B.Des Project II

Teaching the effects of climate change/global warming to middle school students through an Interactive media.

by
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Guided by
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Approval Sheet

The B.des Design Project II titled “Teaching the effects of climate change/global warming to middle school students through an Interactive media” by Nimir Singh Kuntia. Roll Number 16U130031 is approved in partial fulfillment of Bachelors in Design Degree at the IDC School of Design. Indian Institute of Technology Bombay.

Project Guide

Chairperson

External Examiner

Internal Examiner

Declaration

I declare that this project report submission contains my own ideas and work, and if any pre-existing idea or work has been included, I have adequately sited and referenced the original author(s).

I also declare that I have adhered to all the principles of academic honesty and integrity and have not misinterpreted, fabricated or falsified any idea/data/fact source in my submission.

I understand that any violation of the above will be caused for disciplinary action by the institute and can also evoke penal action from the sources.

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July 2020

Acknowledgements

I am grateful to Prof. Ravi Poovaiah for his support and guidance through the period of this project. I would also like to acknowledge the advice given by Prof. Swati Pal, Prof. Shilpa Ranade and Prof Anirudha Joshi from the panel whose opinions, suggestions and feedback guided me to the right direction.

Nimir Singh Kuntia
July 2020

Index

Index

Abstract

Climate change is a very relevant problem that we all are facing globally and in my opinion the only way we can tackle it is by educating the children better so that they can be more motivated to act and not repeat the same mistakes that their predecessor.

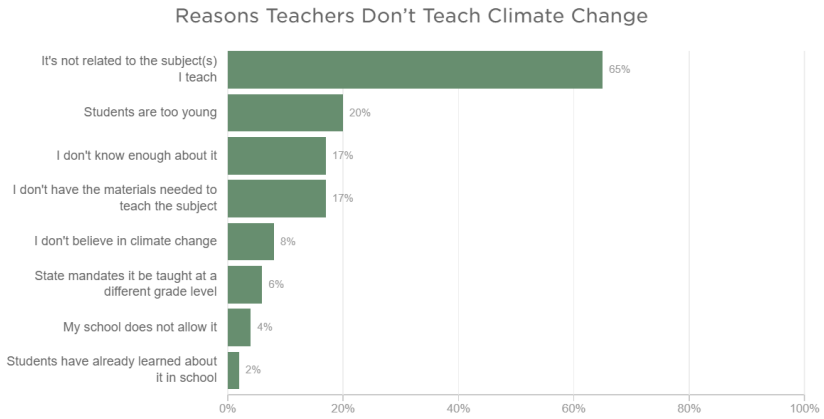
As my final year B.des project, I want to use all the knowledge and skills I have learned to make a very socially relevant project using technology which can create experiences that excite, engage and most importantly educate others.

Goal: I want to teach the children of middle school the effects of climate change and why it is such a big issue in a way that they can better visualize and empathize towards it by the use of modern technology.

Introduction

The Problem in the current system of Teaching -

NPR/Ipsos conducted a poll recently and found that more than 8 in 10 teachers and a similar majority of parents support teaching kids about climate change but in reality, it's not always happening. Fewer than half of teachers told us that they talk about climate change with their children or students. Again, parents were about the same. The top reason that teachers gave in our poll for not covering climate change? "It's not related to the subjects I teach," 65% said[1].



Why teach climate change through the use of interactive media ?

The above source mentions the drawbacks we have with the limited materials they have to teach children about climate change in a more engaging way. Using modern technology such as interactive media can make the data more visual and engaging.

Primary Research

Due to COVID-19 it was difficult to go out and do a proper primary research. I manage to interview two students-

1. **Samprita Soy**, 14 years old, studies in DAV Chaibasa, class VIII in CBSE board, english medium.

Talking to her mother, she said that she is average in studies, she was a very shy girl who if she doesn't know an answer would stay silent and look down. Had no awareness or basic knowledge of climate change at all.

2. **Priyanshu Kalundia**, 15 year old, studied in Sainik School Bhuvaneshwar (Now took TC), class VIII in CBSE Board, english medium.

Talking to his mother, he scores decent marks. He was in a strict boarding school and after taking TC spends most of his time watching movies. He had good knowledge about climate change but he did not consider it a big enough issue that he would personally like to act on it.

Interview Questions -

Questions Asked	Answers by Samprita Soy	Answers by Priyanshu Kalundia
Q. What is Global Warming ?	Warming of the earth, increasing of temperature.	Warming of the earth, increasing of temperature.
Q. What are its cause and effects ?	Deforestation and warming of planet.	Green house effect, using AC, combustion of fuels and it causes melting of ice and rising of sea level.
Q. Who is responsible ?	Humans.	Humans.
Q. Do you experience climate change in your daily life ?	(Silent)	Yes, mostly in the weather these days.
Q. What do you think we can do to stop it ?	Reforestation	Using renewable energy and electrical vehicles.
Q. Why do you think nothing is being done to stop it ?	(Silent)	People are trying but nothing is happening (When asked why is that, he said he don't know)
Q. How did you became aware of climate change, you started to realise that its a problem ?	In school	In school but main awareness came though talking with friends.
Q. Do you know climate activists like Greta Thunberg ?	(Silent)	Yes, through newspaper, she protested against forest and gave some speeches
Q. If protest like that happens in your area, will you take part in it ?	(Silent)	No, I don't like protesting.

