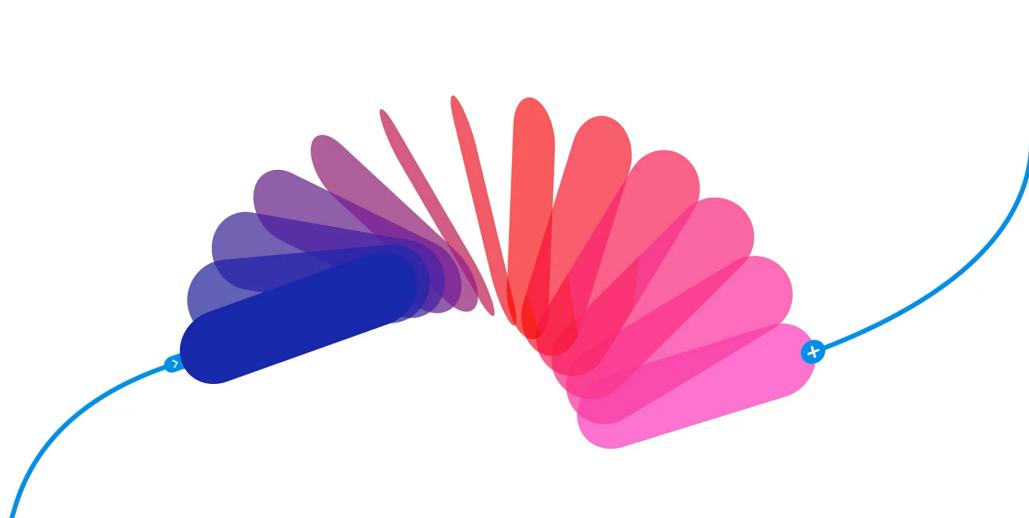
Brief description of facilities available

Creative Cloud integration - Adobe XD is a product offered in the creative cloud of Adobe. Hence, it can be used with all different software like Adobe

Photoshop, Adobe Illustrator, etc seamlessly. For example, users can make edits on an image in Adobe Photoshop and export them directly to Adobe XD. Users can also create SVG images (which are an integral part of modern development) in Adobe Illustrator and export them to Adobe XD.



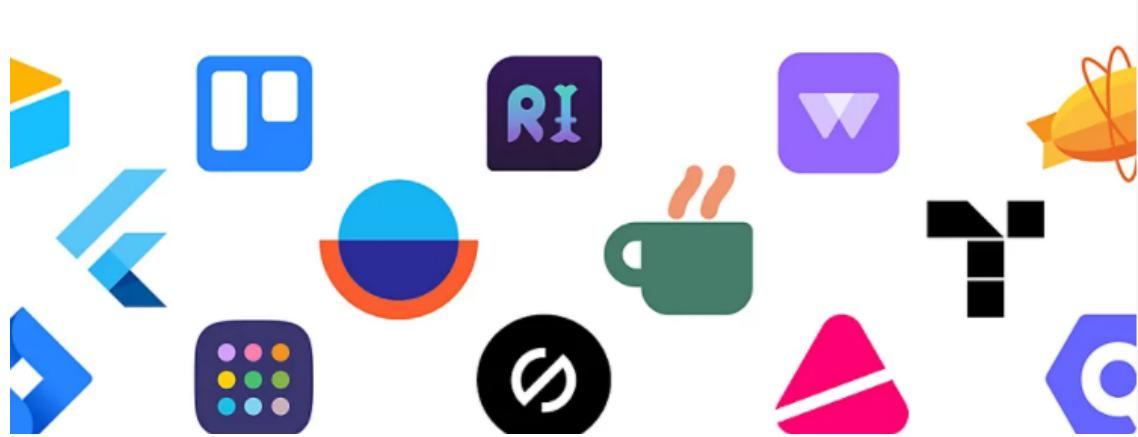
Auto-Animate - Adobe XD can automatically introduce movements as we iterate with Auto-Animate. We can simply add motion effects, playful interactions, visual feedback and smooth transitions with any coding or using other tools.



Voice Prototyping - In Adobe XD, we can use voice commands to create animation triggers. We simply have to select the voice in animation style and enter an utterance in the command field. After this, when we preview the

prototype, we can simply trigger the associated action by saying that utterance.

XD Plugins - Adobe XD has a plethora of plugins almost all of which are available for free. One such plugin is XD to flutter plugin which directly exports the screens to flutter components. This is really helpful as usually after prototyping, a developer has to use his time in developing frontend components and the ability to directly export to flutter saves a lot of time.

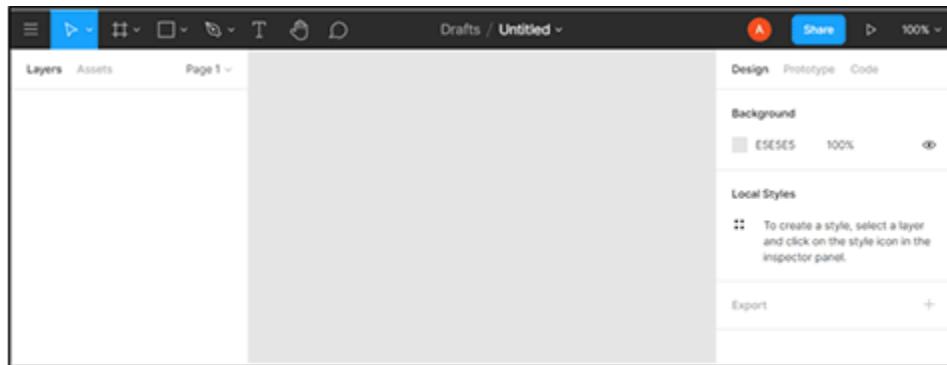


Comparison with other tools

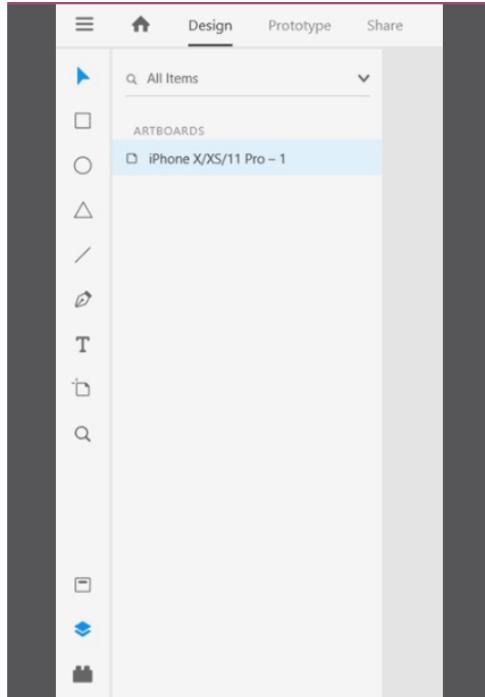
Features	Adobe Xd	Figma	InVision Studio
Cloud storage (Free Plan)	2GB	Unlimited	Unlimited
Toolbar Orientation	Left side vertically	On the top horizontally	Bottom horizontally
Shared Documents/ Links (Free Plan)	1 user	Multiple users	Multiple users
Offline Availability	Yes	No	Yes
Version Control	No	Yes	No

Cloud Storage - Refers to storage space provided by the tools when a collaborative project is developed. Adobe has comparatively less storage space whereas Figma and Invision studio provides unlimited storage. But, Figma allows 3 collaborative projects in a free plan whereas Adobe XD provides unlimited projects with 2GB storage.

Toolbar Orientation - Toolbar orientation plays an important role in HCI from the Fitts Law perspective. Figma and Invision Studio have a horizontal toolbar that eases the selection of assets and provides a better user experience. Adobe XD has a vertical toolbar to the left of its workspace which makes asset selection a little more time consuming. Toolbar comprises various shorthand functions which implement the Visibility Design Principle.



Figma Toolbar



Adobe XD Toolbar

A screenshot of the Invision Studio interface. It features a grid of cards with images and text. The first card shows a camera lens with a red 'TECHNOLOGY' tag. The second card shows a hand holding a smartphone with a red 'FINANCE' tag. The third card shows a bowl of food with a red 'FOOD' tag. Below the cards is a toolbar with icons for selection, transformation, text, and other design tools. At the bottom, there is a navigation bar with links like 'Deck UI Latest Changes', '1 — Homepage A', and 'SHARE'.

Invision Studio Toolbar

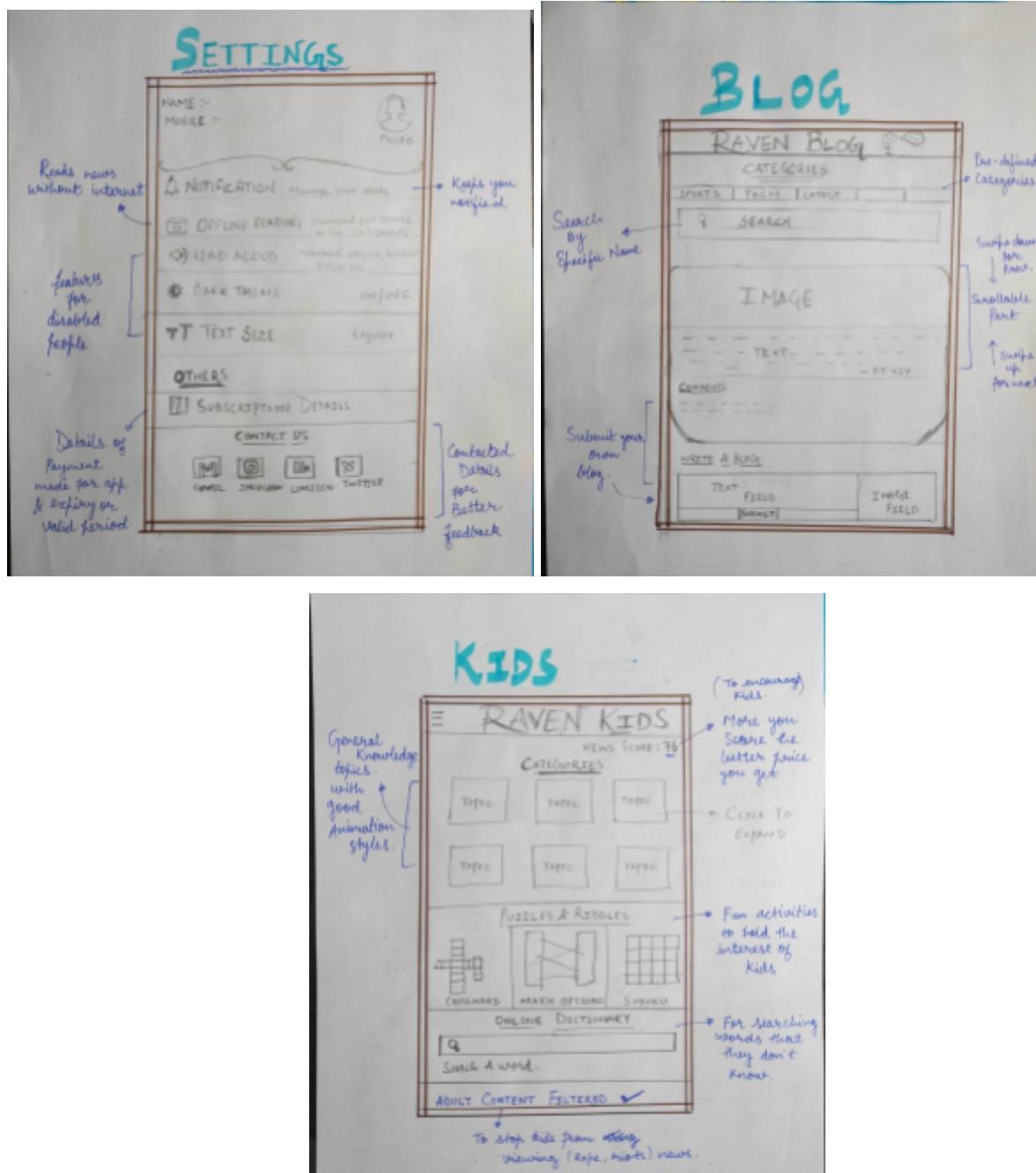
Shared Documents/Links - Sharing of documents and workspace is possible via links in all the platforms. In fact, Figma provides real-time collaboration with visible moving cursors of the members. Adobe in its beta version provides this feature but cursors are not visible and the sharing is limited to one person only. Invision Studio provides only a link sharing option.

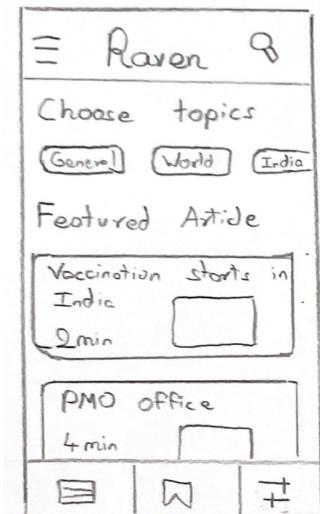
Offline Availability - This feature allows users to use the tool offline in internet prone situations. This facility is provided by both Adobe Xd and Invision studio but not Figma because Figma is browser oriented.

Version Control - Is referred to as the history of edited versions made by respective team members. This feature is available in Figma only.

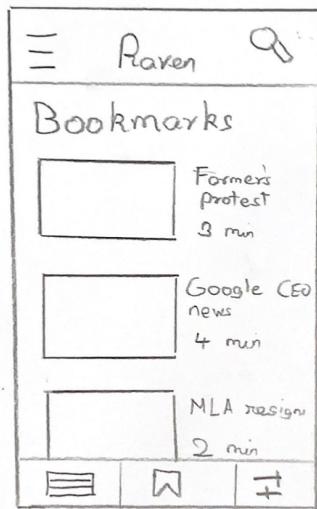
Project planning and preparation

Paper-pen design of the screens

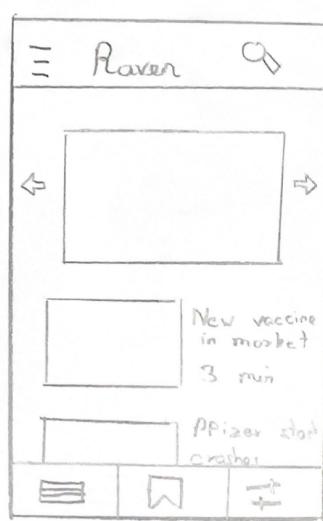




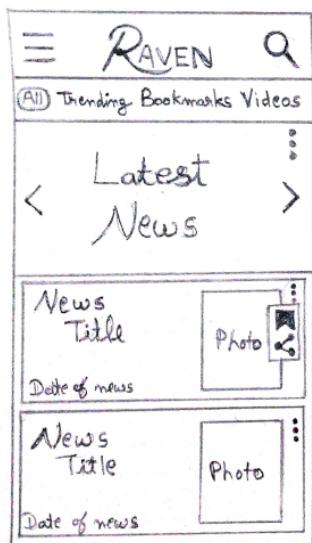
Home



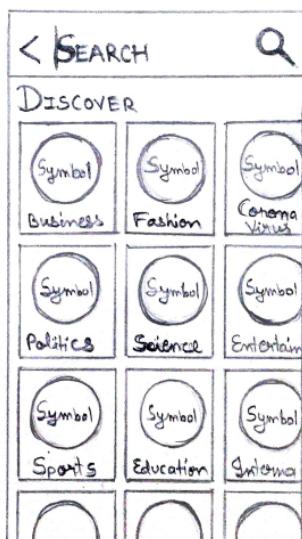
Bookmarks



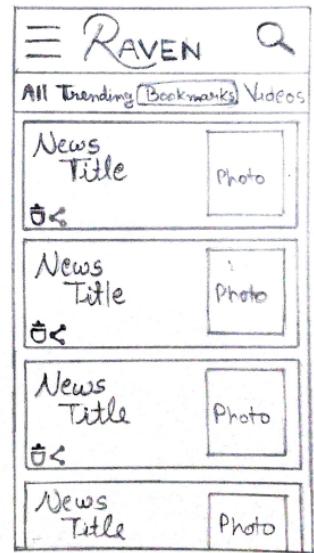
Explore



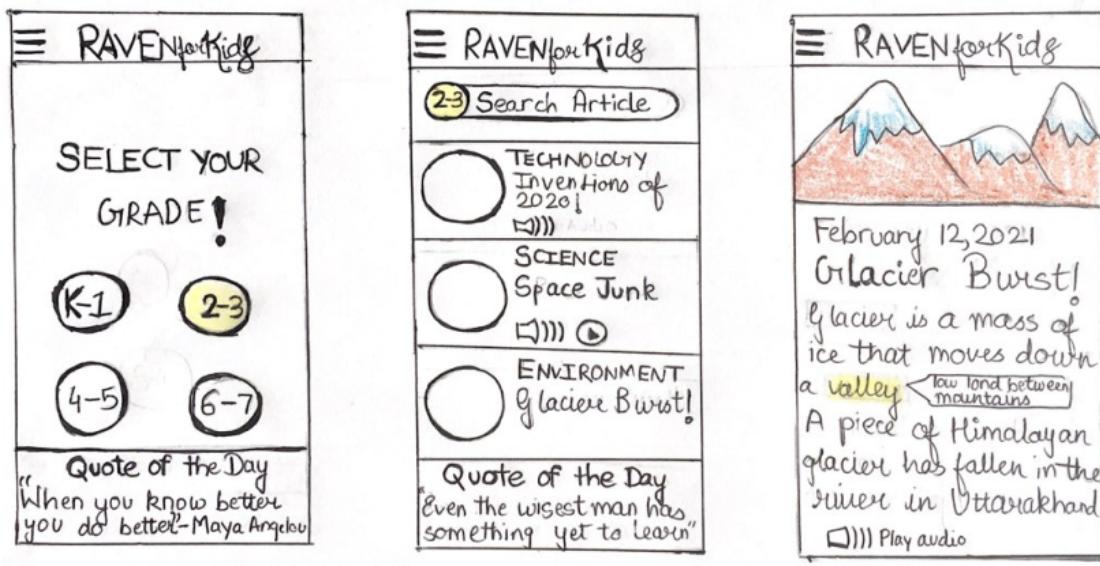
Home Screen



Search/Discover Screen



Bookmarks Screen



Persona development

M K Shah



"Humanity is the biggest religion"

