

Performance of Understanding:

FINAL SUBMISSION

By Anagha Rao

FOREST FIRES

Performance of Understanding: Paper 1

By Anagha Rao

Long before, when people sat around the warmth of a bonfire, tired at the end of the day, with nothing better to do than tell tales, It is said that the birth of storytelling happened around fires. In came the dance and rituals, a culture derived from the conception of the embers. What saw the start of our communities is now ending it in a raging fit.

Forest fires have been an uncontrollable global phenomenon in recent years. In the context of climate change, forest fires contribute to 1.75 Petagrams of carbon globally. It's not too surprising that we've seen the Australian bushfires in 2020 take away about 42 million acres of land in 7 months. With frequent fire breakouts in Tamil Nadu, the government declared February 15th to April 15th as the fire season. 36% of the forests in India are prone to forest fires, and about 95% of these forest fires are caused due to human negligence.

About 70% of India's total forest vegetation is made up of deciduous forests (Forest Survey of India, 1989). The accumulation of litter and seasonal rises in temperature place these forests under the chronic fire effect. If neglected, the evergreen forests too are susceptible to catching fire. With the average global temperatures increasing every year, we're going to see more frequent little combustions in our backwoods.

Let's rewind a little and see where it all began. Indigenous tribes like the Gonds and Baiga in India, Aboriginals in Australia, and Native Americans in North America lived in harmony with the forests for several years until the British colonists set foot on their continent. In those times forest fires were deemed necessary for the growth and revitalisation of the ecosystem. People would set small fires in the forest to clear up dry biomass and create vacancies for new vegetation and pasture. Research shows that in areas that have been granted community rights the unrestrained fires have come down by 70%.

To understand it more scientifically, while forest fires decrease the total nutrient pool on site, the availability of nutrients increases because the complex compounds in the dead matter get broken down. This only applies to low-intensity fires, ones with high intensity lead to loss of all nutrients. Coming to the soil content, elements like Potassium, Calcium, and Magnesium increase or remain the same in cases of fires whereas Nitrogen and Sulphur decrease.

Now, when the British colonists arrived, in an attempt to control the land they knew nothing about, they did what seemed most visibly obvious, criminalise burning forests and protect the rich timber they needed for trade, and along with that came the forest laws. While some of these laws were abolished in the USA by the 19th century, India continues to follow them. To

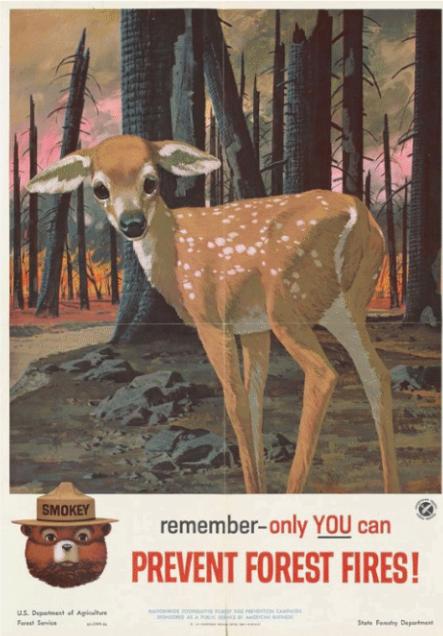
illustrate, Section 26 of the Forest Act, of 1927 states that if one is found to intentionally set fire, they can lose all the rights over the pasture and produce in the forestland. Section 27 of the Wildlife Protection Act states that a person residing in the sanctuary must extinguish any fire within or in the vicinity of the sanctuary. What the Britishers didn't know was suppressing these small controlled fires would have major effects on the ecosystem in the future, for instance, the proliferation of invasive plants like Lantana and other weeds decreased the resources available for the crop growing regionally. These small fires protected the forest from baring larger destructive ones by clearing the build of waste matter and invasive species on the forest floors. By overlooking ancient traditional processes that helped the forests thrive we are now in the process of endangering them.

Now a question may arise, what are the impacts of these forest fires in today's world? Let us take the example of the Australian bushfires in 2019 and 2020, they triggered a series of climate interactions initiated by the emissions from the wildfires that swiftly encircled the Southern Hemisphere. The aerosols produced by the emissions caused the cloud decks to brighten over the Southern Hemisphere, particularly off the coast of Peru. This caused the air to cool and become drier in the area, subsequently altering the location of the meeting point of the northern and southern trade winds. Ultimately, it contributed to a multi-year cooling of the tropical Pacific Ocean, the birthplace of La Niñas. The La Niña phenomena typically affect North America's winter climate, bringing with them temperatures that are cooler in Canada and the northern United States, wetter weather in the Pacific Northwest, and drier than usual conditions in the Southwest. La Niña's onset is a significant event for seasonal climate projections because it can often be predicted months in advance. Yet, this strange event of it occurring 3 years in a row without being followed by a strong El Nino left scientists startled.

Apart from climate change, one of the obvious economic repercussions of wildfires is property destruction, there are long-lasting effects as well. When property is lost, people and families are displaced from their homes, businesses collapse, and insurances suffer considerably. Interestingly, local employment and earnings may seem to rise after massive wildfires as a consequence of job opportunities created by fire suppression efforts. However, because they create sharp differences in seasonal employment, wildfires tend to result in local labour markets becoming less stable over time. Tourism is greatly affected as well because people tend to avoid regions covered with smoke and possible threats. While it can be challenging to determine the exact cost of these catastrophes because the effects of wildfire damage extend across a wide geographic area and numerous sectors, a recent University College London study found the state of California alone suffered \$148.5 billion in economic losses in 2018 as a result of wildfires, with around one-third of those costs coming from outside the state.