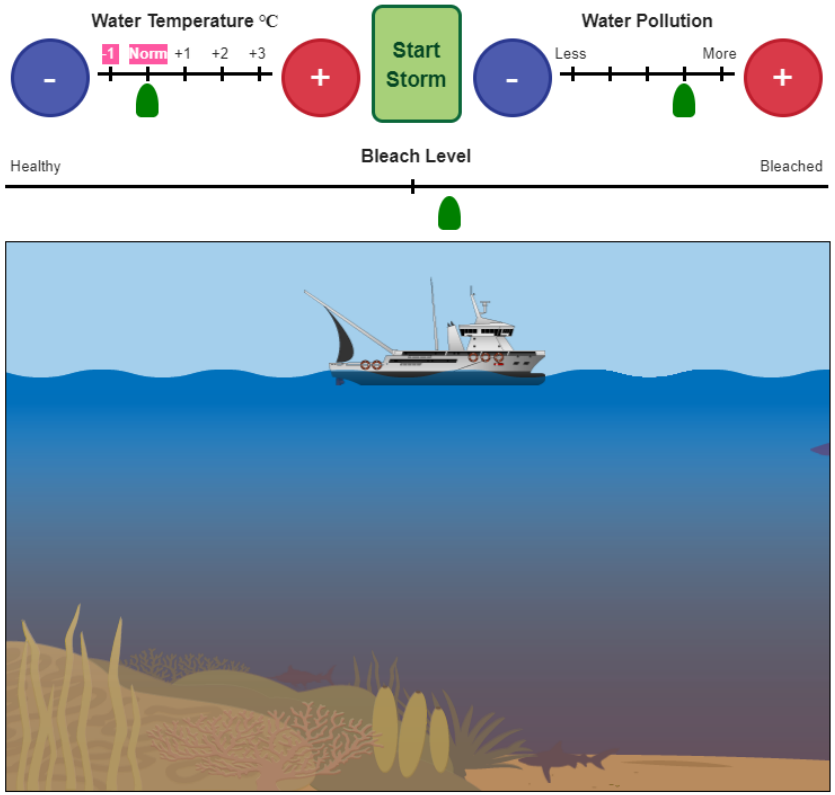
Secondary Research

Secondary Research for the Interactive Mediums.

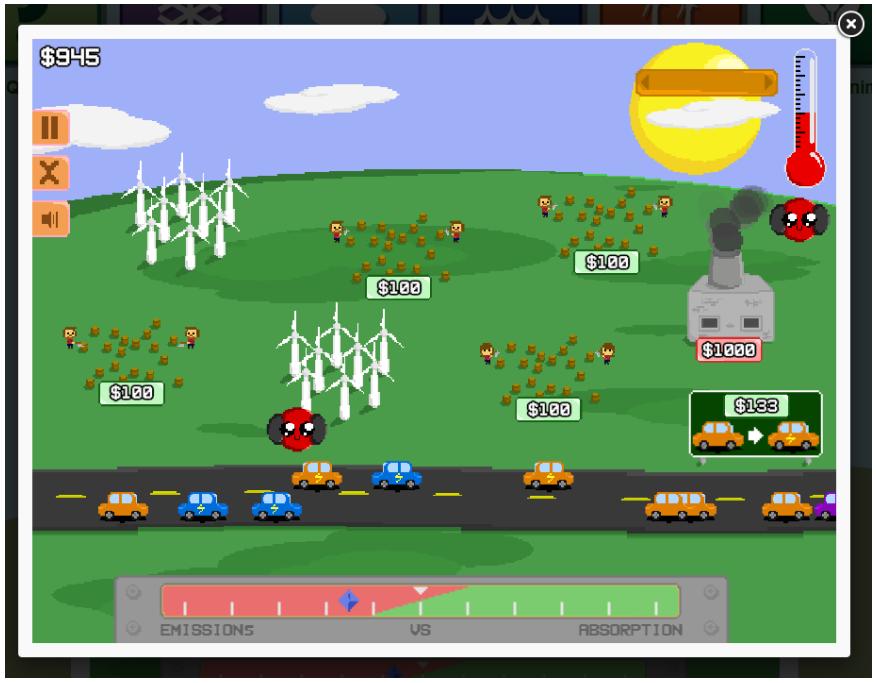
Interactive games by Climate Kinds, NASA: These are very simple games, each one of these games focuses on educating children about one particular topic. It's mostly interactive visualization or games for real world scenarios.

Examples of these mediums are-

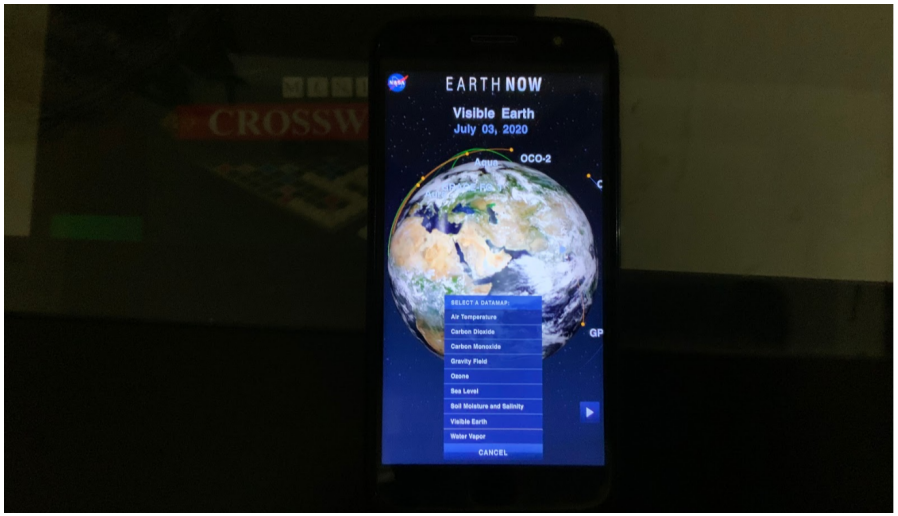
1. Coral Bleaching: You have two interactive dials of water temperature and water pollution from which you can visualize what happens to the marine world if the values are tweaked/made unhealthy. [2]