Name : M.K Shah
Age: 50
Work: Businessman
Family: Married, kids
Location: Ahmedabad, Gujarat

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

Bio

M.k Shah Indian businessman and has multiple businesses (manufacturing, transport, etc.) who stay in Ahmedabad(Gujarat), likes to socialize(meeting new people and exchanging ideas), and likes quality over quantity. He remains updated and reads news related business and politics and is not tech-savvy. He also believes in helping people and doing charity for the upliftment of the society. Adding to that he likes to try new things in his profession and loves to remain on top, with taking care of the welfare of his employees as he believes manpower is one of the major pillars of company's.

Goals

- Easy discovery of news and updates
- News and update of politics and business domain
- Comment and share articles
- Save news for later reading

Pain points

He wants to remain updated every minute of what is happening in the market and needs a one-stop solution which is not possible with the newspaper as it updates you every 24-hour, and may or may not be accessible.

Behavior

Helping	
Fear	
Growth	
Social	

Brands & Influencers





News sources

Newspaper	
Online & Social Media	
From people	
banners and hoardings	

15

User Persona



Rahul Sharma

"It always seems impossible until it's done"

Age: 35
Work: Professor
Family: Married, kids
Location: Ahmedabad, Gujarat
Character: Archetype

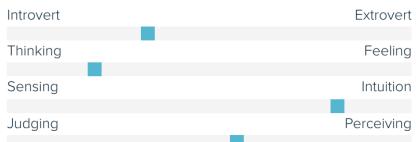
Behaviour

- Likes to have political discussions
- Likes to hit the gym
- Watches daily soap everyday
- Loves to drink tea
- Is allergic to nuts

Bio

Rahul Shah is a 35 year old professor who teaches 'human resource accounting' at a well known university in Delhi. His interests include having political conversations with his colleagues and students, watching daily soaps on television, frequently looks up news related to COVID-19 pandemic , loves tea, likes to hit the gym every day and is allergic to a certain species of nuts.

Personality



News source

Traditional newspapers

Television

Friends and family



Needs and goals

- Curious about politics
- Wants to know about vaccination
- Wants to know when the gyms will reopen

Frustrations

- Isn't accustomed to modern technology and has difficulty operating applications
- Hates to read long texts. Instead, he prefers to look at images and read headlines
- Dislikes getting stuck in Delhi traffic for hours as it wastes a lot of his time

NAME

Dhruv Mistry



Quote

"It is more important than ever to stay aware of what's happening around us."

Bio

Dhruv Mistry is a tech geek who loves reading and giving his opinion on the new things happening around. Every morning when he wakes up he enjoys a cup of coffee and along with it he surfs online to check the latest news as he is not fond of reading newspapers. He regularly checks the latest news section, technology and politics. If he sees any interesting news, he would send it to his friends via whatsapp. After reading the news for 20-30 mins, Dhruv would proceed to get ready for work. At work, during break time he likes to talk to his co-workers/friends about the latest trending stories that day and ask their opinion and thought about the story. In the evening after he gets back home he likes to catch up with the news and read sections that are more for leisure such as sports and entertainment. So he is always hunting for a single news app that can provide up-to-date news regularly with reliable sources.

Demographic

Male 27 years
Ahmedabad, Gujarat
Single
Android Developer

Personality

Extrovert - Introvert (Score: 70)
Thinking - Feeling (Score: 70)
Judging - Perceiving (Score: 70)
Sensing - Intuition (Score: 70)
Social - Ego (Score: 70)

Goals

- Stay aware of the latest news.
- Reliable news sources.
- Bookmark news for later reading.
- Comment and share blogs.
- Become more aware of topics and news outside of his radar.

Motivations

- Awareness about what's happening around us
- Self Growth
- Learning new things
- Social - Sharing personal thoughts
- Interests
- Remain Updated

Technology



Pain Points

- Biased news sources.
- Content overload.
- Constant negative news and events.
- Difficulty to find the news or content he wants to read.

Brands and influencers

BBC NEWS

Name

Shreya Chauhan



Quote

I am always curious to learn. The more I learn, the more I grow.

Personality

Shreya is a nine-year-old girl who lives in Ahmedabad. She is in grade 4 and goes to Mount Carmel School. Shreya is a very expressive girl and likes to listen to podcasts and informational news. She is a curious and inquisitive child for her age. She likes to boast around her friends of her knowledge in current happenings around along with rich vocabulary. She has a very competitive nature. Shreya likes to watch videos and learn from them.

Demographic

Female 9 years
Ahmedabad

Goals

- Learn new things every day.
- To stay informed about the events happening around the world.
- Learning new English words as well as new languages.

Skills

Imagination: 70

Curiosity: 70

Creative: 70

Motivations

- Read aloud text
- Less content reading and gives a summary in a nutshell.
- Curated information
- Gets to learn new words and their meanings.

Frustrations

- Complicated language in applications.
- Information presented in a haphazard manner.
- Reading long paragraphs to extract a bit of information

Technology



Scenario and Use case Description

1. Scenario Description

M.k Shah wants to find the latest news on a specific topic and he does not have time to access the newspaper and search in it as he has a meeting lined up, and also the latest news will be in tomorrow's paper. So he installs a "Raven" app on his mobile which is a news application that has news sorted by various categories. He has signed up for notifications and he will be alerted when any latest news comes up. As a result, Mr. Shah can now continue his life with a little bit less stress as he doesn't have to open the app continuously for the latest news. Also, he can save the news offline so that he can read the news without the internet as well.

Use Case Description

1. The user opens the Raven app.
2. The system launches the default home screen of the app.
3. The user wants to get updates on recent market crashes.
4. The user clicks on the blog button on the home screen.
5. The system displays the blog screen.
6. The user searches for the market crash in the search bar.
7. The system shows the result related to the search.
8. The user selects the most appropriate blog, but is unable to read and wants to increase the font.
9. The system provides an increase in the font size in the setting.
10. The user updates the font size and presses the back option.
11. The user gets the desired information.

➤ Alternative

6. If the information is not found in the search bar.
 - 6.1 The system shows a message "No results found".
 - 6.2 The app returns to step 5.
8. If the user wants to listen to the news, instead of reading.
 - 8.1 The read-aloud feature is used in the setting.

2. Scenario Description

Rahul has been stuck inside his home for several months now due to the COVID-19 pandemic. He's been anxious due to his remote style workload and wants to go on a vacation where he can blow off some of his steam. But he's too scared to step out of his home. He frequently watches television to get updates on the recent vaccination drive started by the Indian government which seldomly messes up his schedule for his daily soaps. Rahul decides to install an application called 'Raven' on his phone. It is a news application that has a dedicated section for COVID-19. He has signed up for notifications and he will be alerted when his chance for vaccinations comes up. As a result, Rahul can now continue his life with a little bit less stress.

Use Case Description

A use case for looking up news regarding the latest vaccine drive for COVID-19 that has been set up by the local government authorities might be:

1. The user launches the application
2. The system launches the default homepage of the application
3. The user opens the categories drawer in the application
4. The system launches the categories drawer in the application
5. The user selects the COVID-19 option
6. The system loads up all the relevant news of COVID-19
7. Inside this, the user opens the vaccination subsection
8. The system loads up the vaccination subsection

3. Scenario Description

Dhruv Mistry is an android developer who remains very busy due to his packed schedule and that's why he doesn't get time to read newspapers. His colleagues discuss the latest trends, politics, technology every day during the lunch break but since he does not read the news, he is unable to take part in the discussions. So, he installed the 'Raven' app on his phone. In that app, he can see directly the trending news on the main screen. He can also read news related to specific categories. In short, he can explore the latest news every day. He also uses the bookmark feature of the app extensively to read the news later when he is free. He also shares news to his WhatsApp group which he finds interesting. As a result, he can also take part in discussions with his colleagues during lunch break because every day he can spare 15-20 mins to go through the news in the Raven app while commuting to his work on the bus.

Use Case Description

1. The user opens the Raven app.
2. The system launches the default home screen of the app.
3. The system shows options like all, trending, bookmarks, videos etc in the top menu.
4. The system shows all the news available on the home screen.
5. The user reads the whole news by clicking on its title.
6. The user bookmarks the news and also share it with friends.
7. The user returns back to the home page.
8. The user selects bookmarks on the top menu.
9. The system displays all the news which are bookmarked.
10. The user can share or delete news from the bookmark.
11. The user clicks on the search icon.
12. The system displays categories from which users can select directly.
13. The user searches for news or selects any of the listed categories.
14. The system shows all the news that satisfies the searched topic/category.

➤ *Alternative courses*

7. If no news are bookmarked.
 - 7.1 It will display the message "No bookmarks".
12. If the search topic did not satisfy any news.
 - 12.1 The system shows the error "No results found".
 - 12.2 The system returns to step 10.

4. Scenario Description

Shreya is a fourth-grade girl who is a student at Mount Carmel School. Her school is going to conduct a competition after a week in which she wants to participate in. The quiz is about general knowledge of the current affairs in her country. Because of her competitive nature, she is very enthusiastic and keen to win the quiz. She logs in to the Raven app for kids and learns the curated news for her. She searched articles by country and prepared for the quiz. The summary of the news gave her a brief insight about the news and due to this she could gather more information in less time. The easy to access dictionary helped her in understanding the article thoroughly. Finally, she won the quiz! Shreya now reads the news daily, learns new words and stays updated.

Use Case Description

1. The user chooses a grade for the available option.
2. The user clicks on the “Quote for the day” at the bottom of the screen to enlarge the quote.
3. The system redirects the user to the news feed of the respective grade level.
4. The user scrolls down for news curated for them.
5. The user chooses their choice of topic from the tab above.
6. The user searches for news articles according to the topic and date.
7. The user selects the news which he/she wants to read
8. The user clicks on the audio button to hear the news aloud.
9. The user clicks on a video to watch some information about the news.
10. The user hovers over the highlighted words to learn their meanings.

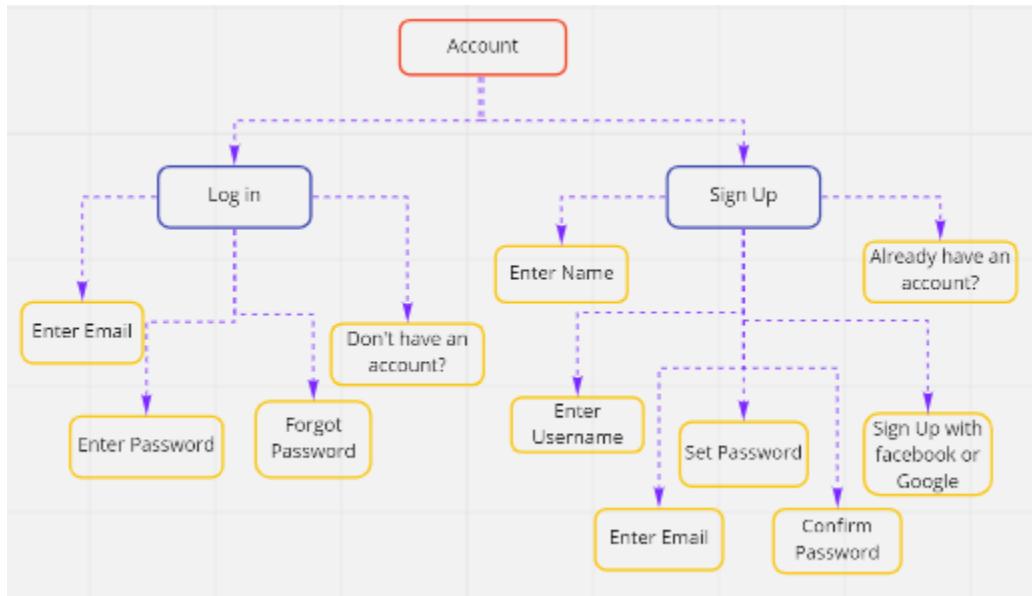
➤ Alternatives

7. If no article is available for the selected date
 - 7.1 The system displays articles of dates past and prior to the selected one.