In the wake of a climate emergency, centralised management of natural resources and the suppression of traditional knowledge are actively transforming our forests into prospective infernos. This tragedy underscores the urgency of protecting our natural world, and with renewed determination, we must forge ahead toward a future where forests thrive and our bond with nature grows stronger.

PICTURES AND GRAPHS



Smokey the bear was a critical icon in the U.S campaign for prevention of forest fires. This campaign could be attributed to one of the causes of the extensive wildfires today.

The plane flying over the Australian bush fires dropping the fire retardant PHOS-CHEK.



Fires and the Climate Feedback Loop

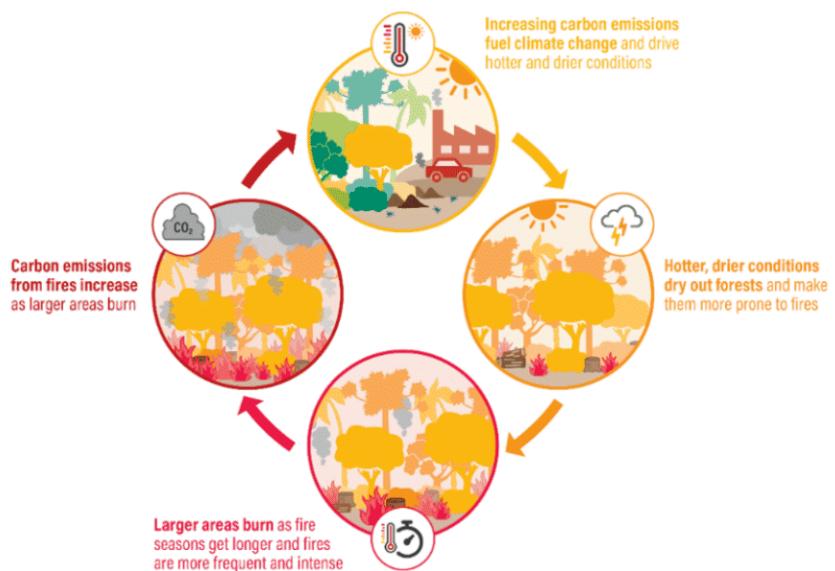
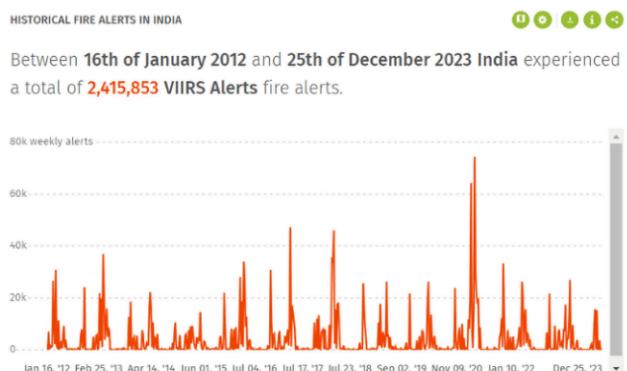
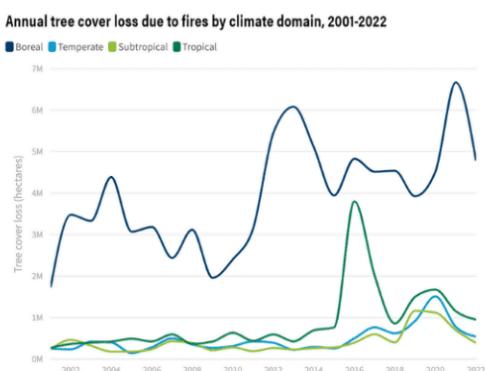


Table 3-8 Susceptibility and vulnerability of Indian forests to wildfire.

	Type of Forests	Fire frequent (%)	Fire Occasional (%)
1	Coniferous	8	40
2	Moist Deciduous	15	60
3	Dry Deciduous	5	35
4	Wet/Semi-Evergreen	9	40
5	Northeastern Region	50	45

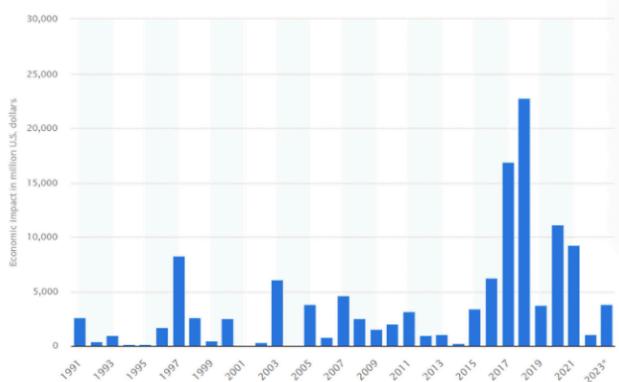


REGIONS WITH MOST TREE COVER LOSS DUE TO FIRES IN INDIA

From 2001 to 2022, Odisha had the highest rate of tree cover loss due to fires with an average of 238 ha lost per year.