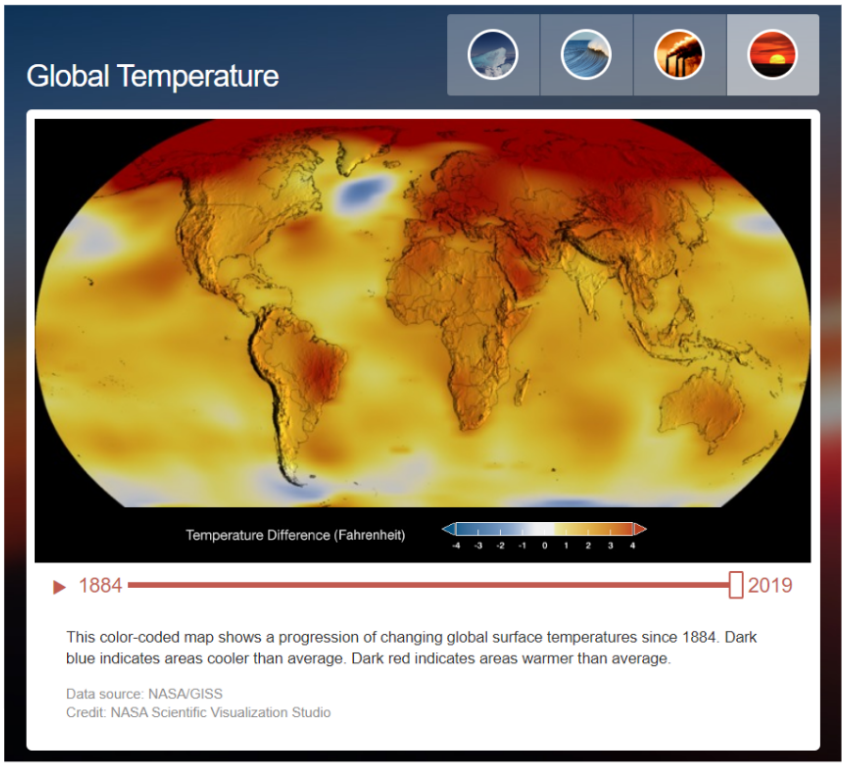
2. Play Offset: A game in which you need to plant trees, upgrade industries to more renewable energy sources, upgrade cars to electric cars so that less carbon is produced. There is also a dial on the top which bounces back carbon gases, if these carbon gases escape into the atmosphere, the amount of carbon, earth temperature will rise and the player will lose if the carbon/temperature reaches a certain threshold. [3]



3. **Earth Now:** It's an app by Jet Propulsion Laboratory which allows users to see and visualize all datas in the present time gathered by different NASA satellites. One of the examples of the data available is the sea level variation which you can visualise. There is also an option to explore the Vital signs of the problem and details about it.[4]

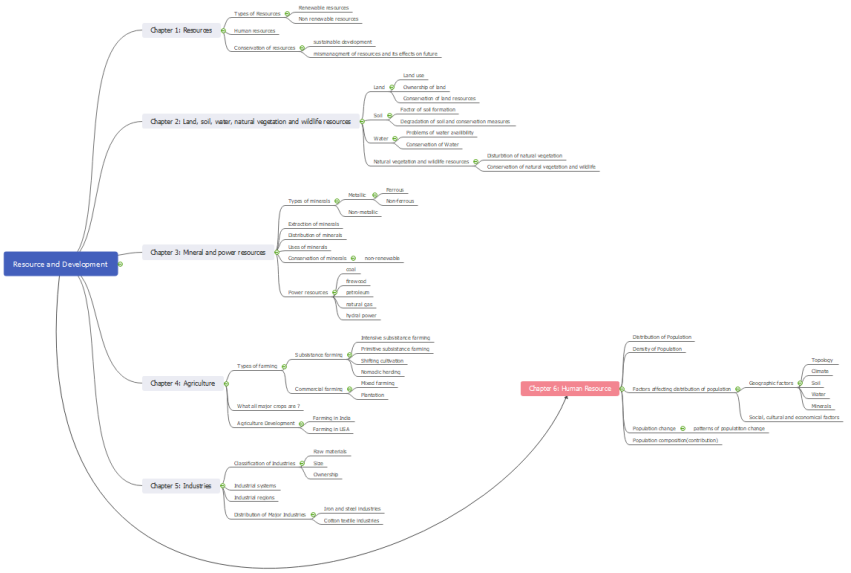


4. Climate Time Machine: The application helps the viewers to visualise the amount of sea ice, sea level, carbon dioxide and global temperature has changed from 1884 to 2019. According to the visualization, The data started rising from 1960 and started reaching an hazardous level from the 2000s.



Secondary Research on other mediums.

1. NCERT Social Science text book in Geography for class VIII: This particular book for the Indian students of 8th class (14 years old) covers a lot of topics which are related to climate change. It mostly focuses on Resource and development and covers a lot of topics essential to understand what are the causes of climate change. It covers a lot of relevant chapters/topics like[6] -



2. Man: An animated short film by steve cutts

Source: https://www.youtube.com/watch?v=WfGMYdalClU

It is a thought provoking movie in which man in which there was balance in the ecosystem and then a man came and destroyed the ecosystem and the planet.