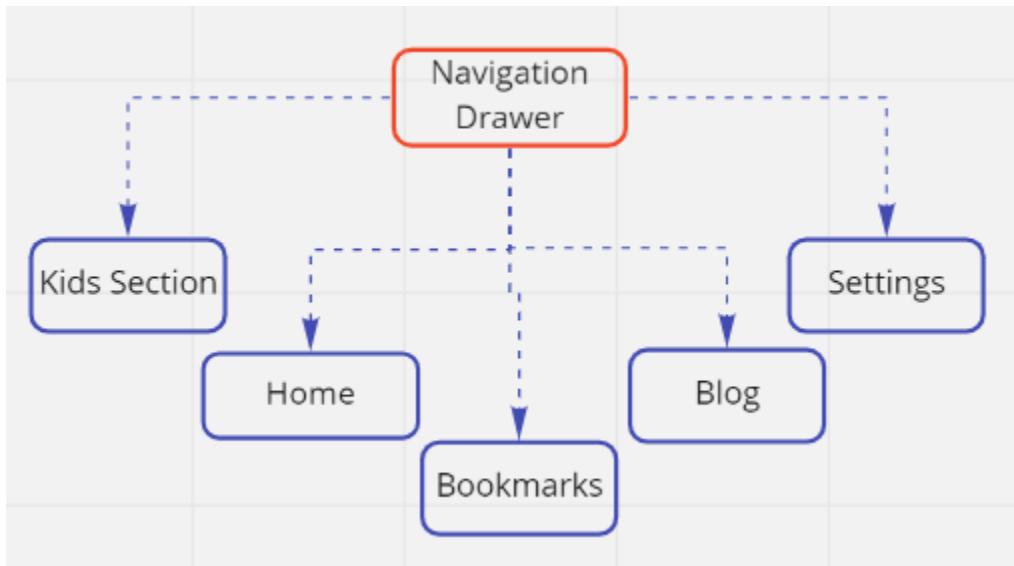
Project features

Required diagrams(Hierarchical Task Analysis)

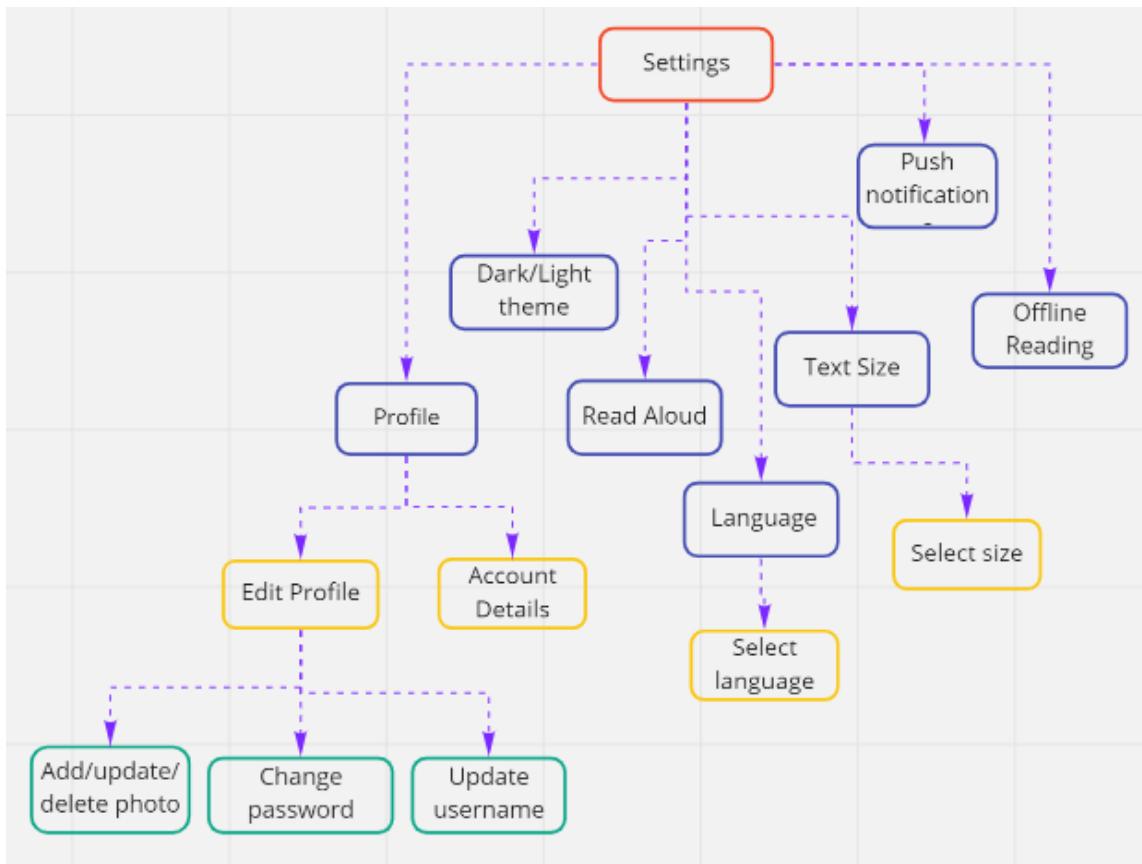
Log In / Sign Up



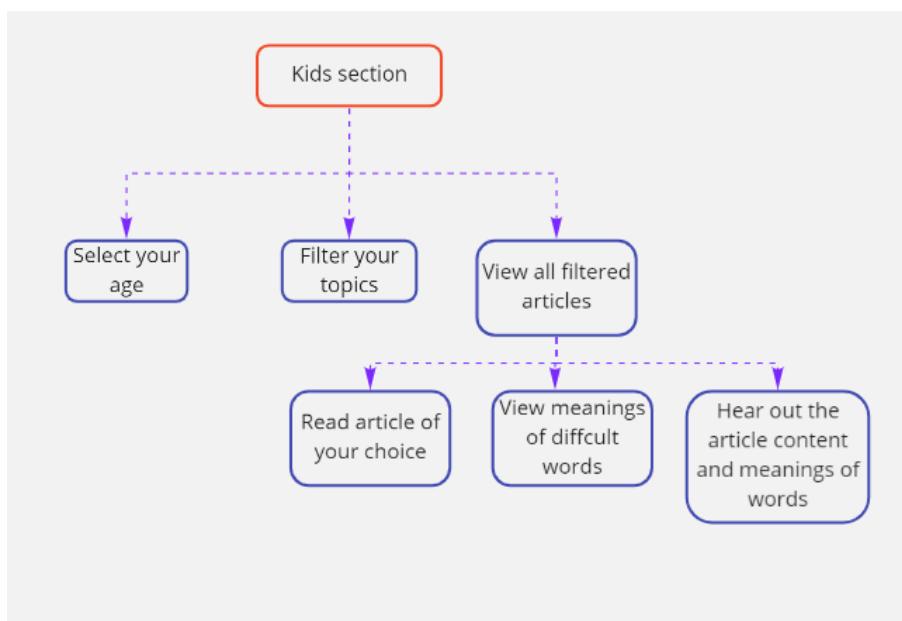
Navigation Drawer



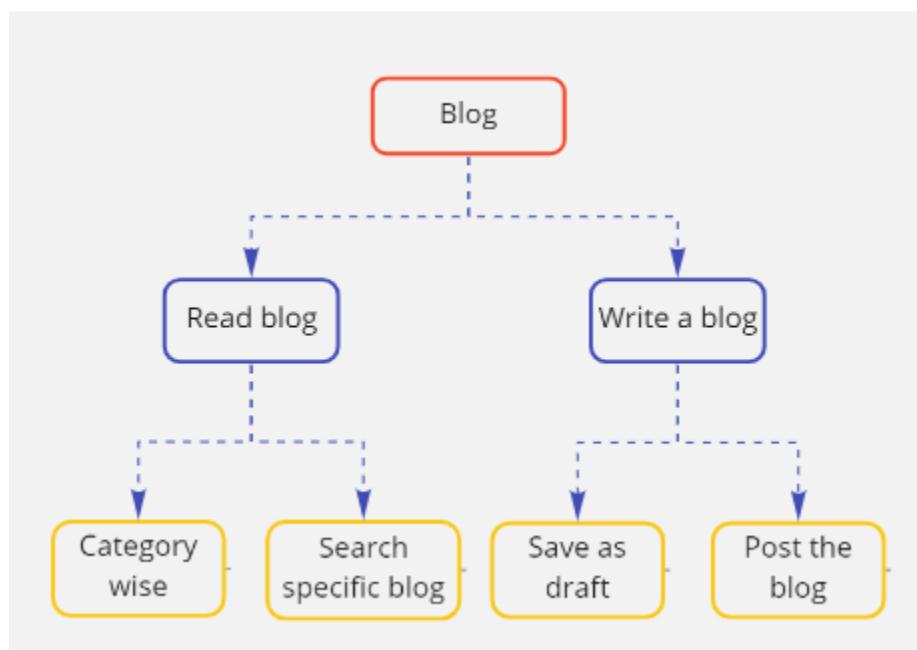
Settings



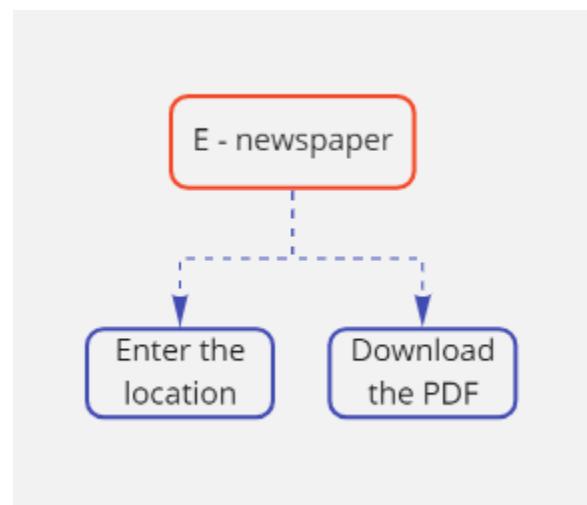
Kids Section



Blog Section



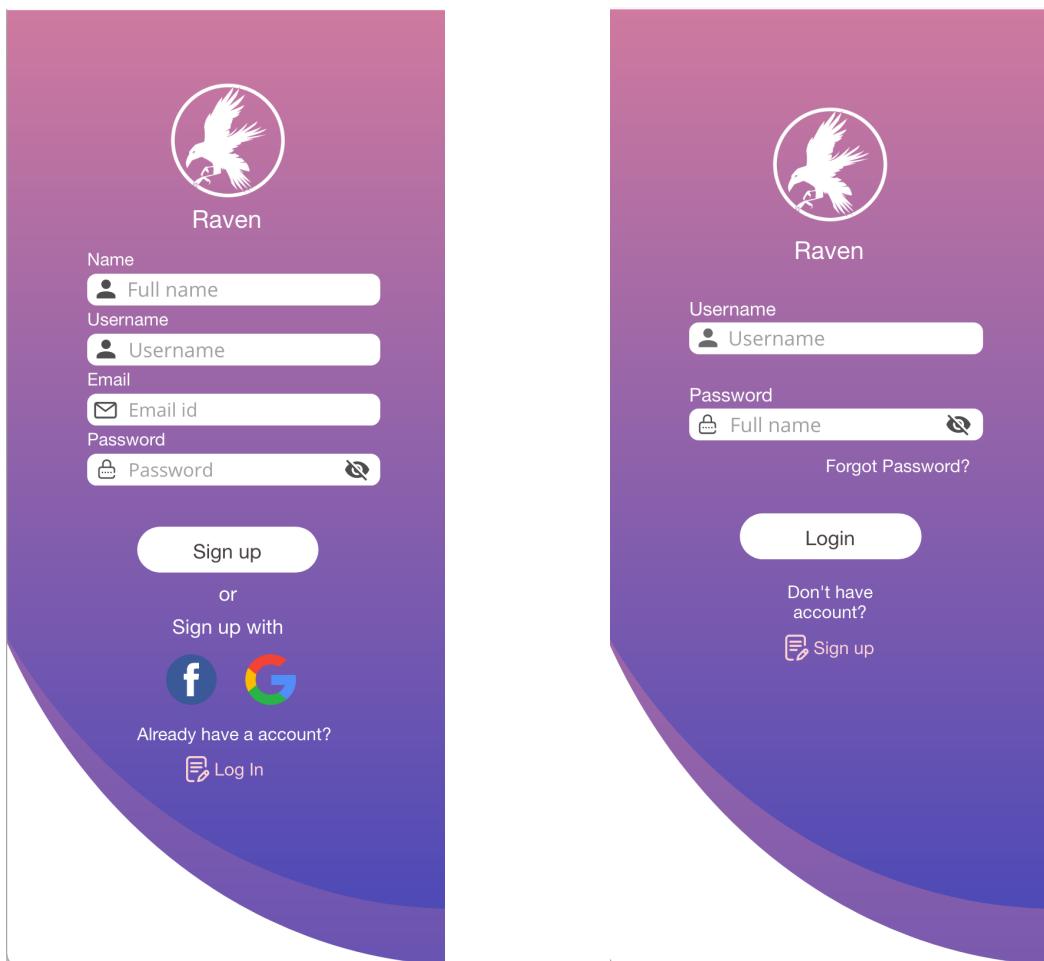
E-newspaper Section

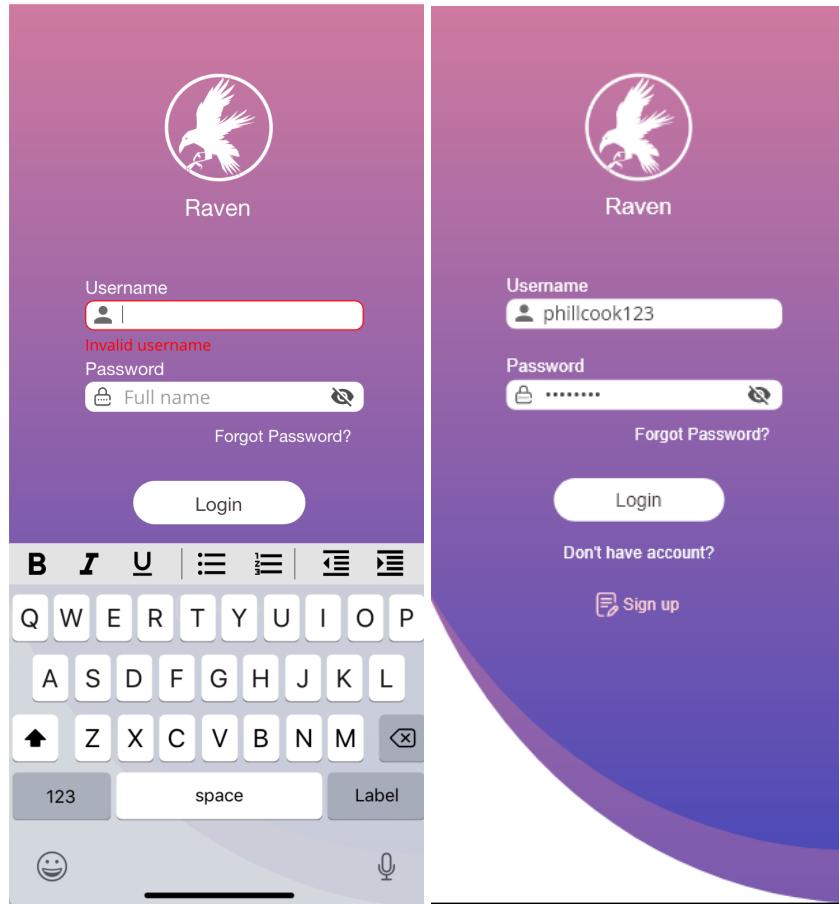


Details of all the features and screen photos

1. Name of the feature: User login/Signup

Photo of the implementation:





List of Design/Universal Usability (UU) principles:

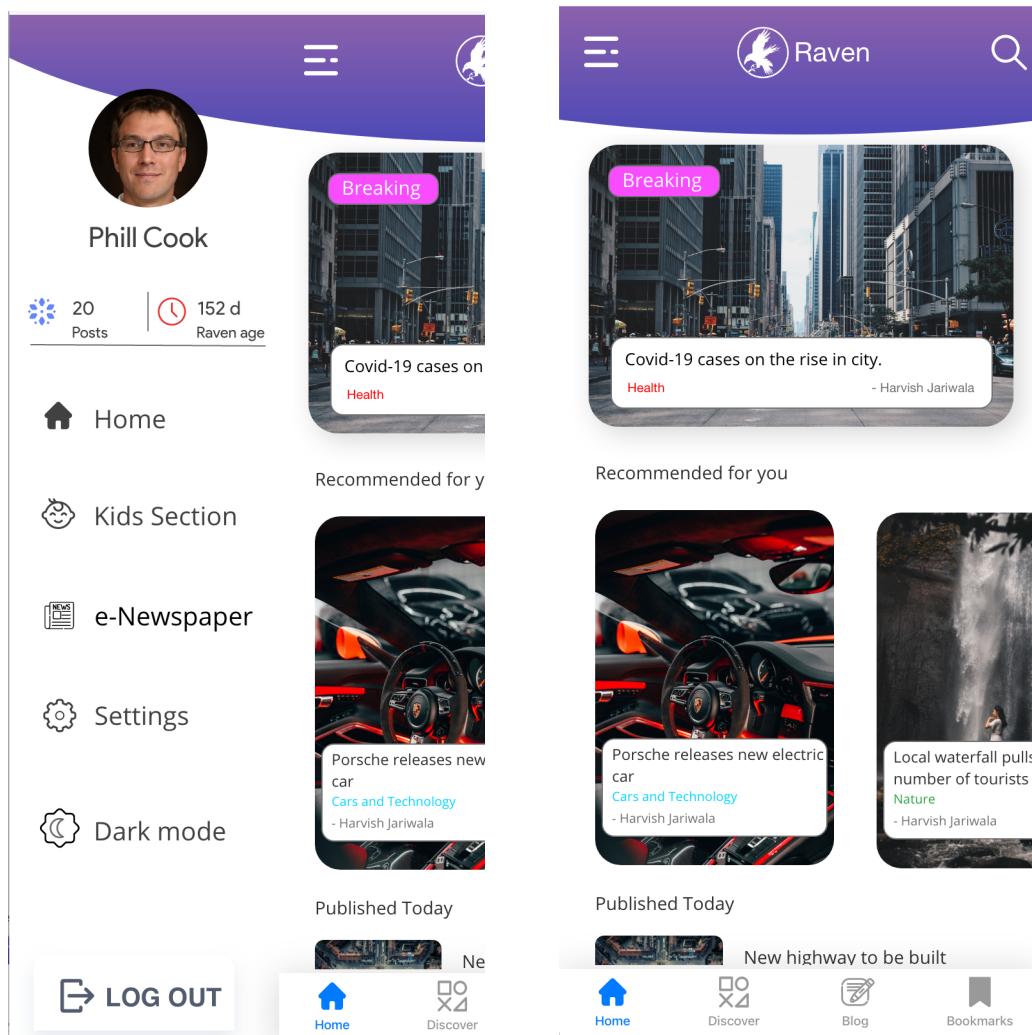
- In sign-up feature it asks you to confirm your password by re-entering it so that the person does not make errors in writing the password, thus showing the principle of **Prevent Errors and Constraints**.
- The login feature has a forgot password option, so in case we forget the password it permits us to reset it. This **permits easy retrieval/reversal of the action**.
- **Affordance** is seen in both login and signup as there is an eye icon without any description which is used to see the typed password. And also password and email icons.
- **Personality differences(UU)** are taken care of as one may or may not trust a third party software(facebook or google) for authentication.
- One may or may not remember the email id, so we can use third party authentication which directly fills the necessary details and thus **Reduces the short term memory load**.