1	Odisha	238 ha
2	Arunachal Pradesh	198 ha
3	Nagaland	195 ha
4	Assam	116 ha
5	Meghalaya	97 ha

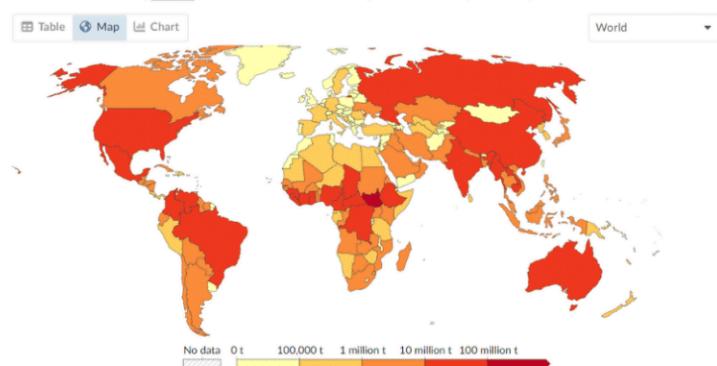
ECONOMIC DAMAGES GLOBALLY



Annual CO₂ emissions from wildfires, 2024

Carbon dioxide released by wildfires in tonnes. The 2024 data is incomplete and was last updated 16 April 2024.

Our World in Data



CITATIONS

1. How Colonial-era Forest Policies Led to the Wildfires of Today – The Leaflet
RightsGovernanceIndia et al.
<https://theleaflet.in/how-colonial-era-forest-policies-led-to-the-wildfires-of-today/#:~:text=In%20an%20attempt%20to%20centrally,from%20burning%20to%20the%20ground>.
2. Top 12 Largest Wildfires in History
Igini
<https://earth.org/largest-wildfires-in-history/>
3. [Explainer] The good, the bad, and the ugly side of forest fires
Tandon
<https://india.mongabay.com/2022/06/explainer-the-good-the-bad-and-the-ugly-side-of-forest-fires/>
4. Most forest fires in India on account of human activity
Tandon
<https://india.mongabay.com/2020/01/most-forest-fires-in-india-on-account-of-human-activity/>
5. Australian bushfires likely contributed to multiyear La Niña
<https://new.nsf.gov/news/australian-bushfires-likely-contributed-multiyear#:~:text=The%20catastrophic%20Australian%20bushfires%20in,event%20that%20dissipated%20only%20recently>.
6. How Fire Season Affects the Economy
Reiff
<https://www.investopedia.com/how-fire-season-affects-the-economy-5194059>
7. Fire Effect On Soil
<https://www2.nau.edu/~gaud/bio300w/frsl.htm>
8. Fire Situation In India
<https://www.fao.org/3/ad653e/ad653e50.htm>

9. Global Deforestation Rates & Statistics by Country: GFW

Vizzuality

<https://www.globalforestwatch.org/dashboards/global/?category=fires>

10. Wildfire economic damages worldwide 1991-2023

Salas

<https://www.statista.com/statistics/1423714/economic-impact-due-to-wildfires-worldwide/>

11. Wildfires

Samborska et al.

<https://ourworldindata.org/wildfires>

12. Pinterest for images

Performance of Understanding:

SUBMISSION 2

By Anagha Rao

FIRE FIGHTERS!!

- An animation series for children
- Shown at the Bandipur Nature Center but also on TVs.
- Made to educate children in an entertaining way
- Interaction with audience & impact
 - ↳ watch and learn — instill sense of morality, awareness about nature
- Strong pitch
 - ↳ Brand association. — Brings in customers
 - ↳ raises awareness — educates audience
- Target audience
 - ↳ Children age. 7 to 13

- Adventure Show.
- something like maybe paw patrol, ~~power rangers~~ Power Rangers
- includes problem solving
- educates children about how forest fires are handled, how animals navigate and can use their strengths to help.
- very short episodes about 15 mins? → (ad breaks)
basically an awareness campaign not a full show on its own but gets the children to watch & interact ... form an attachment.

main character

MAYA.



- 12 years old
- leader of the squad.
- smart and strong
- positive.

- The base is in Bandipur but they explore forests in India mostly and also around the world.

- meet different animals

(remembers routes - water bodies)

also main character.

RAYA



Representation
of Bandipur.

BALA

side character.



explores strengths of animals while saving the forest.

— Maya and Raya help the fire fighters calm down fires and save animals.

— They also explore good firing practices and meet people from indigenous communities.

— short bits of geography, safety practices and current climatic events regarding forest fires.

PACKAGING DESIGN

◦ How will it interact and impact the audience?

→ guilt trip people.

→ include small facts

→ QR code to know more / donate.

◦ Strong pitch?

→ make people curious — good marketing

→ catches their eye.