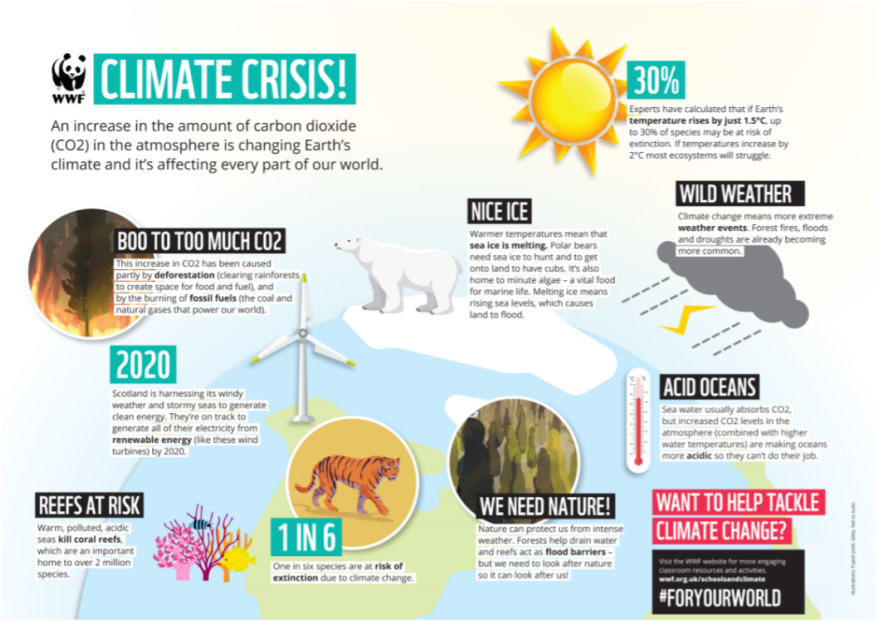
3. Before the flood: A national geographic documentary

Source: https://www.youtube.com/watch?v=zbEnOYtsXHA

A documentary which is now shown to the middle schoolers of America, itfeatures Leonardo DiCaprio who journeys through five continents and the Artic and shows how climate change is real and why no one is acting on it. It covers topics like the rise of sea level and the ignorance of politicians and major corporates, The massive burning of fossil fuels. How much ice has actually melted in Antarctica and Greenland. Floods in Florida, Amount of CO2 in China and how it is moving to renewable energy, Poverty in India and how farmers are affected by climate change. Drowning of Islands like Kiribati and coral bleaching, Burning of forests and destroying its vegetation in Indonesia to plant palm trees, How much methane is produced for beef and the concept of carbon tax etc. The documentary is very blunt and strikes politicians and greedy corporates and consumerism which is causing climate change.

4. The Garden of earthly delights by Hieronymus Bosch
The exterior of the painting depicts an the earth from the outside, the interior of the drawing panel has three panels, the first one depicts the past when there was balance, the second panel depicts the present times in which there is imbalance there are way to many people who are exploiting nature for there own greedy needs, in the third panel the nature retaliates and punishes mankind. The amazing thing is that the painting was made in the fifteenth century but is very relevant in what mankind is doing to nature today.[7]

5. Visualization of Climate Change by WWF: A very simple visualization made for school students to summarize climate change in one poster.[8]



6.Understanding what made youth activism so big ?

In the images below is listed some of the most popular speech/quotes by the young activist[9]. If we see patterns in all the quotes there are some things which are common in them and observing the patterns can make us understand what made them so big. These patterns are-

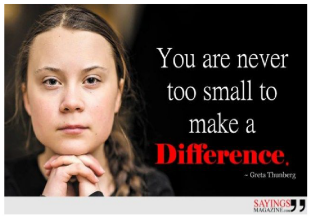
a. All of them target the youth, they are the only one who can make things right.

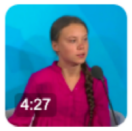
b. These speeches are structured in a way that not acting towards it will make you feel guilty.

c. The older generations, politicians and greedy corporates are villianified.

d. There is worldwide unity among the youth to tackle climate change.

e. All of the activists are young. making the point that if they can do it, there is hope if everyone unites and does what they can towards the common goal.





"People are suffering, people are dying, entire ecosystems are collapsing. We are in the beginning of a mass extinction and all you can talk about is money and fairytales of eternal economic growth."

Eyal Weintraub | Argentina

"We have reached a point in history when we have the technical capacities to solve poverty, malnutrition, inequality and of course global warming. The deciding factors for whether we take advantage of our potential will be our activism and our international unity"

Saoi O'Connor | Ireland

"If a politician comes to my door, I start asking them hard questions. Some of them are shocked . . . The politicians we elect this weekend will have a direct influence over whether or not my generation inherits a liveable planet . . ."

Lilly Platt | The Netherlands

"You don't have to be a grown up to do something. Children are allowed to help the environment. If they don't, they won't have a future. They won't have anything to go to school for."

Vic Barrett | USA

"The journey of looking at myself and my identity... made it clear to me that something had to be done. How could you not when people are dying?"

David Wicker | Italy

"We will not stop until politicians and leaders decide to take action"

Luisa Neubauer | Germany

"What the world community is doing with the planet, will be described one day as the biggest political failure of our time"

John Paul Jose | India

"India should declare a climate emergency. The rich biodiversity and culture are under direct threat from our climate crisis."

Kallan Benson| USA

"Don't be intimidated by what you think you can't do. Do what you can. Learn about the issue. It's important to focus on making better choices and decisions, not on finding the 'right' solution or answer."

Leah Namugerwa | Uganda

"Most people do not care what they do to the environment. I noticed adults were not willing to offer leadership and I chose to volunteer myself. Environmental injustice is injustice to me."

Insights from Primary and Secondary Research

1.Middle school students have a very basic understanding of the issue.

2. Most of the interactive mediums focus on only one topic and give only very raw data. The impact which is portrayed in the games of climate change does not provoke any thoughts.

3.The Earth Now App and Climate Time Traveler is good in giving real world data but is only suitable for mature audiences who have a very good understanding of climate change.

4.The class VIII textbook in Geography has really good information and is well suited for them but the chapters focus more on explaining these concepts and explaining how big of an issue it is not explained in that much brief as it should be.

5.Before the storm is a good documentary and should be also shown to the students of India or something similar.
It is extremely thought provoking.

6. The young activists movement is successful because the youth directly speaks to the youth.

Redefining the Problem Statement and its scope

Since most of the children are unaware of the topic it is essential that my design to **Teach the middle school students the basic understanding of Global Warming in a thought provoking way by the use of interactive media.**

Scope

1.For the students to understand Global Warming and the system that causes the issue

2.For the students to know what all has been affected because of climate change.