Interaction styles used: Form Fill-in

- In this interaction style, The user has to fill the form Including name, Email, Password

2. Name of the feature: Providing access to various sections of the application via the Home page and app drawer.

Photo of the implementation



List of Design/Universal Usability(UU) principles

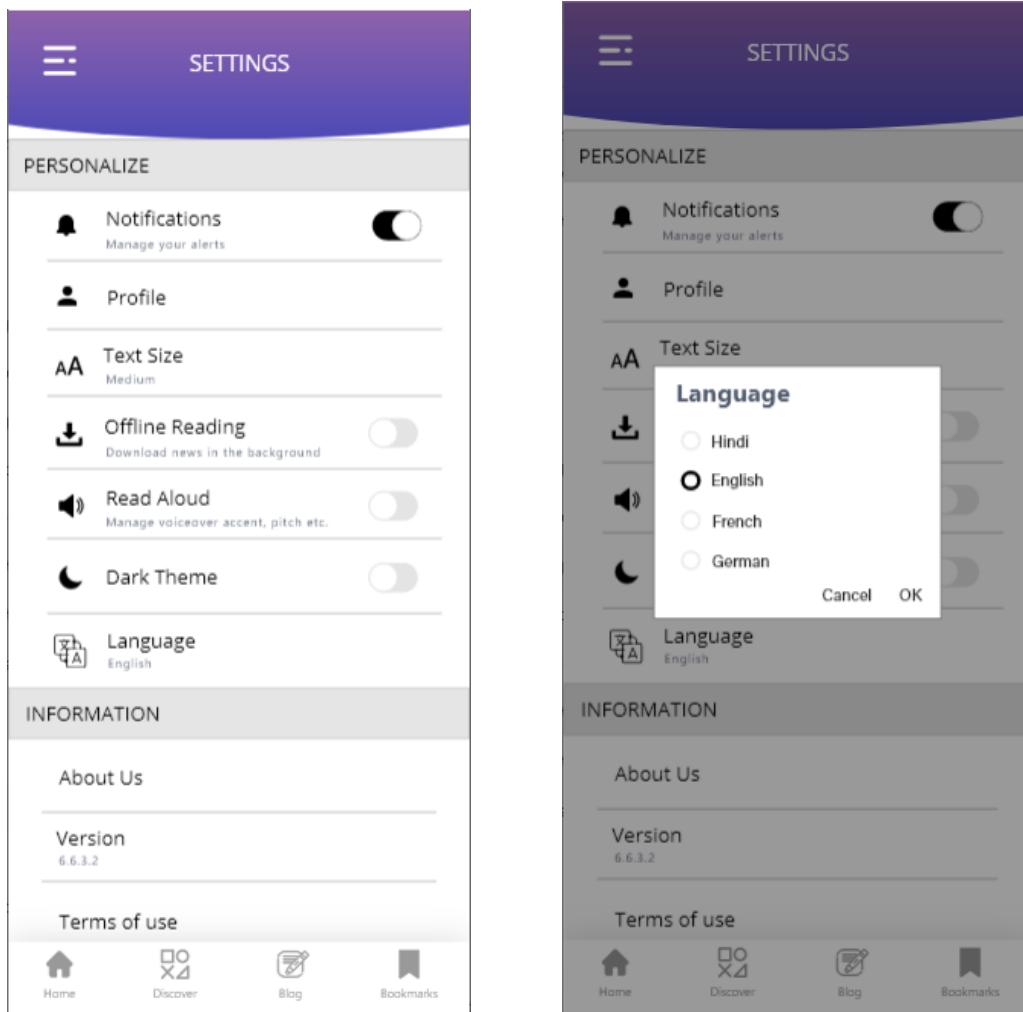
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc. Also, the size of the buttons and the images of the post are the same(consistent).
- **Visibility:** All the functions of the app are seen on the home screen.
- **Affordance** This is a design principle that takes care of the understanding of users based on objects. Here, the icons in the settings clearly indicate the meaning of the feature and what action it will do when we click on it.
- Feedback of how many posts we have posted and the number of days we have used the app is provided, thus satisfying the principle of **Offering informative feedback**.
- **Support Internal Locus of Control** principle is satisfied, the user feels that they are incharge of the interface and it responds to their action as they can navigate through the whole app and read the news category wise.
- **Diverse Cognitive and Perceptual Abilities** is taken into consideration as while designing all the below points are taken care of:
 - Short-term and Working Memory
 - Long-term and semantic memory
 - Problem Solving and reasoning
 - Decision Making
 - Language Communication and Comprehension
 - Search imagery and sensory memory
 - Learning
 - Fatigue and Sleep Deprivation

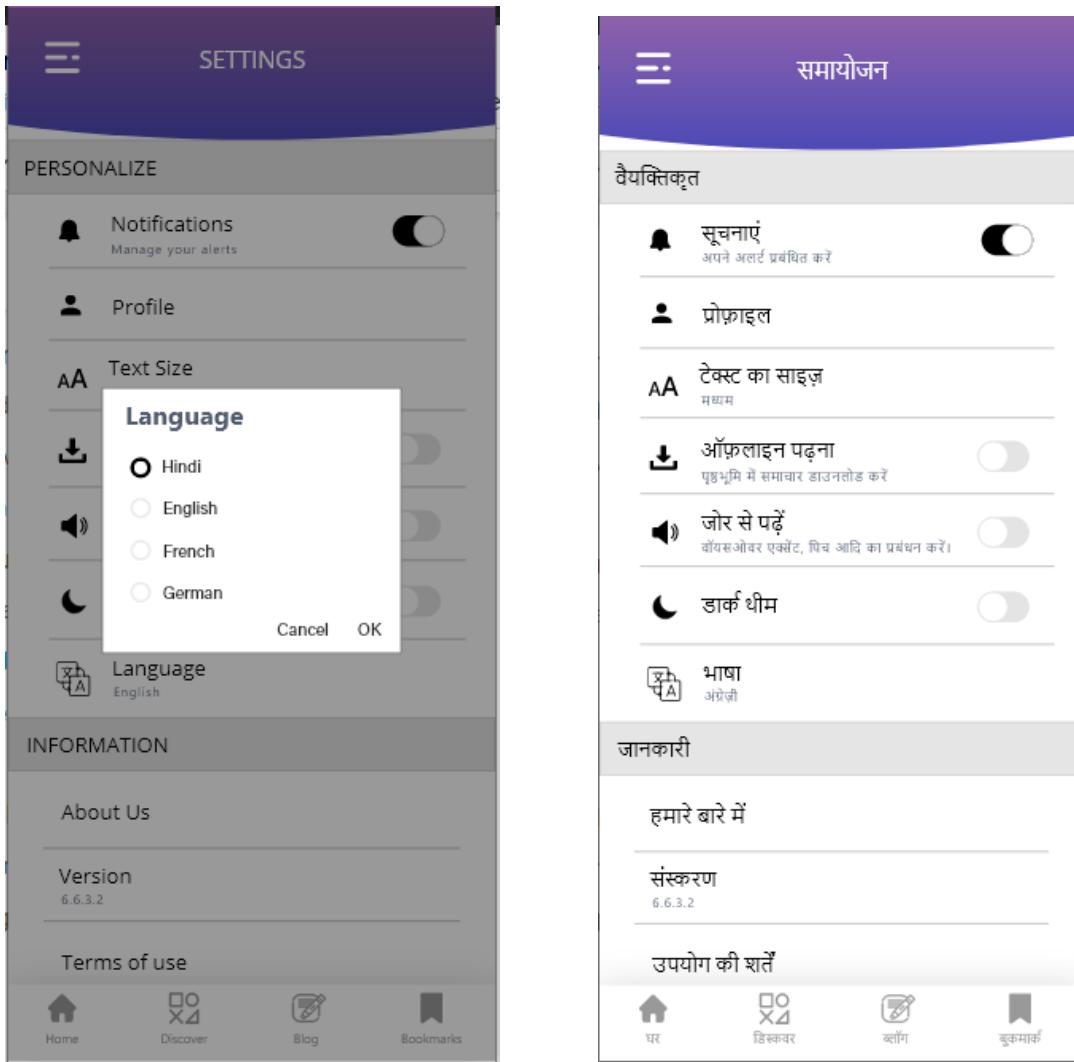
Interaction styles used

- **Menu Selection:** There is an app drawer to navigate through the application's various pages like kids, blog, settings, bookmarks etc.

3. Name of the feature: Change language of App from Settings

Photo of the implementation:





List of Design/Universal usability(UU) principles:

- **Cultural and International Diversity:** Here, in settings we can change the language of all the text of the app so one can read the news and navigate in the app in the language which he/she is comfortable with and doesn't have to struggle in using the app or understanding other languages.
- **Strive for Consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger (profile and other app categories), search button, etc. Also, the same type of menu pop's up in every feature. Also, consistency is maintained in designing the setting screen as it is arranged properly and also radio buttons are used to select options and proper spacing is maintained.

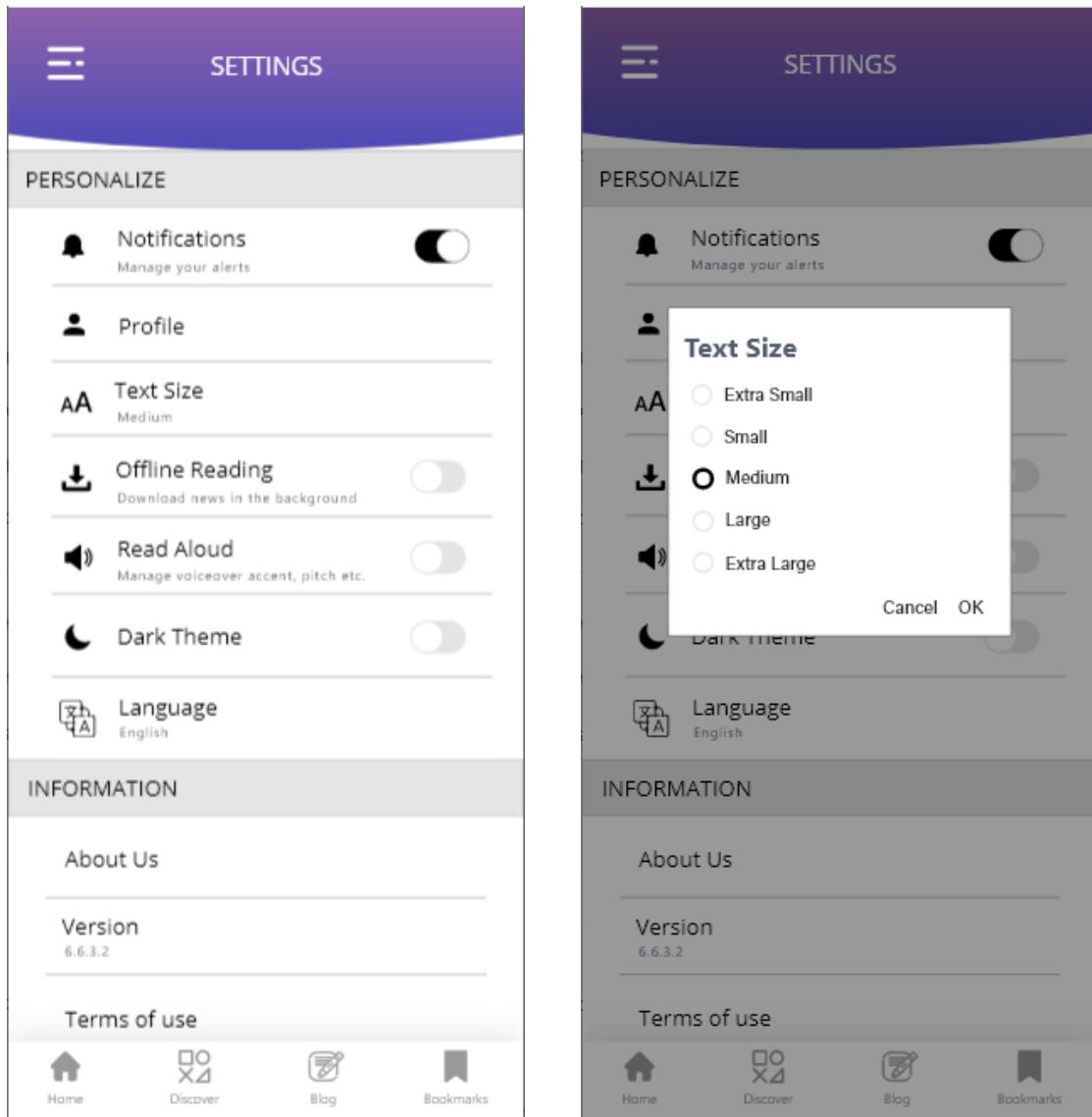
- **Prevent Errors and Constraints:** Here, we have used radio buttons to select any one of the given options so no-one can select more than one option as it is difficult to apply both options and error occurs. So, to prevent such errors radio buttons are used so one change is applied at a time.
- **Affordance:** This is a design principle that takes care of the understanding of users based on objects. Here, the icons in the settings clearly indicate the meaning of the feature and what action it will do when we click on it.

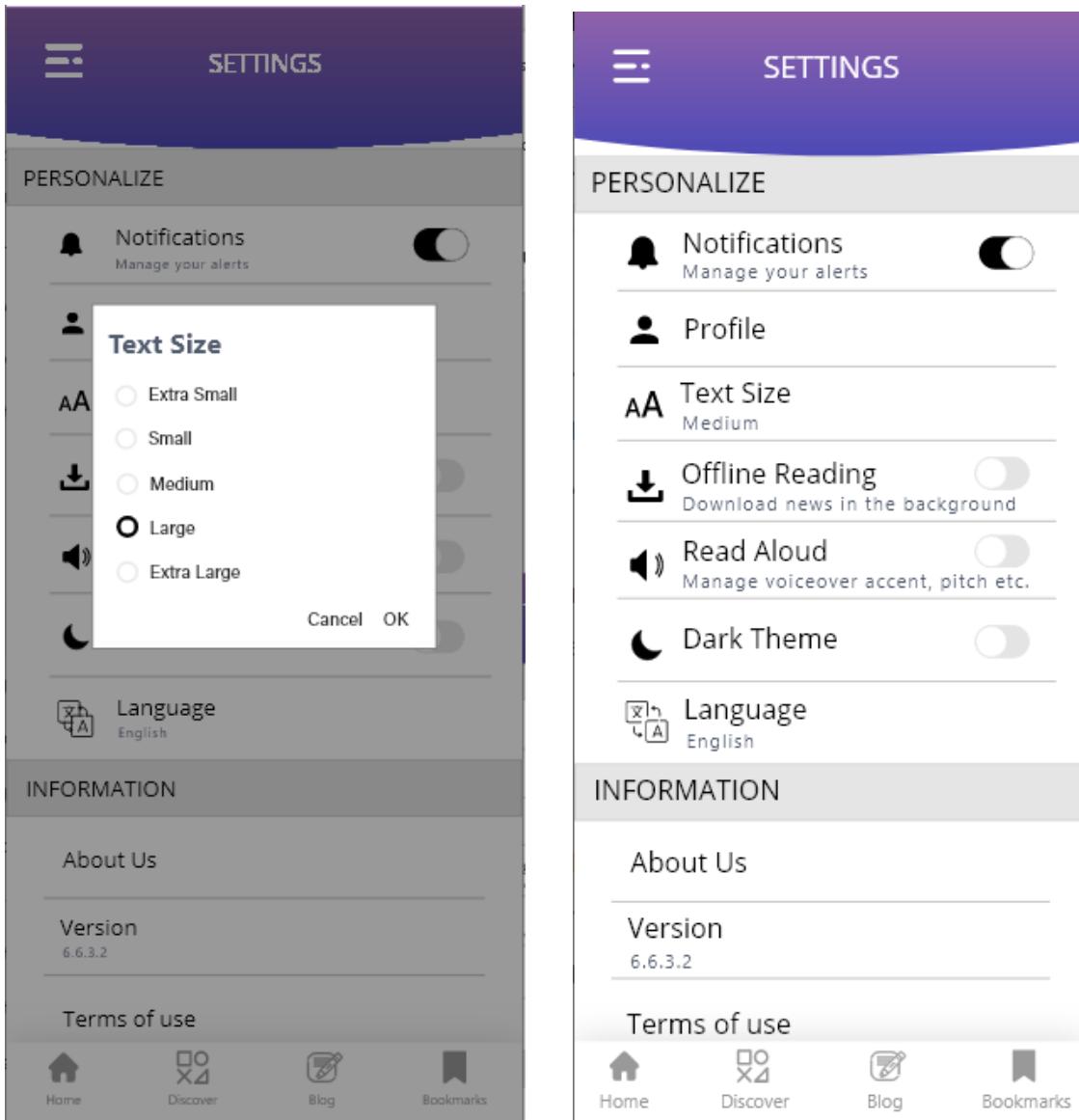
Interaction styles used

- **Menu Selection:** It is a structure for decision making as all possible choices are present at one time. In settings, the user can read the list of all languages available, select the appropriate language, observe the effect of the action on the app.