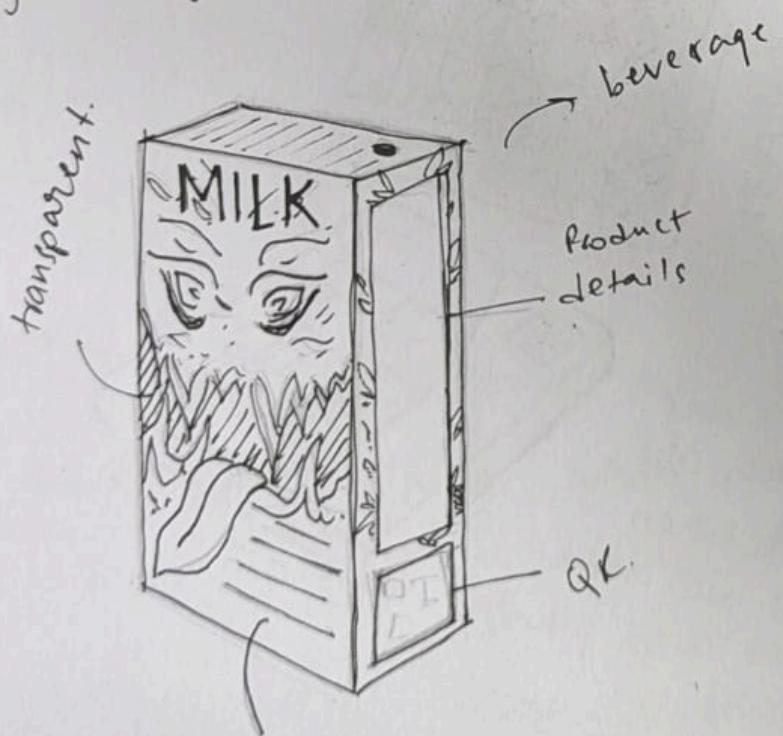
→ works on their conscience.

◦ How will it educate & engage?

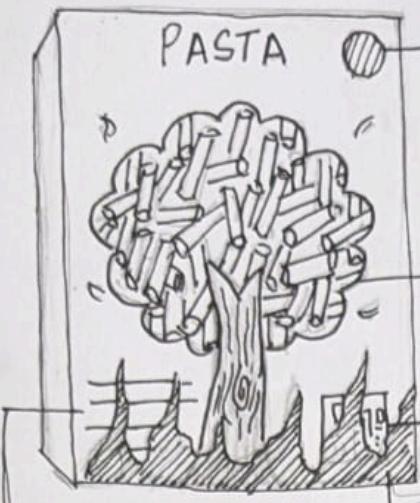
→ through visuals & unusual packaging.

◦ Sold at the cafe in the nature centre.

◦ Organic food & beverages



cool the heat in the
forest while you cool the heat
in your belly, donate today.



logo

transparent cover (pasta inside
can be seen)

QR code (leads to website donation page)

fire that has to
be ripped off to
reveal QR & fact

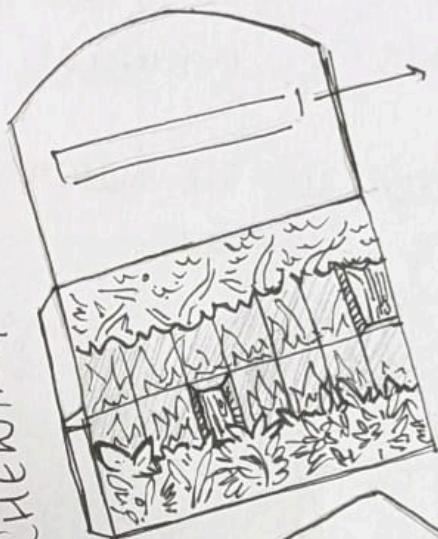
(will have tear here
sign) — made of paper.

Ex. every ^{in the} time
you boil pasta,
about 2.4 miles
of forestland
gets burned.

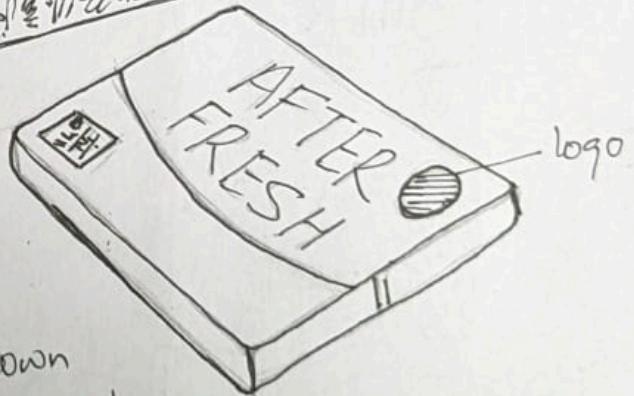
The taglines
can be passive
aggressive or
just normal
unusual facts
to draw in
the customer
to pick up
the product

campaign
on how some
forest fires are
good and when
the fires die down
new trees and plants
are grown.