3.For the students to become aware that if nothing is done to prevent it, how would the disastrous future look like ?

4.For the students to know what can be done to prevent such a future ?

User Persona

This is Meena. She is a 14 year old student who is a student of class VIII who studies in a CBSE english medium school in Jodhpur, Rajasthan. She is from a middle class Indian family. Her father is always busy in his Grocery shop and comes home tired but he really cares about her, her older sister and a just born baby boy. Meena's Mother is a housewife and she did not have a proper privilege of education like Meena and has struggled with a lot of inequality in her time and she wants to make sure that her daughters don't go through the same struggles as her. Meena also has an older sister who is four years older but is like a best friend and a mentor to her.
The youngest member of her family is a baby boy who is not even a year old, She treats him like her own son.

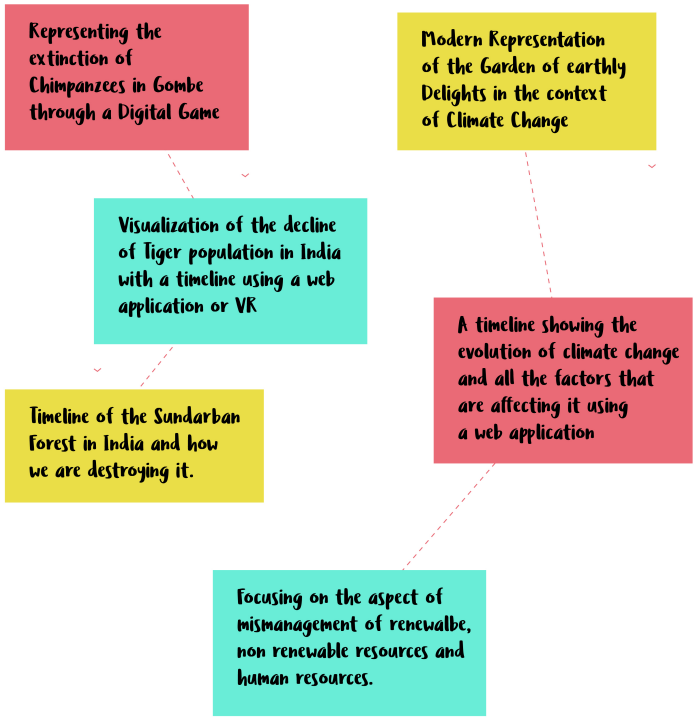
She is not the brightest student in her class but she always tries the best she can. She always struggles with maths and problem solving. She can only understand things which she can visualize and relate to more. In her class she is mostly shy in front of her teachers and people who she doesn't know well but she deeply cares about her small circle of friends and her family the most.

Her school is only now adapting to smart class. Meena likes when teachers show movies, animation or interactive games in the smartclass. She studied about Global Warming in her VII class but her understanding was more scientific rather than it being something more real. In class VIII she is studying Global Warming in a more real world context.

When she went back home, she asked about Global Warming to her sister and they had a good discussion about how real and how big of a threat it actually is. Now Meena worries about the future and her family but she is still unable to visualise the problem properly and has no idea who is responsible/what is the system that allows such a crisis ?

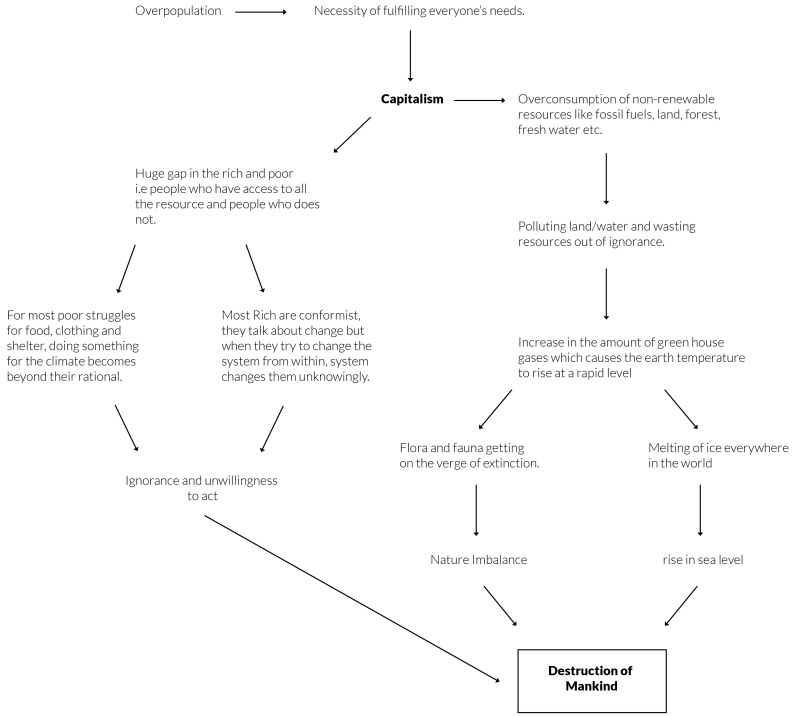
Ideation

Brainstorming: I started getting ideas and then rethinking about those ideas for the context of how it can represent the system better.



Understanding of the system

The current system came into existence after the world war, in the 1960's when the baby boomers were born and huge growth in the industries worldwide happened. The system is now leading us to the world's worst crisis.