4. Feature name: Change Text Size of App from Settings

Photo of the implementation





List of Design/Universal usability(UU) principles:

- **Older Adults:** Most of the older adults have spectacles so they are not able to see small fonts of the news. So with the feature of changing text size, we can change the size of all the texts in the app so they can easily read the news in whatever size they are comfortable with and don't have to give stress to their eyes.
- **Strive for Consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger (profile and other app categories), search button, etc. Also, the same type of menu pop's

up in every feature. Also, consistency is maintained in designing the setting screen as it is arranged properly and also radio buttons are used to select options and proper spacing is maintained.

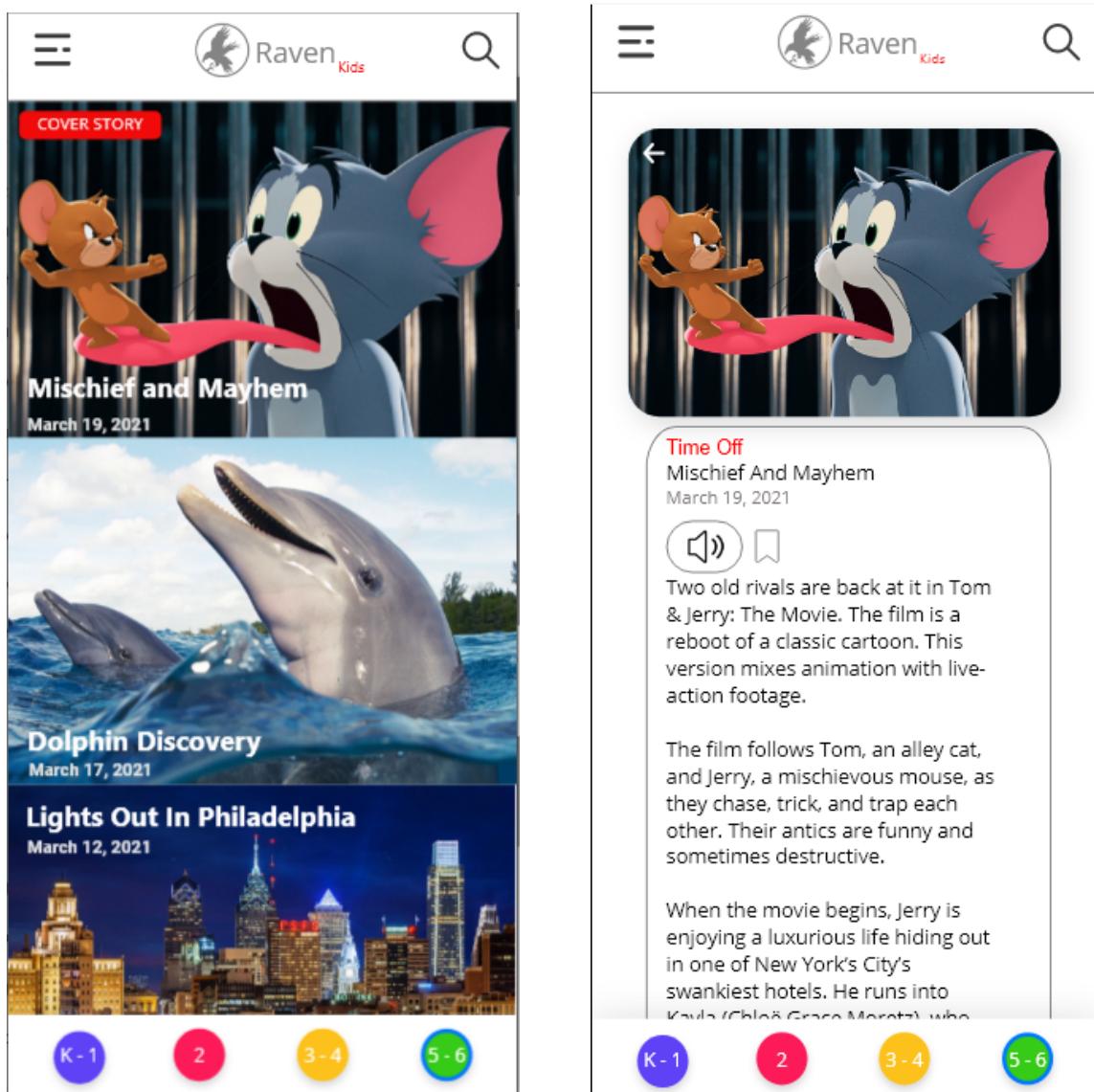
- **Prevent Errors and Constraints:** Here, we have used radio buttons to select any one of the given options so no-one can select more than one option as it is difficult to apply both options and error occurs. So, to prevent such errors radio buttons are used so one change is applied at a time.
- **Affordance:** This is a design principle that takes care of the understanding of users based on objects. Here, the icons in the settings clearly indicate the meaning of the feature and what action it will do when we click on it.

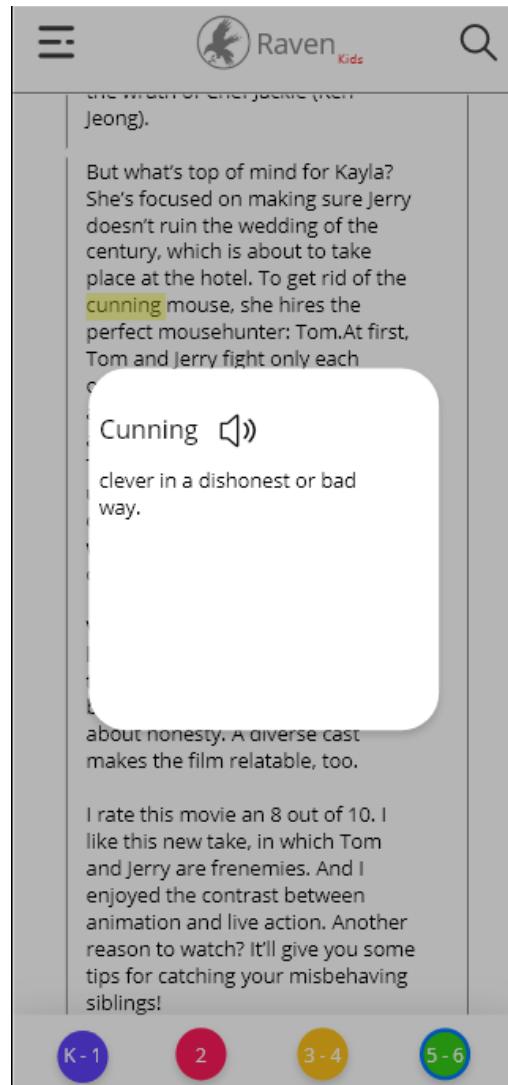
Interaction styles used:

- **Menu Selection:** It is a structure for decision making as all possible choices are present at one time. In settings, the user can read the list of all languages available, select the appropriate language, observe the effect of the action on the app.

- 5. Feature name:** To provide meanings of highlighted words while by clicking them in Kids Section

Photo of the implementation:





List of Design/Universal usability(UU) principles:

- **Offers Informative Feedback:** Children usually want to learn new words or their parents motivate them to get familiar with new words. The basic way of doing so is a lot of reading and meanwhile, when kids come across new words they might want to know their respective meaning. By using this principle kids are offered informative feedback in the form of meaning to words highlighted.
- **Children:** This is a universal usability principle. Most kids don't read news and if they wish to read not all are filtered for them according to their age. Hence, this section of the app provides filtered news to kids according to their age. The language is also taken care of.

- **Affordance** - This is a design principle that takes care of the understanding of users based on objects. By highlighting the word, the user gets to know about something which is to be tapped and information is gained.
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc.

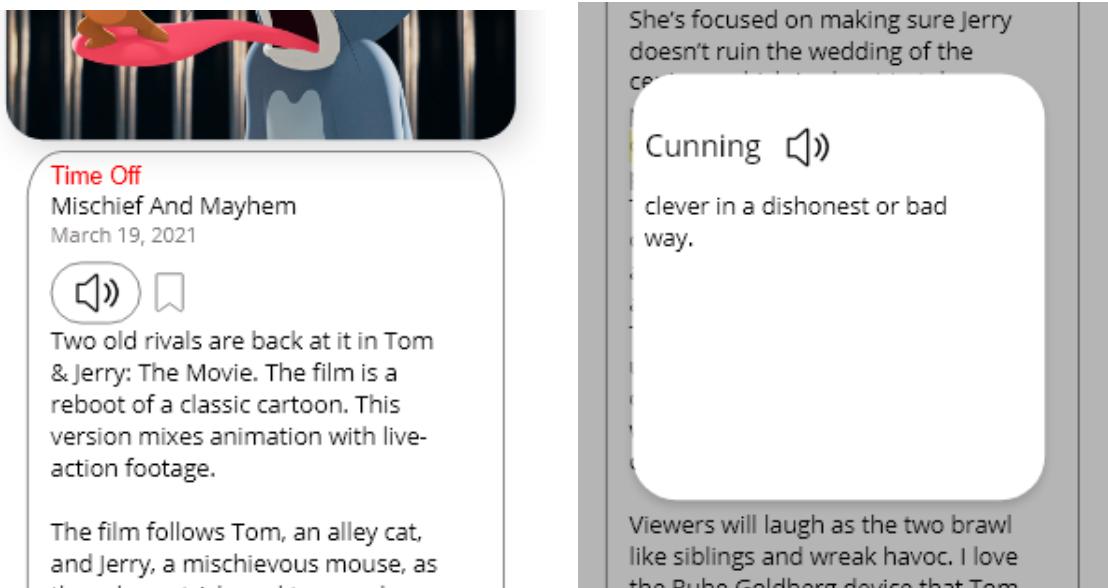
Interaction styles used:

- **Direct Manipulation:** This interaction style provides a visual representation. In the kid's section visual representation plays an important role to attract kids for reading.

6. Feature name: To read aloud news in the kid's section

Photo of the implementation:

(To listen to audio click on images)



List of Design/Universal usability(UU) principles:

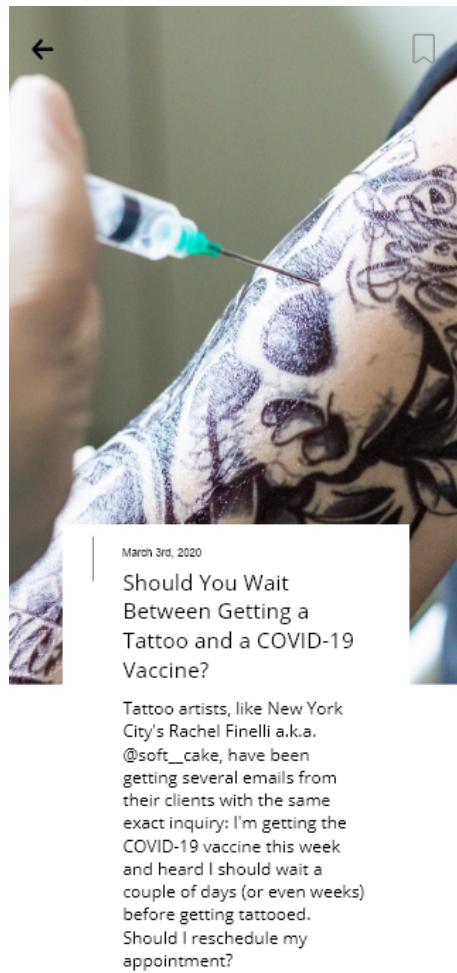
- **Users with Disabilities:** This is a Universal Usability principle where user UX is designed in such a way that all kinds of users can benefit from it. In this feature, we take care of kids with visual disabilities. They can read aloud the news and gain information regarding the same.
- **Children:** This is a universal usability principle. Most kids don't read news and if they wish to read not all are filtered for them according to their age. Hence, this section of the app provides filtered news to kids according to their age. The language is also taken care of.
- **Affordance:** This is a design principle that takes care of the understanding of users based on objects. By keeping the speaker symbol the users get to know about the read aloud feature of the application.
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc.

Interaction styles used:

- **Direct Manipulation:** This interaction style provides a visual representation. In the kid's section visual representation plays an important role to attract kids for reading.