CHewing GUM



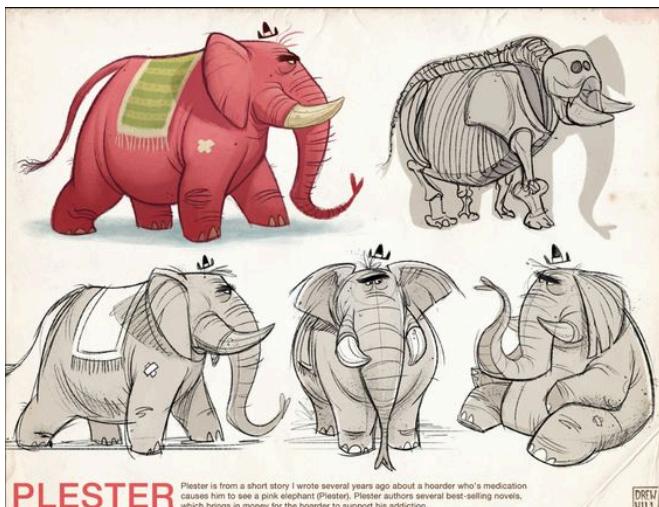
fact



logo

Inspiration from

Pinterest

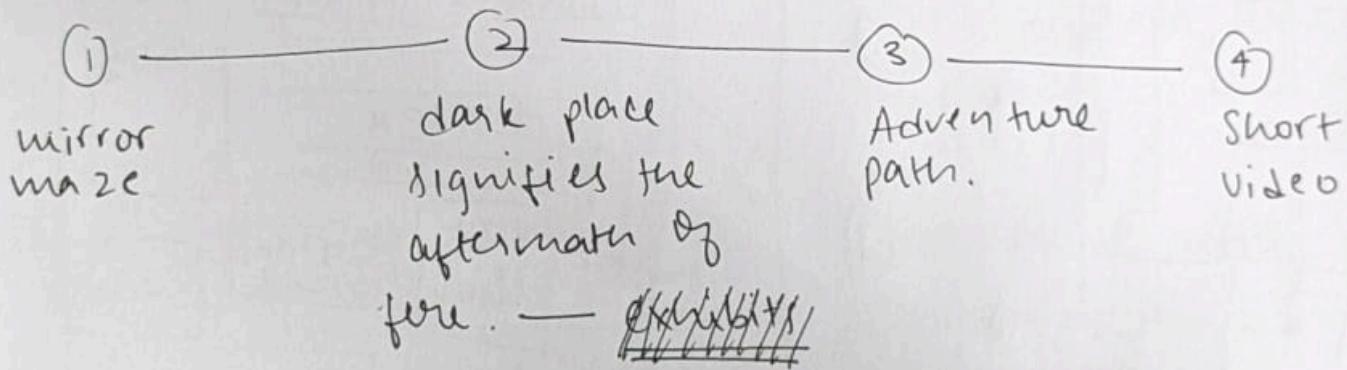


PLESTER Plester is from a short story I wrote several years ago about a hoarder who's medication causes him to see a pink elephant (Plester). Plester authors several best-selling novels, which brings in money for the hoarder to support his addiction.



INTO THE JUNGLE

- the idea is that you're going through a forest fire as a small animal.
- ② the ambience is dark and very warm with sounds of the fire crackling — the deeper you go the louder the environment becomes. — smoke machine.
the ppl that died in the town near the fire
- the zombies will essentially be wild animals looking for prey. there will be things falling. (on safety nets above you that are invisible)
- a mirror maze which is bright
① trees burning on a big screen are projected that get reflected into the mirror.



- in the adventure park they need to walk on a ③ plant, wall climb, wade through water. etc.
(will have fake snakes ~~off~~)
- in the end there will be a short video on forest fires & its aftermaths.

- This would take up 2 whole floors of the museum.
- Asthma patients aren't allowed.
- this exhibit is experiential and focuses on evoking the emotional aspect. the anxiety and fear you feel in this simulation is only $\frac{1}{100}$ th of what the animals/ must feel any creature trapped.
- the last educational video is to make some sense of that experience, to provide harsh facts of what's happening so you leave with the knowledge of how dangerous forest fires are.



UI - APP

It's an app for the museum.

Basic features will be on website.

- what light shows are happening
- book ticket / safari + Donate.

→ About

→ Contact

→ exhibits.

→ Fire alerts, news

→ Bandi marathons ☺

only app features.

Bandi marathons will be the app feature I will be focussing on:

- Every 3 months to raise awareness, the nature centre hosts REMOTE MARATHONS.
- people can participate from anywhere in ~~the world~~ INDIA.
- They need to pay ~~£~~ a fee of £100 to get started with the tasks because it's not a usual marathon.

This app is made to motivate the runner to finish the marathon now?

The concept is, the running user is running from a forest fire and along the way there are milestones and tasks.

There will be different intensities like 5km, 10km, 15km.

a certificate will be awarded from ~~govt~~ the centre (~~with~~ in association with ~~govt~~)

Partnership with Swiggy/ Zomato — discount codes.

In app ads + donations funds.

Features

modes : Surface fire (5KM)
Ground fire (10KM)
Crown fire (15KM)

Tasks :

- ① Save the animal
- ② Reach the edge ~~to~~ to help fire fighters to control the fire
- ③ there is a predator stalking you, out run it.

more coming.

- o The app tracks distance and your speed.
- o You can switch on bg music or listen to your own playlist.
- o There is a leaderboard. top 10 in each category get special prizes.

o During the tasks you've to answer multiple choice questions to gain points — You can chose the number of tasks but there will be a minimum.

Are you running with someone ?

Yes

No

How many?

[Enter]

↓
Button to sync

will there be any obstacles while running

Yes

No.

(Ex. on road-traffic)

(Ex. park, track)

With this input the avg. time to finish the run will be set accordingly.

App

① Interaction.

- book tickets, know more about museum
- participate in marathons
- latest news / blogs

② Impact

- is updated on current events regarding forest fires
- engages in marathons → gain info while staying active
- provides funds for the centre
- gain benefits like → free tickets, safari, light show, merch

③ Strong pitch

- raises funds
- raises engagement from all across India
- incentive for people to come visit. (inc. audience)
- education + activity
→ brings in sponsorships.
→ info about museum + current event updates.

④ How to incorporate & info.