Concept 1 (Draft): The first idea was to represent the extinction of Chimpanzees of Gombe by making a digital game which focuses on the young rangers who want to make sure that the chimps do not get extinct by climate change. The reason why it could not be implemented was because the game mechanics weren't fleshed out due to the limitation of time also I found it quite difficult to execute the idea. So I decided to not make games but more of a visualization. I decided to represent the decline of the Chimps population through a timeline. Same visualization could have also been used for the Tigers in India. Thus the project idea evolved to represent a timeline which shows the decline of tiger population by the use of VR. It was only later I realised that the Tiger population has been growing since the last 10 years and is getting better so I dropped the idea.
Conditions of Tigers aren't good in the Sundarban area though I researched about the project Wade by ghost animation about how climate change is affecting both the citizens and the farmers of Sundarban region. I wanted to ideate more but issues came when -

1. Unable to find a lot of real world numerical data and history on the area.

2. When students are unaware of the basics of climate change, it's difficult to explain something that specific.

3. It's not something which is a part of their academics

4. The narrative is hard to explain with an interactive media.

5. Only covers a small portion of the system which is good to represent the problem but not so much in explaining the bigger network that exists.

Concept 2: I wanted to make sure that my concept covers the following objective-

1. It should cover the most of the system mentioned above.

2. It should cover the conservation part given in all the chapters of the VIII class geography book and the documentary.

3. It should be able to help students visualize the real world data and how it is affecting/affected the real world.

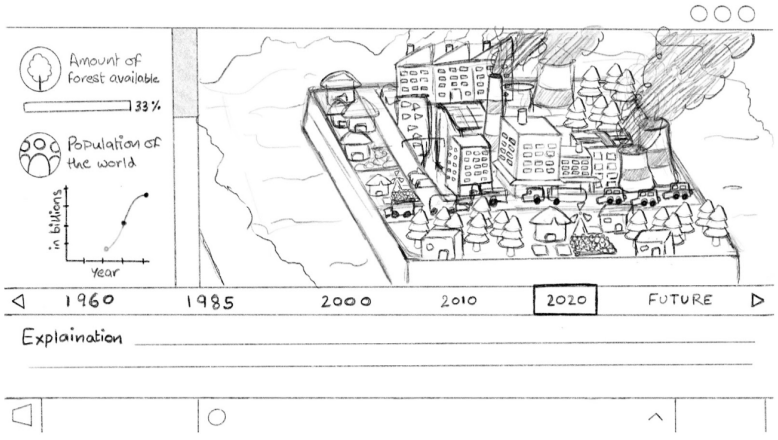
4. It should be able to explain the system in the most simple way possible.

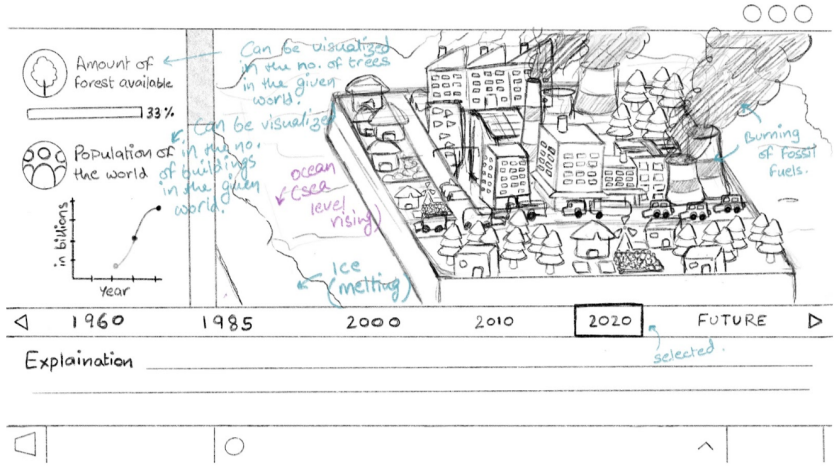
5. It should be able to show how it has affected the world, us and the vegetation to provoke thought in the students and how we and them are responsible.

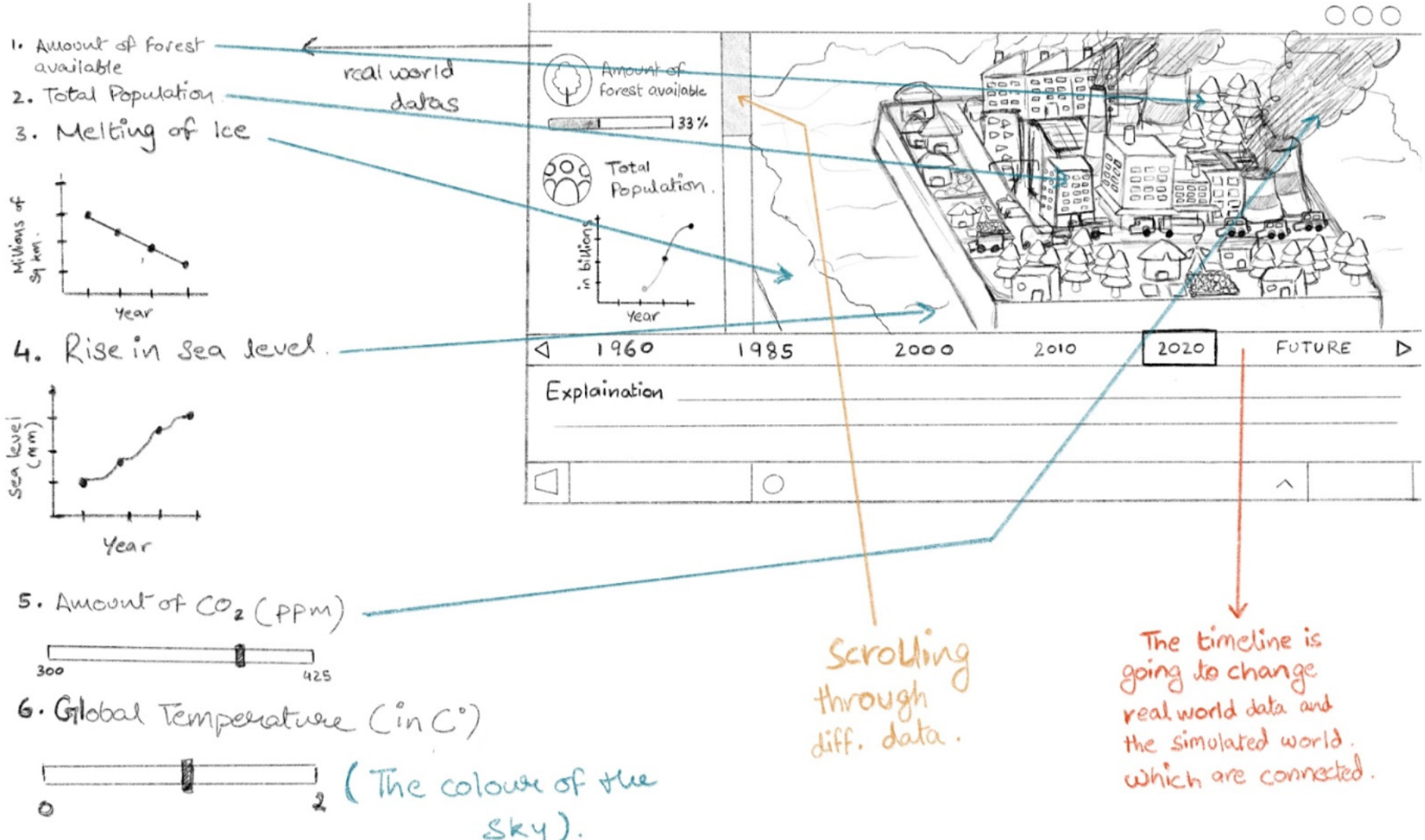
Converting the concept into an idea (Basic Wireframe)