7. Name of the feature: Read the blog

Photo of the implementation:



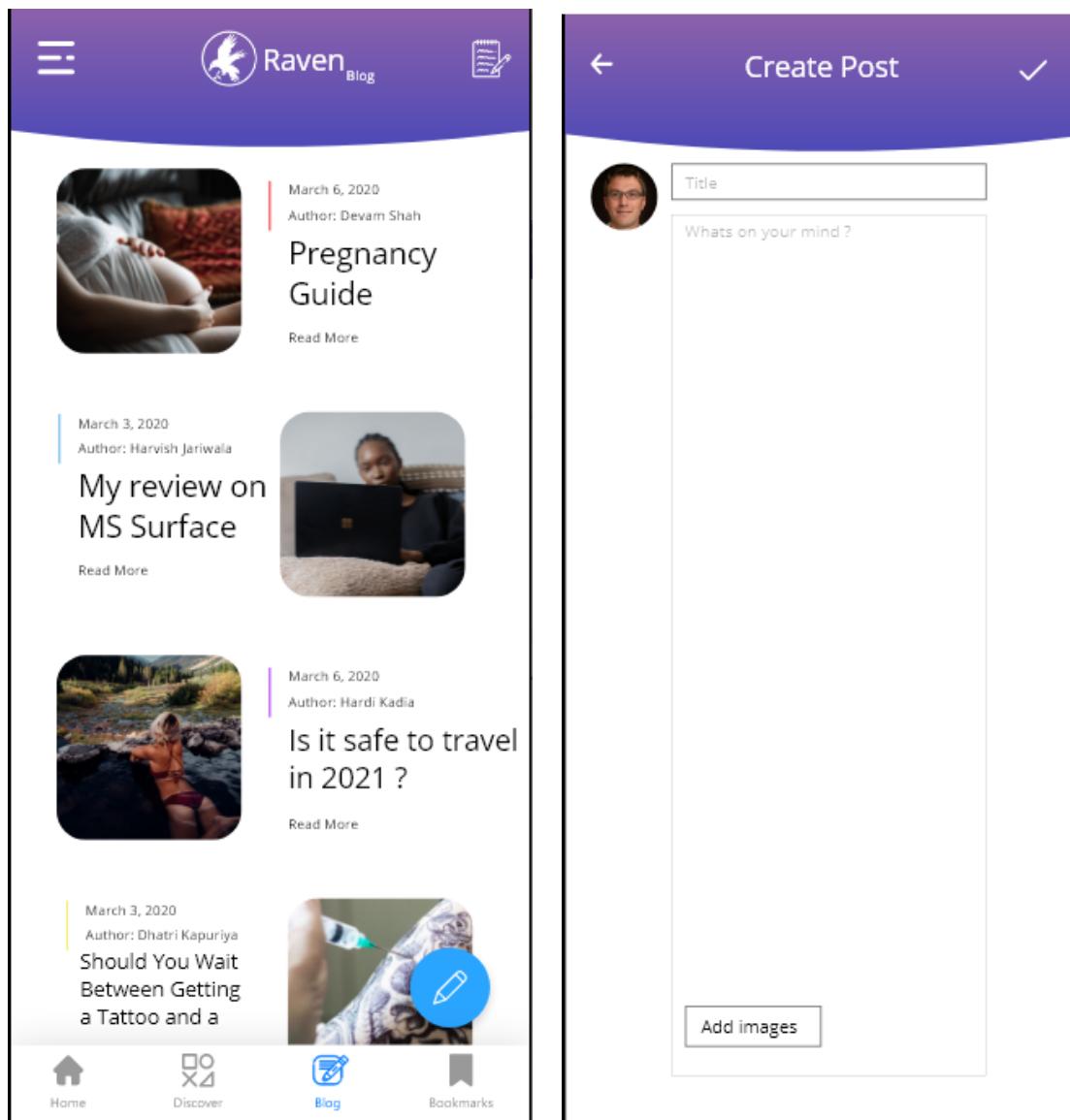
List of Design/universal usability (UU) principles:

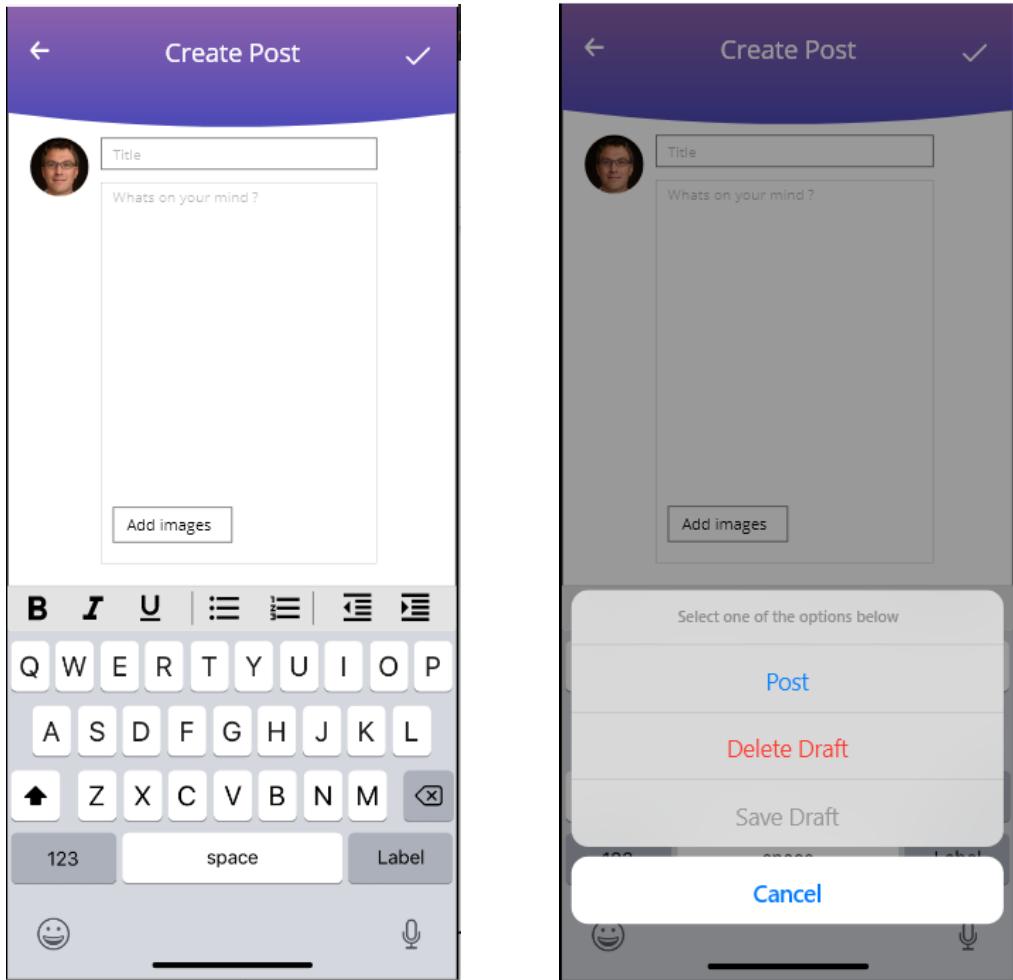
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc.
- **Affordance** is clearly seen at many places such as the search icon of the navigation bar which has a magnification lens picture and no written content but it conveys its function, similarly for the app drawer on the top left corner with three lines.

- **Design Dialogues to yield closure** is observed as all the brief posts have a specific flow of Title ---> Image ---> Description ---> Comments. Thus grouping them in beginning, middle, and end.
- Reading blogs gives an overview of the topic and helps different personality types like perceptive and judging to derive inferences on the topic. Thus showing the use of **Personality Differences(UU)**

8. Feature name: Write your own blog

Photo of the implementation:





List of Design/Universal usability(UU) principles:

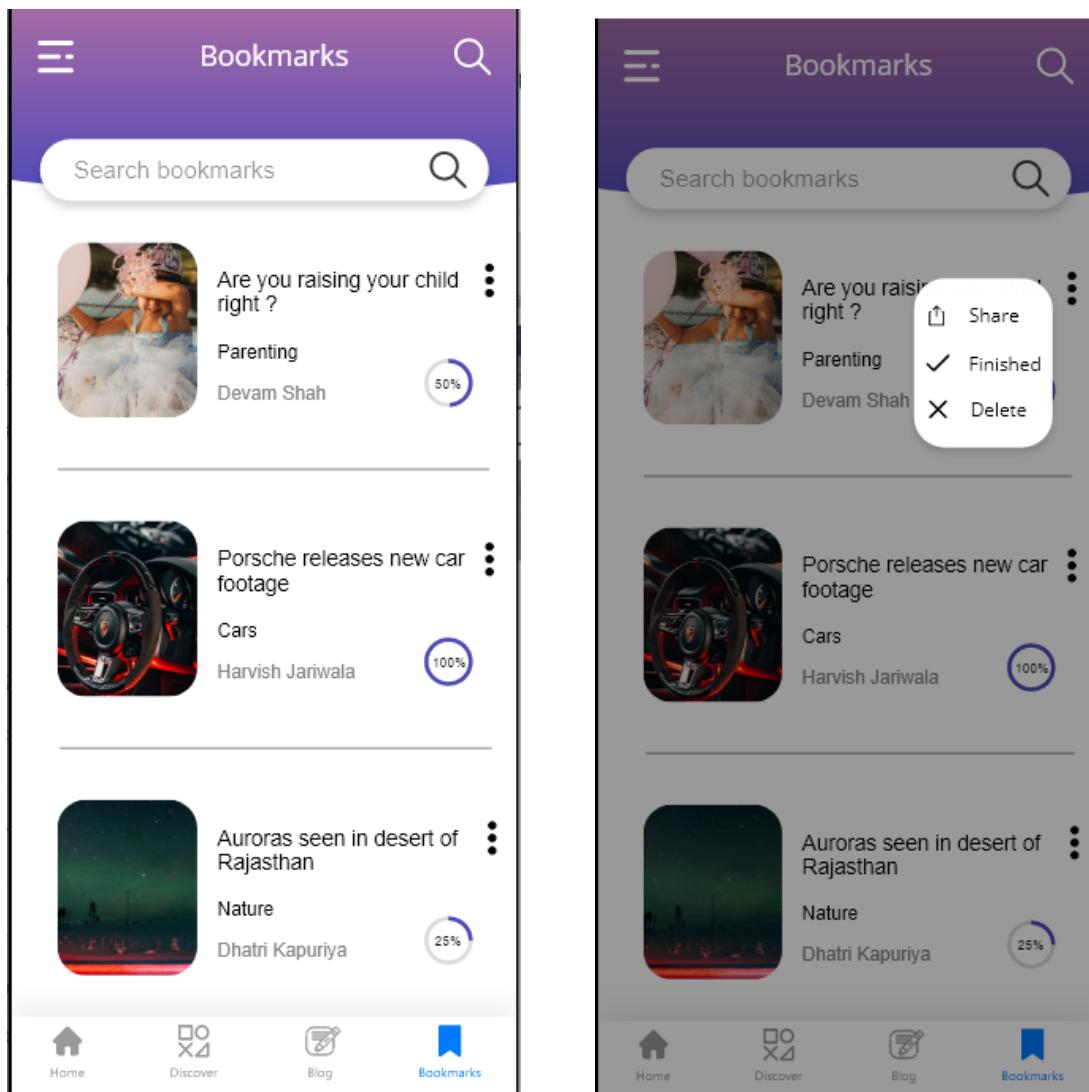
- **Permit easy reversal of actions** can be seen when one can delete our post after posting it, so if there is any mistake we can easily reverse it.
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc.
- **Personality differences(UU)** are taken care of as extroverted people who want to express their views on a certain topic can write their own blog and publish it.

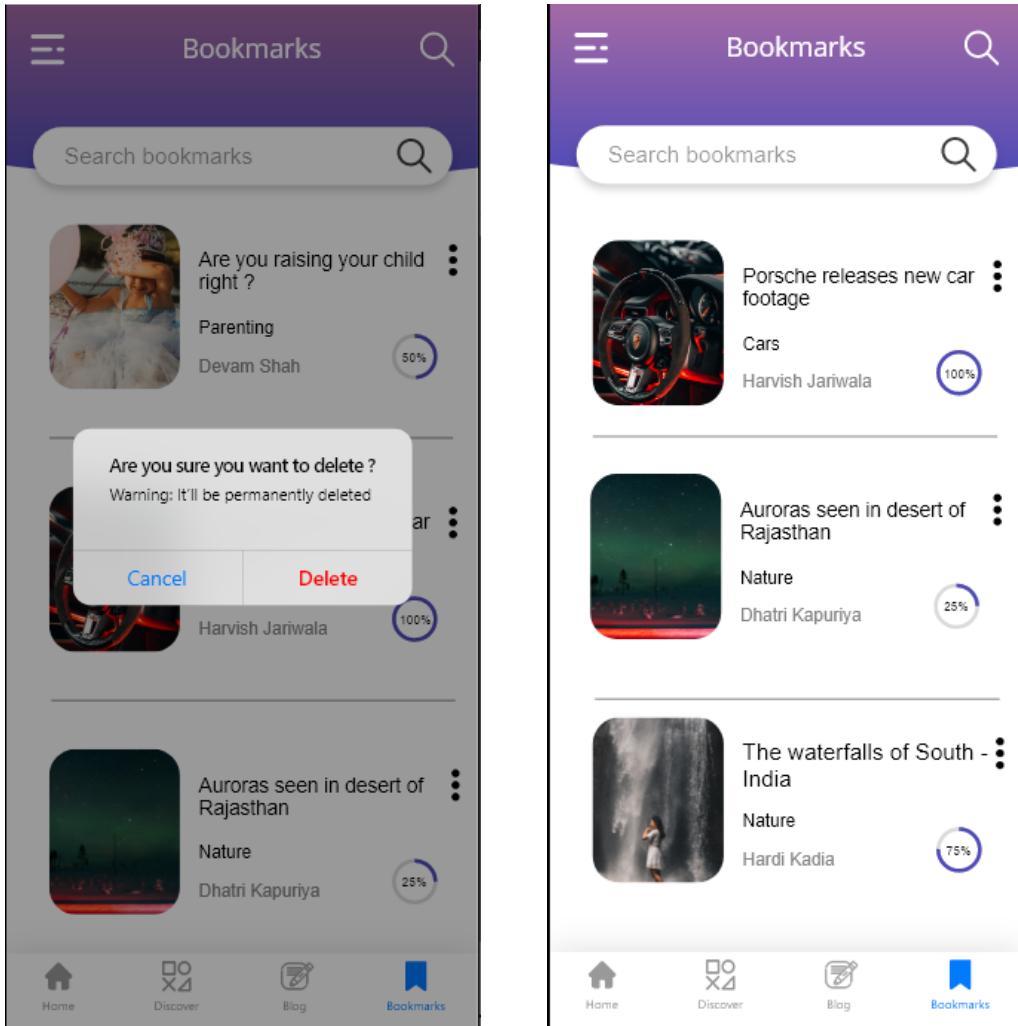
Interaction styles used: Form fill

- Form fill interaction is used as there is a specific area defined for fields like image, title, description.

9. Name of the feature: Bookmark

Photo of the implementation:





List of Design/Universal Usability (UU) principles:

- In the bookmark feature, if you have added a post or bookmarked a post by mistake, you can easily remove it. So this **permits the easy reversal of actions**.
- If you click on the delete/remove bookmark option it will ask you to confirm your choice by clicking it on confirm or cancel it. Thus showing the principle of **preventing error and constraints**.
- **Affordance** is seen in this section as there are icons on the left side of every post for share(the box with an arrow icon) and remove(the cross icon).

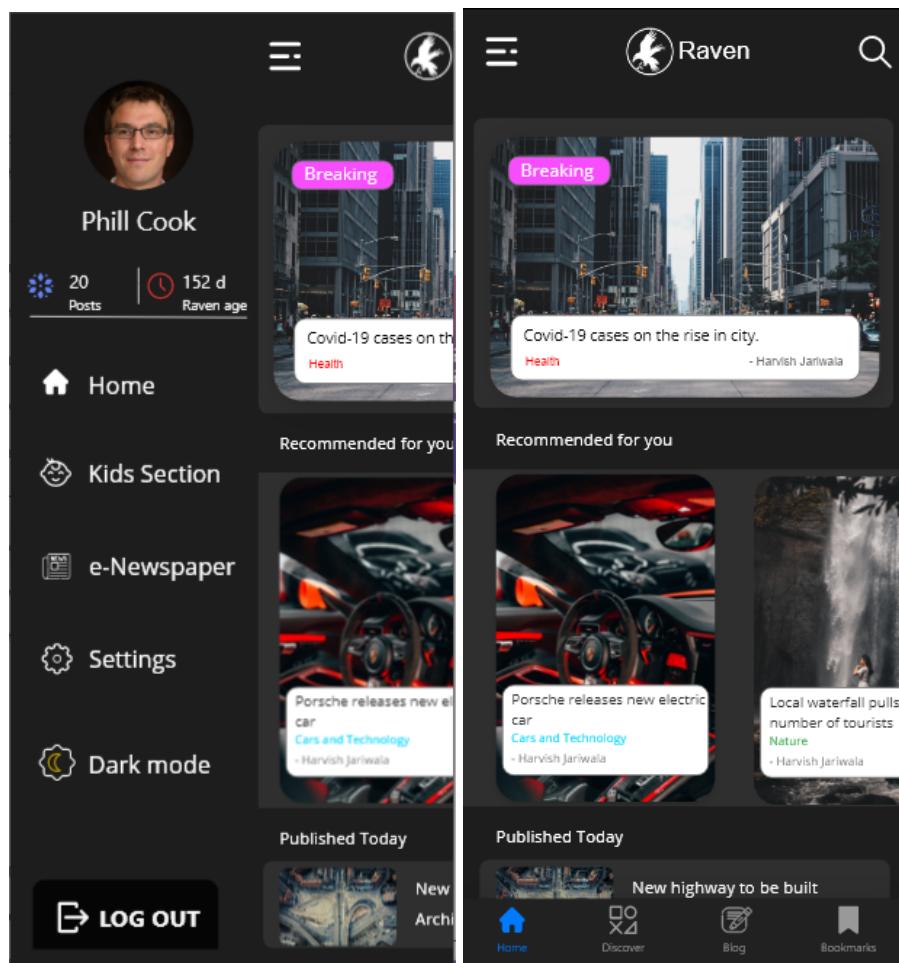
- The percentage written at the bottom of every post tells you the portion of the post you have read. Thus showing the principle of **offering informative feedback**.
- People can bookmark posts so as to refer to them later and do not need to search for them by remembering the name and time of the post. This **reduces the short term memory load**.