- the milestones will be specific
ex. (obtain fire retardants → PHOK-CHEK and help fire fighters calm down the fire)
- In the end of the marathon ans. a short MCQ quiz that you learnt from your milestones to earn extra points! → inc. score on leaderboard.

Performance of Understanding:

SUBMISSION 3

By Anagha Rao

CONCEPT NOTE

My concept for this project was to make a strategy for promoting the Nature Centre. The main highlight of my project is the app, which I have made mock-ups for. The website is to provide context for the app in relation to the museum. The thought process was, people don't usually download apps to inquire about museums, so the app is model that the user can choose to download if he/she wishes to participate in the Benki-Run.

WEBSITE

The website is a necessary part of my project as it connects the functions of the Nature centre to my app. On the website the user can explore workshops, blogs, and field visits to understand the local community better. The aim of this was to provide a connection between people coming from urban areas to the forest dwellers. When they understand and interact with the people in the region that the fires are causing devastating impacts in, the whole situation becomes much more real and easy to empathise with. Interacting with the local community will also help them understand the age old tradition of igniting small flames in the forest to keep the ecosystem healthy + the history of the tribe.

BENKI-RUN

Benki-Run is an app made by the Bandipur Nature Centre (BNC) as a fundraiser programme + public engagement activity. It is a remote marathon model (that is gamified), where the user can participate in run from the convenience of their own town while contributing to the cause. The marathon is conducted by the centre once in two months and the funds collected will be donated to organisations that prevent uncontrollable forest fires.

The user is essentially running from a forest fire and along the way has to complete milestones, which is just crossing a certain distance. The point of this is to motivate the user to finish the run as well as provide tiny bits of information. The user can also take a quiz if he/she chooses to based on the information provided in the milestones. Attempting this quiz increases the overall score of the user and puts them on a higher rank on the leaderboard. The top 15-20 participants are rewarded with free tickets, safaris, merchandise etc.

This app is a marketing strategy for the Nature centre. It provides incentive and context for general public to come and visit the centre, and also be involved in helping improve the situation of forest fires in South-India.

PROCESS NOTE

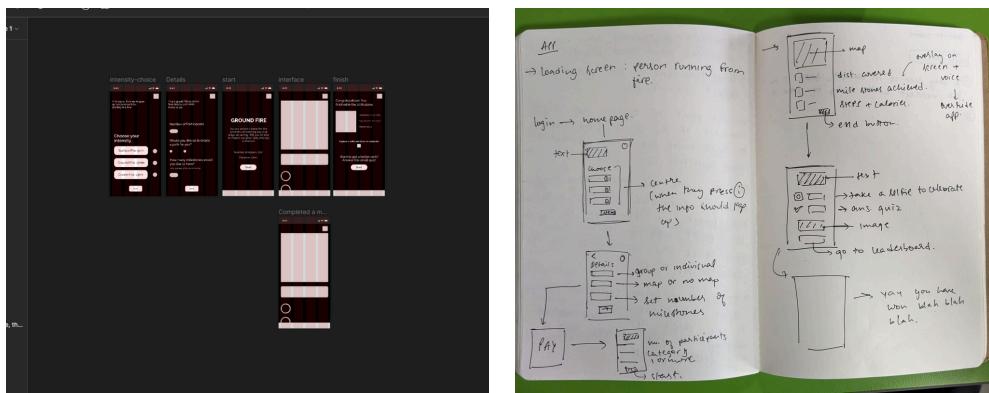
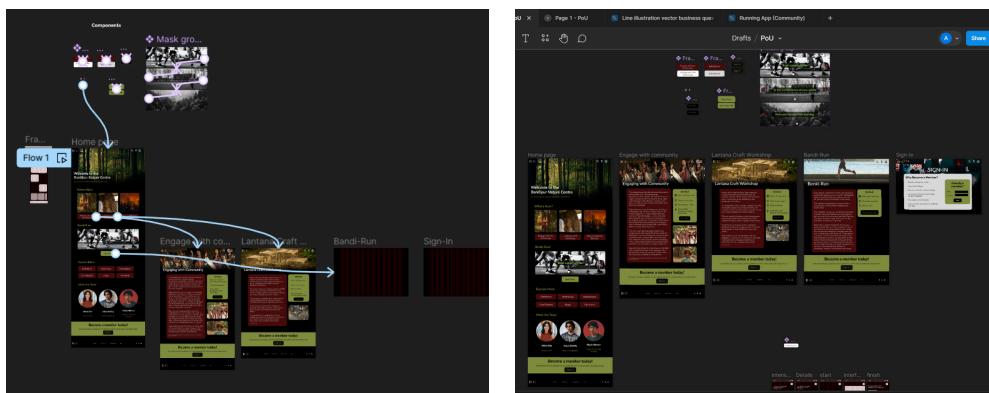
The process I followed is:

1. Research and identify what part of the problem you want to provide a solution to -> Marketing Strategy + Understand of Locals
2. Choose medium -> Figma
3. Make wireframes and outline basic concepts.
4. Design and prototype

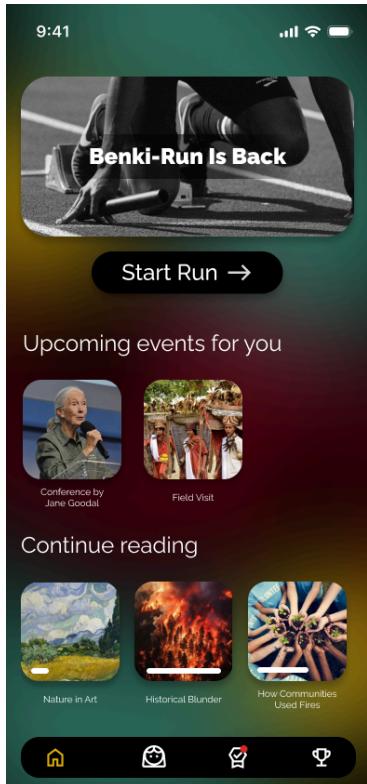
NOTE: Due to time restrictions, I have prototyped only the Website properly. I prototyped the app in a way basic way so as to take you through all the screens.