It is a concept for a web application which can be used in smart class or in the NASA website, you start in the 1960's which was the start of imbalance. You go forward in time to get a visual idea of how real world data and the simulated world which is based on it has changed over the time. In the end there is an Apocalyptic future which is possible if these numbers continue to rise and stopping is only possible if you (the youth) can do something about it.

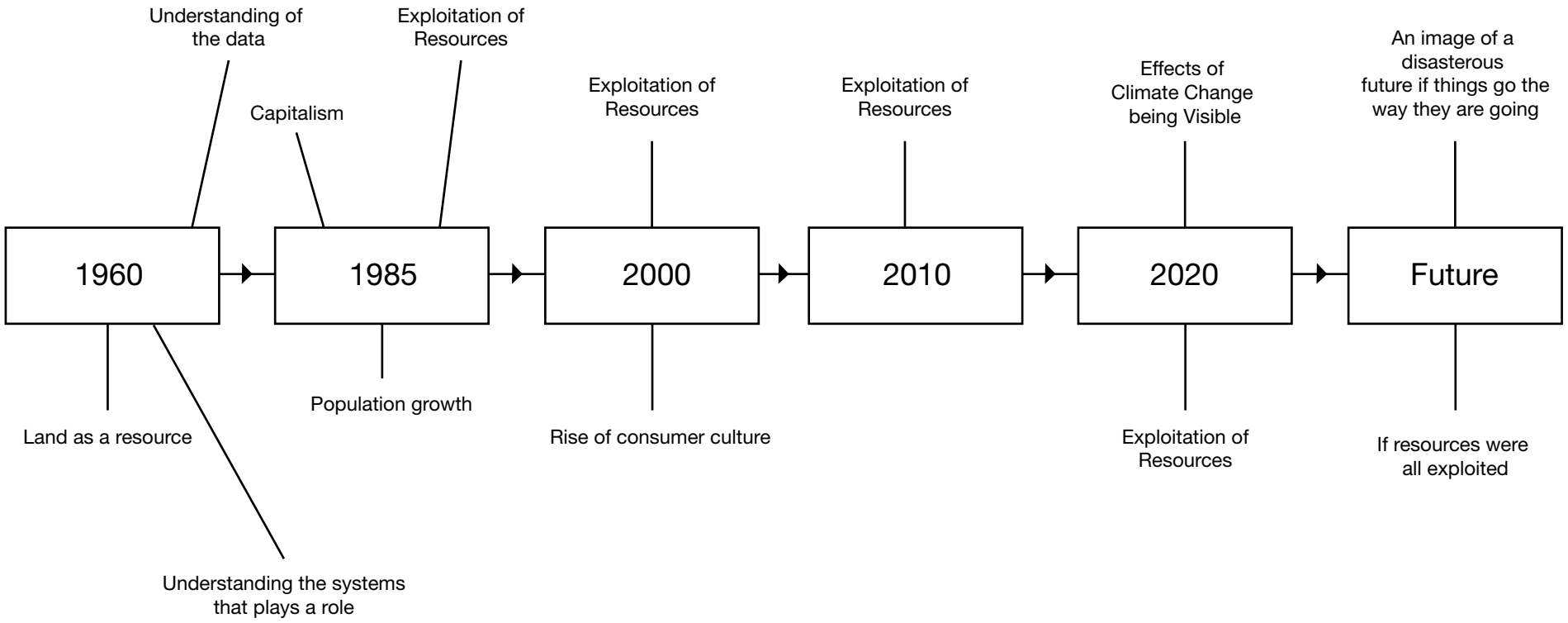
If an object in a simulated world or any data on the left hand side is selected, An explanation in the bottom bar will appear. This application covers most of the system and objectives and I have checked the availability of real world data. [10]