Interaction styles used: Direct manipulation

- It is direct manipulation because one can add, remove it. Meaning that we can directly manipulate the action on the post.

10. Name of the feature: Dark mode

Photo of the implementation:



List of Design/Universal Usability(UU) principles:

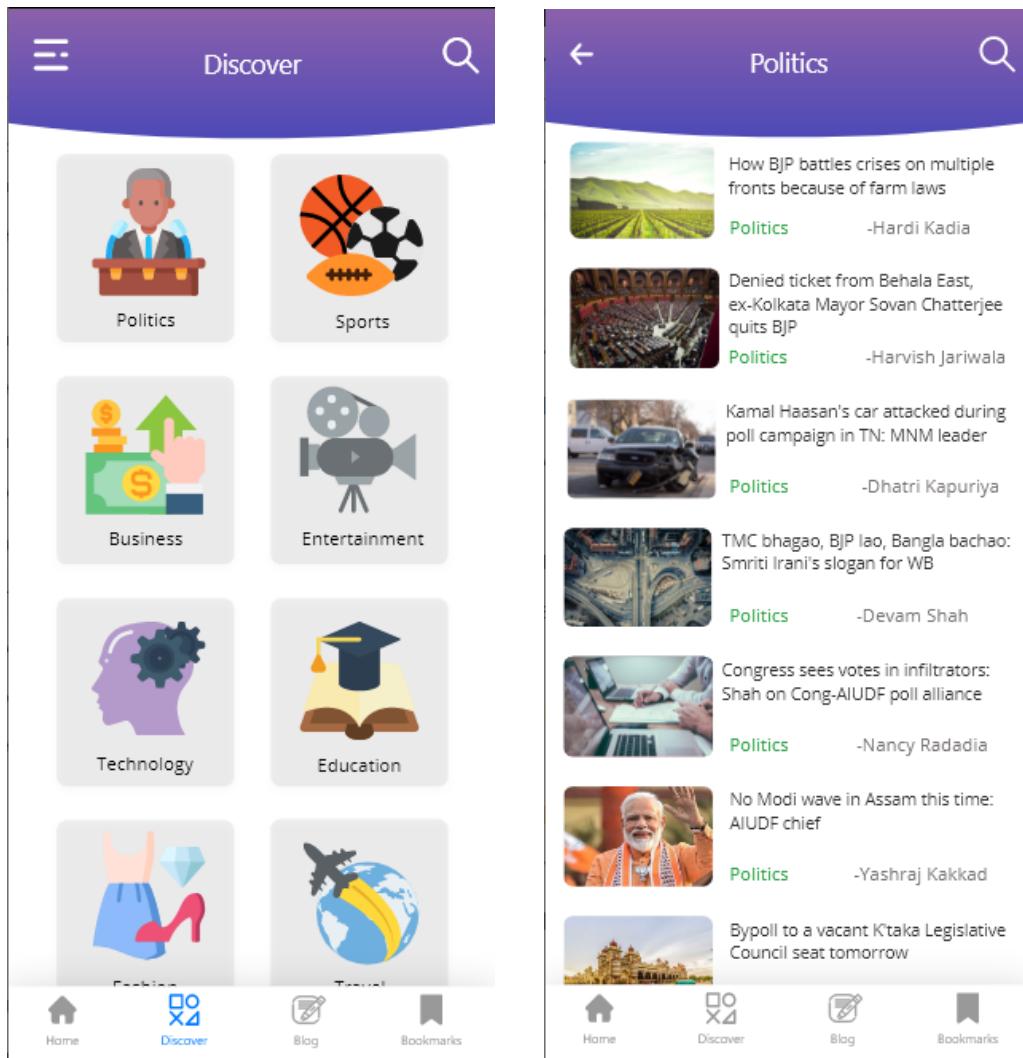
- **Variation in Physical Abilities and Physical Workplaces(UU)** is taken care of as the dark theme is 6 times less bright than the bright screen, Thus giving less strain to our eyes while reading in dark.
- **Strive for consistency** is seen in all the pages while designing dark mode, as the same background color, font color, font type, are there and also we can perform similar functions as in bright mode.
- The user can change the theme whenever he/she likes to, meaning if he is using the app at night he/she can switch to dark mode and switch back when using it in a bright place. Thus giving the user the control and **Supporting Internal Locus of Control**
- Apart from the principles listed in the lecture notes, the dark mode also affects the **User experience goals** of using the app like satisfaction, unhappiness, etc.

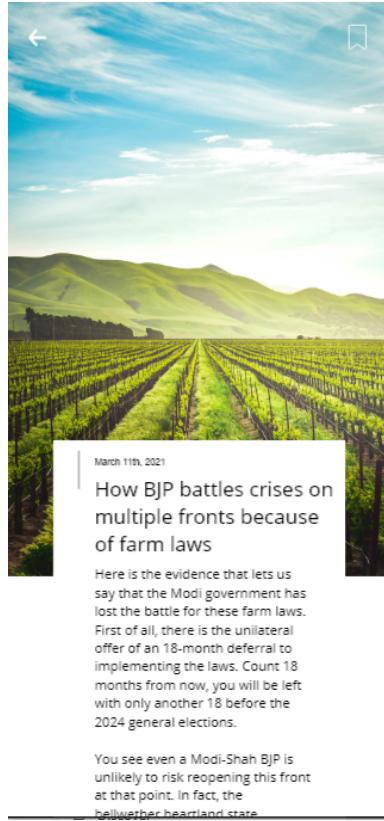
Interaction styles used: Direct manipulation

- It is direct manipulation because one can directly change the theme of the app.

11. Name of the feature: Discover/Category

Photo of the implementation:





List of Design/Universal Usability (UU) principles:

- **Diverse Cognitive and Perceptual Abilities** - This design is made by considering all kinds of people, meaning if a person is lazy and wants a specific set of news but does not want to search for it. He/she can directly click on categories and start reading.
- **Supports Internal Locus of Control** - If a person wants to filter the news content, he/she can directly do this by selecting categories. Thus making the user feel the control over the app.
- **Strive for Consistency** - The navigation bar, font size and colour, are the same as that for other pages showing the strive for consistency in this section.

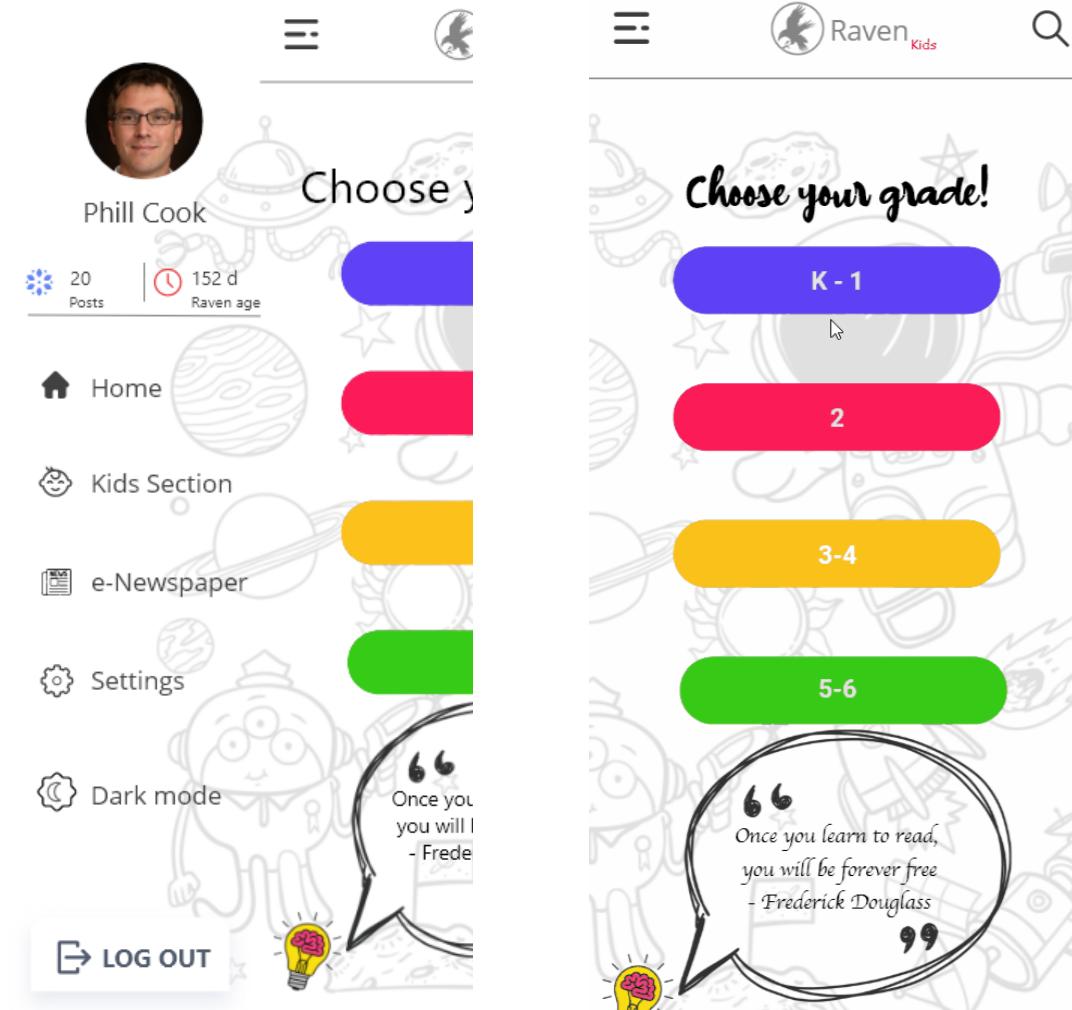
Interaction styles used:

- **Direct manipulation** - Here, it is direct manipulation because one can directly filter news of any category which he wants to read by clicking the icon of that category.

- **Menu Selection** - Here user reads list of topics, selects topic of which he wants to read news, observe the effect of action. So, the app will filter the news related to that topic which user selected.

12. Name of the feature: Kids

Photo of the implementation:



List of Design/Universal Usability (UU) principles:

- **Children (Piaget's Stages of cognitive development)** - According to Piaget's theory of cognitive development, children move through four different stages of mental development. His theory focuses not only

on understanding how children acquire knowledge but also on understanding the nature of intelligence.

- The four stages are

Sensorimotor Stage - This stage is from birth to 2 years of age. In this stage, the children learn by observing action taking place around them.

The Preoperational Stage(2 to 7 years) - Children begin to think symbolically and learn to use words and pictures to represent objects. While they are getting better with language and thinking, they still tend to think about things in very concrete terms.

The concrete Operational Stage(7 to 11 years) - During this stage, children begin to think logically about concrete events.

The formal operational stage(12 and Up) - Teens begin to think more about moral, philosophical, ethical, social, and political issues that require theoretical and abstract reasoning

By Piaget's theory, it is said that at this age children not only grow intellectually but also add information and knowledge to their existing knowledge. The Kids Section helps to get through the information and learn in a fascinating way. The news here is bifurcated on the basis of grades to allow every child to learn according to their stages of cognitive development.

The motivational quote provided gives them the motivation to acquire information.

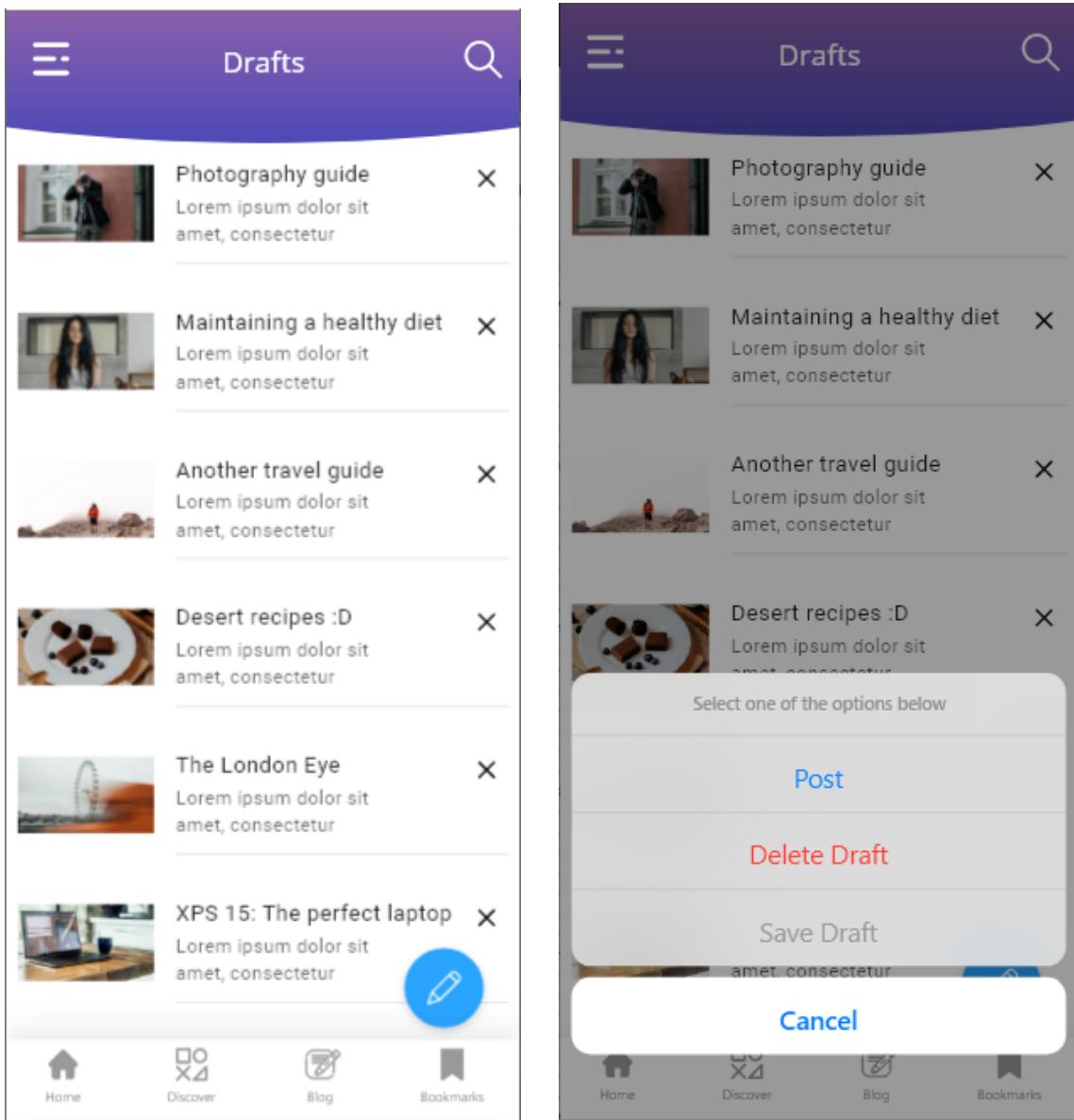
- **Visibility** - The grades option provided to them makes it easy for kids to figure the flow of the application. They select their grade and can further read the news articles.

Interaction styles used:

- **Menu Selection** - The grade selection screen provides kids to choose their grades. All the possible editions of news articles are classified in terms of grades hence, the user knows well about these editions as all the options are clearly visible.

13. Name of the feature: Saving blog post as a draft

Photo of the implementation



List of Design/Universal Usability(UU) principles

- If a person has written a partial post and wants to complete it later then the post will be saved in draft, So he\she can continue from where he left and doesn't have to write from starting. Thus showing the principle of **Reducing the short-term memory load**.
- Saving the posts as drafts before posting helps us to correct our mistakes if any and thus prevents us from making errors in the post

before posting, Thus justifying the principle of **Preventing error and constraints**.