RESOURCES

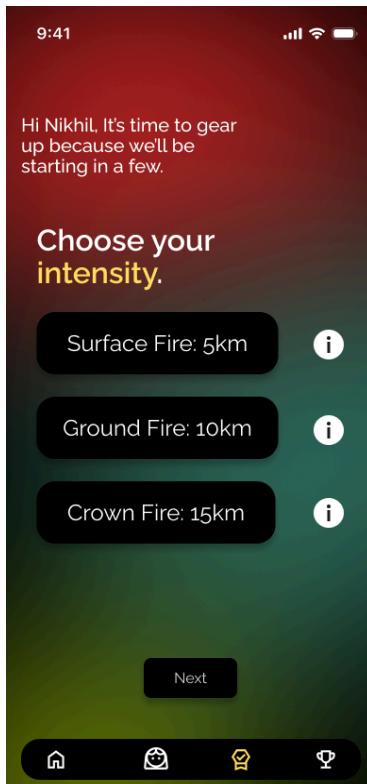
- Material resources from google for the icons
- The inspiration for the website is taken from The Museum of Art and Photography
- The leader board screen from my app is inspired from a template by Deku on Figma Community
- Images from Pinterest



FRAMES

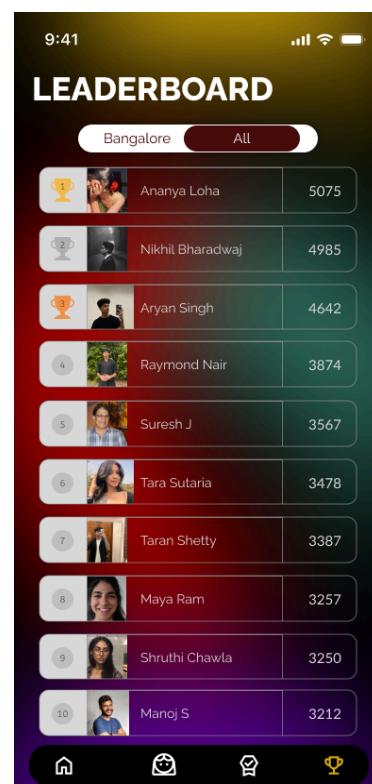
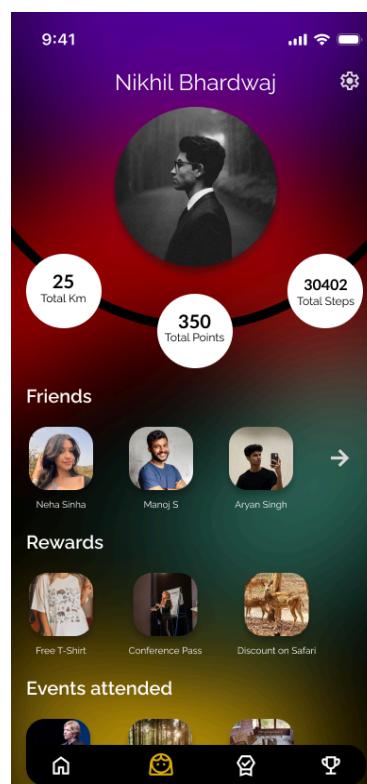
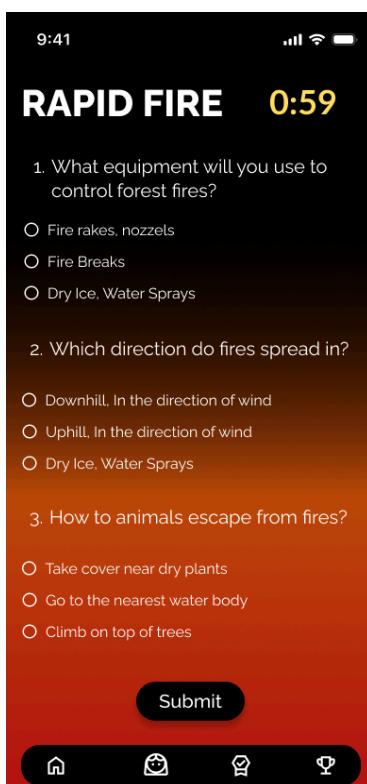
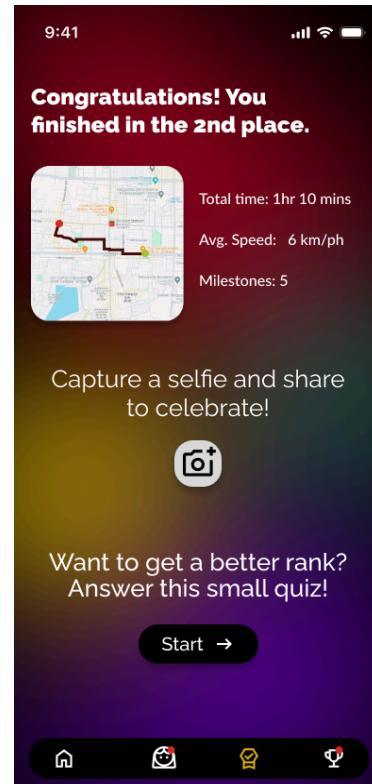
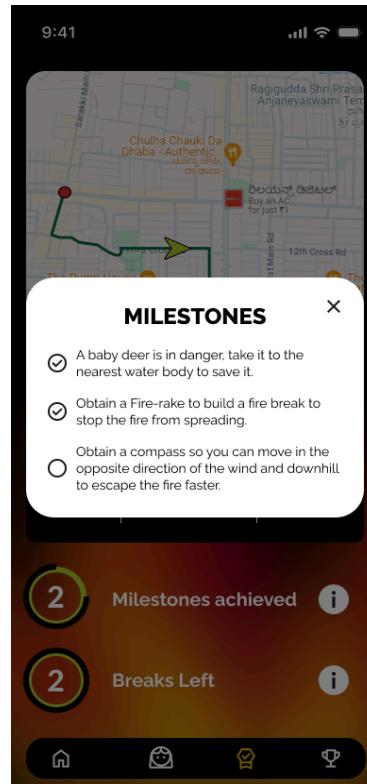
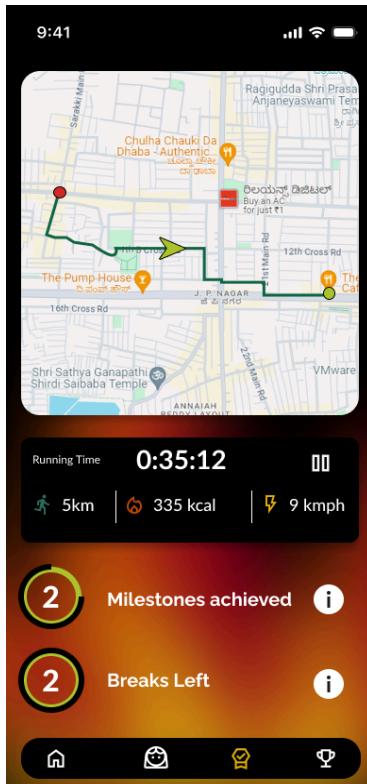


Here the user can chose if they're running in a group or indivisually, if the choose group all payments must be paid by one person and 'then the group members can sync their map.



The information buttons show the definition of the catagories, like what is surface fire ect.





REFLECTION

I learnt a lot from this PoU, in terms of skill as well as information. I chose paper 1 primarily because the topic excited me. I noticed that this time around I did a lot more research on my topic before jumping to the ideas and outputs directly. I think it helped set a potential for what outcomes I could come up with. I enjoyed writing the essay too, because I had done research properly I just needed to convert my notes into the actual material.

Coming to the iterations, I picked marketing and promotional activity as my goal for 2 iterations, i.e., Packaging design and the UI as for the adventure course and animation it was focussed on the more emotional and educational aspects. I was in a dilemma through the weekend because I didn't know what iteration to go with. Packaging was an option where I wanted to include a narrative within the design, so the outside of the package has a scene and the inside when you open it has another scene. To illustrate that from outside all we see is just a forest burning but when you unravel it you can see all the things that went behind what caused the destruction. My animation idea was fairly simple, but I knew I wouldn't take it up. It was just an idea that popped into my head. It was inspired by Dora the explorer and Power Ranger. The main character, Maya, with the help of her animal friends saves the forest. Each episode was going to be 15 minutes and the series would take you through why forest fires happen, how to prevent them, what animals do when fires happen, how it affects the state of our climate etc. My third idea was the adventure course. The person starts by entering a mirror maze on which a screen with forest fire is projected, so it's to understand and experience how creatures feel when they're trying to escape.

The main iteration I decided to go with is the website and the app. It took me a long time to finalise the iteration and which one to go forward with because I am really indecisive but I'm happy that I ended up doing this one because I enjoyed the process through and through. I am a HCD major and I have been itching to try my hand at Figma for quite a long time so this was the perfect opportunity. I attended the Figma workshop by Siggchi this semester so it was great to start with this project and help refresh the skills I learned. In this process, I did wire-framing and prototyping. It was very gratifying to see my interactions on the app come to life. I think this was a good project to familiarise myself with User Interfaces. Although there were times when I got tired of making frames but not once did it force me to get up and leave, I finished my work and while I was working I was so absorbed that I never realised how time went by so quickly. If I had more time I would have loved to complete the app and make user test cases as well.

Apart from the task given in PoU, If I were to further develop this app, I would maybe add a game to it. In the sense that the users run the marathons and collect items (on the app) on their way and these items become inventory for a world-building game, like they have to create a forest and every time there's a fire in the forest they can use the items out of their inventory to control it. It was just an idea I came up with while working on the app.

All in all, I loved the case study and all the information I got through research was very cool, because it took me back to 9th grade when we had a climate chapter, and studying about this brought back information I had learnt in school. In general, I think this is a relevant topic as well considering the forest land decreasing due to human activity and negligence, I think it provides for better environmental consciousness.