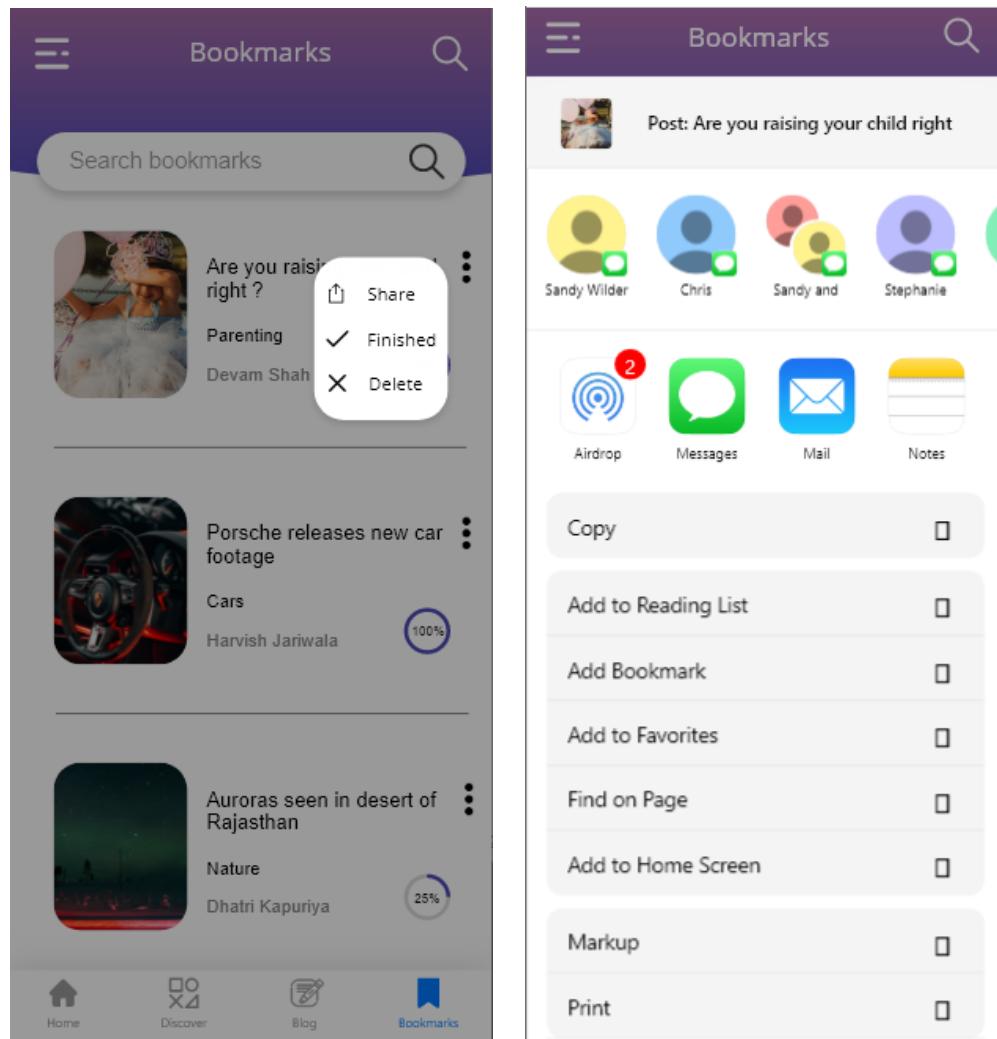
- While deleting the draft it asks us to confirm our choice, which also shows the principle of **preventing errors and constraints**.
- **Permits easy reversal of actions** is taken care of as one can retrieve the half-written post from the draft.

Interaction styles used

- **Direct manipulation:** We directly manipulate the post by deleting or saving it as a draft.

14. Name of the feature: Sharing post with people

Photo of the implementation:



List of Design/Universal Usability(UU) principles

- **Personality differences(UU)** are taken care of as extroverted people who want to share some news or post(people's view) with people can easily do with this kind of feature.
- **Affordance** is seen by the top bigger icons which are for sharing through the mail, airdrop, text, etc. as well as by smaller icons on the side of the menu for copying a post to various places,

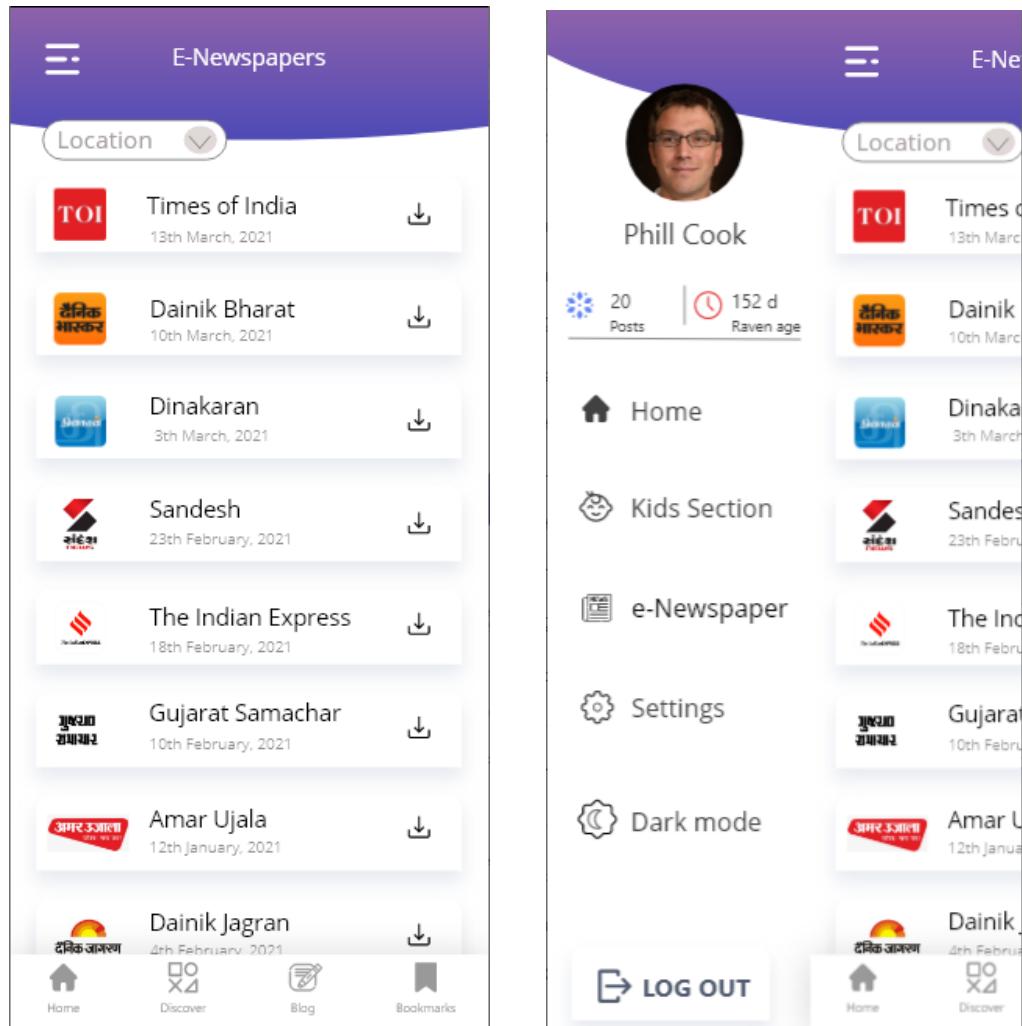
- **Strive for consistency** is maintained by keeping the same navigation bar on the top screen which includes the hamburger(profile and other app categories), search button, etc.
- All the options are clearly visible for sharing, printing, and adding the post, and the user does not have to look for possible functions. Thus showing the principle of **Visibility**.

Interaction styles used

- **Menu selection:** All the possible options are listed in the form of a menu so that the user can directly click on the option and there is no chance of error.

15. Name of the feature: E-Newspaper

Photo of the implementation:



List of Design/Universal Usability (UU) principles:

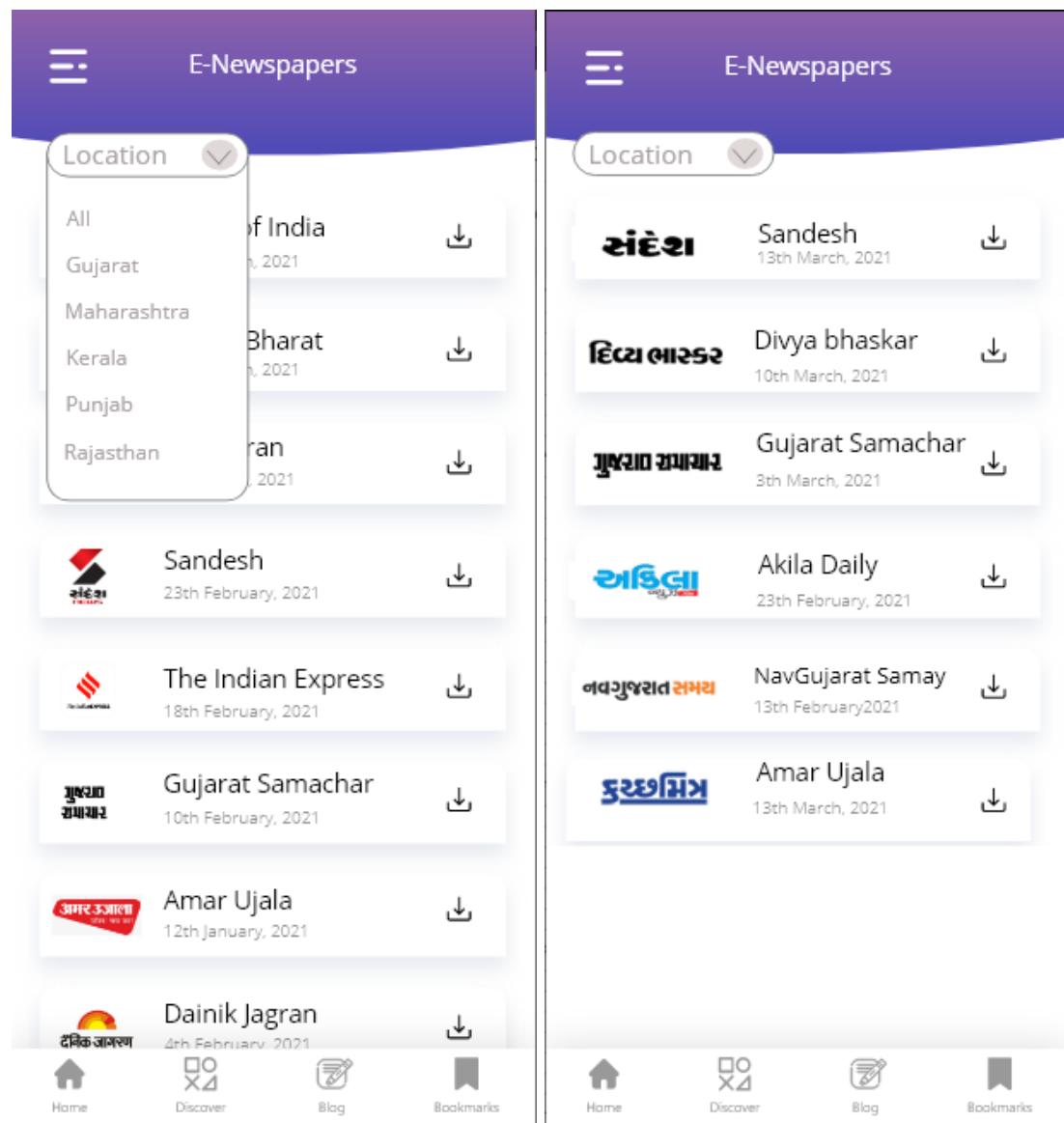
- **Personality Differences** - Some people don't like to search news or to see news directly but like the old method of reading the daily newspaper and read news which is provided in it. In situations like corona, the hardcopy of the newspaper stops delivering at home so people start reading E-newspapers so we have introduced this feature of downloading E-newspaper.
- **Strive for Consistency** - Here consistency is maintained in font size, newspaper brand icon size and keeping the same navigation bar on

the top screen which includes the settings, bookmarks, search button, etc. like in other screens.

- **Affordance** - Here, we have given the download option and for that download, an icon is used. So by seeing the icon, the user can understand what to do with it which comes under affordance.

16. Name of the feature: Sort E-newspaper by Region

Photo of the implementation:



List of Design/Universal Usability (UU) principles:

- **Prevent Errors and Constraints** - The users while using any app or website might tend to make mistakes. This principle helps users to stop making mistakes and help them decide. In this feature there is a facility in the application which provides newspaper pdfs on the basis of states. The dropdown menu helps the user to select the exact state so that they do not search for the state whose newspaper articles are not available. This also helps to prevent spelling error in case the input is taken instead of choice selection.
- **Cater for Universal Usability** - By providing location based E-newspaper, the demand of users is fulfilled. There are many people who may want to read the news in their own native language or are used to reading newspapers in their native language. Hence, this feature takes care of Universal Usability.

Interaction styles used:

- **Menu Selection** - Users are provided with a list of states from which they make choices. This provides clear structure for decision making as all possible choices are present at one time.

Difficulties encountered and resolved

Description of debugging

1. Prototyping connection error

Difficulty :

After making all the screens of the app in Adobe XD, we started prototyping it, which means we started connecting the screens according to the flow of the app. But while connecting it became messy as there were too many buttons and features.

Solution:

After designing all the screens, we started connected from scratch(means removing all the connections done before and started from square one).

2. Number of pages for dark theme\font\language

Difficulty:

After completion of all the basic screens, later for implementation of dark theme\font\language, the number of pages increased exponentially as the same number of basic screens needed to be added with different functionalities. This happened because it's a prototype and not hand-coded where we can use a color palette or a bigger font size or a different language for all the pages.

Solution:

So we decided that we will show the functionalities in only a few pages for demo purposes and later will implement it as future work.

3. Showing functionality of side-navigation bar

Difficulty:

The side-navigation bar is used to move between pages of the apps and appears on every page, thus it is an important component of the app. And showing its visual functionality is a challenge, I mean the opening and closing of the side navigation bar. Also, after the screens increased it becomes difficult to give navigation of all the screens in the side-navigation bar.

Solution:

So I made 2 screens, one with the navigation bar open and the other with the closed navigation bar. Thus shifting between the pages would feel as if it is opening and closing. Also, to solve the problem of giving navigation of all screens from the side-navigation bar, we have given a bottom bar to navigate. We divided navigation of some screens in the bottom bar and for other screens given navigation in the side-navigation bar.

4. Making Attractive UI for kids

Difficulty:

Students tend to be attracted by colorful UI. They need more interactive styles. Implementing this was quite challenging as a lot of creativity was to be implemented on the screen. At times, if I had an idea of arranging the layout the tool was not supportive enough to stand all the interactive styles.

Solution:

I took reference of many kids' applications and observed the creativity they implemented. Later by taking their inspiration I designed my screens on a page. For our final prototype I referred to various videos on youtube and learnt required animations and integrated in the best possible manner.

Real life implementation perspectives

Details of problems you may encounter in real life implementation and its proposed solutions

1. Content on the blog post

The blog feature is a great feature as it helps people to express their views on a certain topic but if we try implementing a blog feature in real life then it has some implications like, the content would not be filtered as someone may put content that may offend others and they may also stop using the app. So, it's not that we cannot implement it but we need to filter the content before posting it publicly.

2. Authentication for age in the application

Our application provides a different section for kids. This section was created to filter news for kids. This section gives articles that are kids friendly according to their age. But, this feature is driven via the main application. Hence, there might be some kids who would ponder on all the news and this may not be good for them. Hence, there is no such restriction or authentication for kids so that they can view only the kid's section.

3. To maintain a database for users and their bookmarks

The app would work fine for a small number of users. But if we try implementing it in real life on a larger scale then the number of users will increase to a large scale and the management of the database for the users and bookmarks for each user would be a tough job and thus making the app slow. So, it's not that we cannot implement it but we need bigger storage and high performance servers.

4. Device Compatibility and Screen Size

Device compatibility is perhaps the most important factor for a mobile app. We have to make sure that our app should provide flawless service and be compatible on multiple devices. OS selection is very much important. Apple

and Android require different development procedures, UI/UX elements and frameworks to execute, so we must have to research well about the nature of our app and our target audience before taking a final call. We also have to ensure our app works on a smartphone as well as tablet and other devices. We have to pay attention to various aspects of screen resolutions, sizes, and pixel densities.

Project Integration

Get our entire project demo at this [link](#).

References

- Adobe XD Documentation -
<https://helpx.adobe.com/xd/user-guide.html/xd/>
- References of few news apps -
[Times of India app](#)
[The Hindu](#)
- HCI principles and design related help -
https://www.tutorialspoint.com/human_computer_interface/index.htm
- Youtube videos for explaining the with examples -
[Playlist for HCI by Stanford University](#)