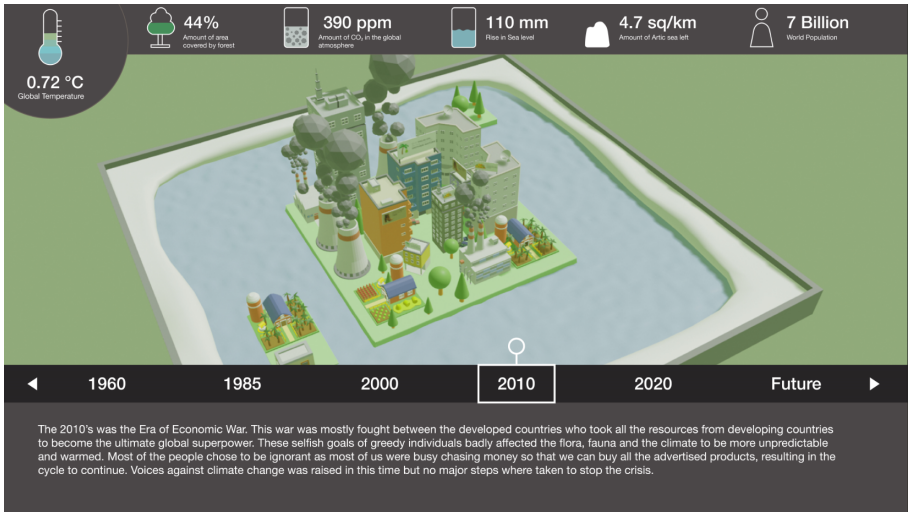



1. Amount of forest available
2. Total Population
3. Melting of Ice
Millions of Sq km
Year
4. Rise in Sea level
Sea level (mm)
Year
5. Amount of CO_2 (ppm)
300
425
6. Global Temperature (in C°)
0
2
(The colour of the sky).
real world datas
Amount of forest available
33%
Total Population.
in billions
Year
1960
1985
2000
2010
2020
FUTURE
Explaination
Scrolling through diff. data.
The timeline is going to change real world data and the simulated world. which are connected.

User Flow


Understanding of the data
Exploitation of Resources
Capitalism
Exploitation of Resources
Exploitation of Resources
Effects of Climate Change being Visible
An image of a disasterous future if things go the way they are going
1960
1985
2000
2010
2020
Future
Land as a resource
Understanding the systems that plays a role
Population growth
Rise of consumer culture
Exploitation of Resources
If resources were all exploited

Final Product based on Wireframes and the User Flow



The final product is an interactive timeline in which the user is the time traveler and is able to see the data changing in the top bar which is the real world data and is able to visualize the changes and it's impact on the simulated world which is a mini representation of the real world. In the bottom, an explaination is available which explains the above system and the events that occured during that particular time which lead to the climate crisis as we see today.

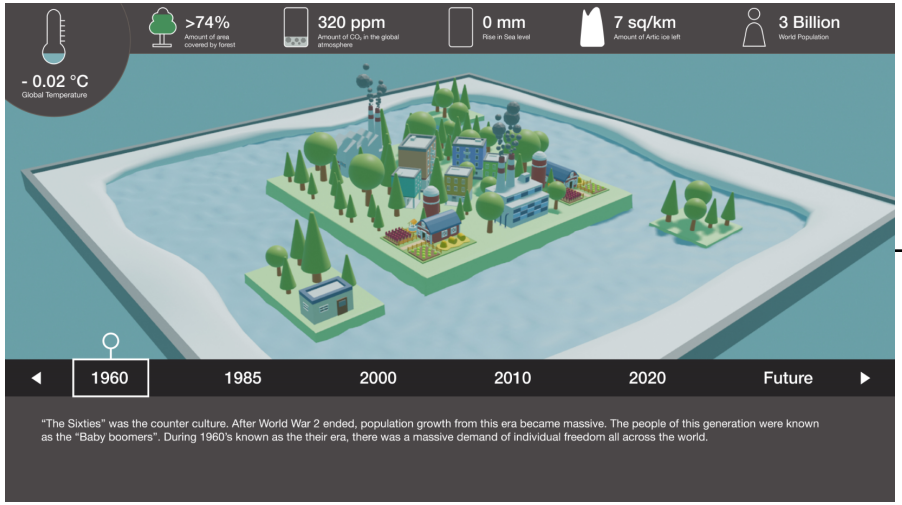
The main screen, the simulated world can be zoomed in, zoom out and be rotated via mouse.

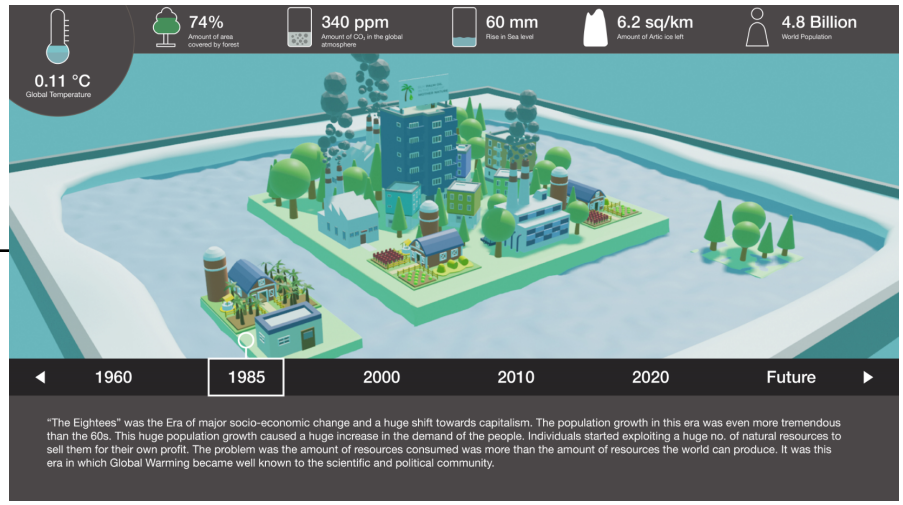
The data given on the top, each of the above data can be selected. Selecting the forest icon will highlight all the trees in the world. Selecting the CO2 panel will highlight the smoke coming out from the industries. Selecting the Water panel will highlight the water, The ice will highlight the ice on the corner and the population will highlight the buildings. The colour of the sky depends upon the thermometer which represents the global temperature.

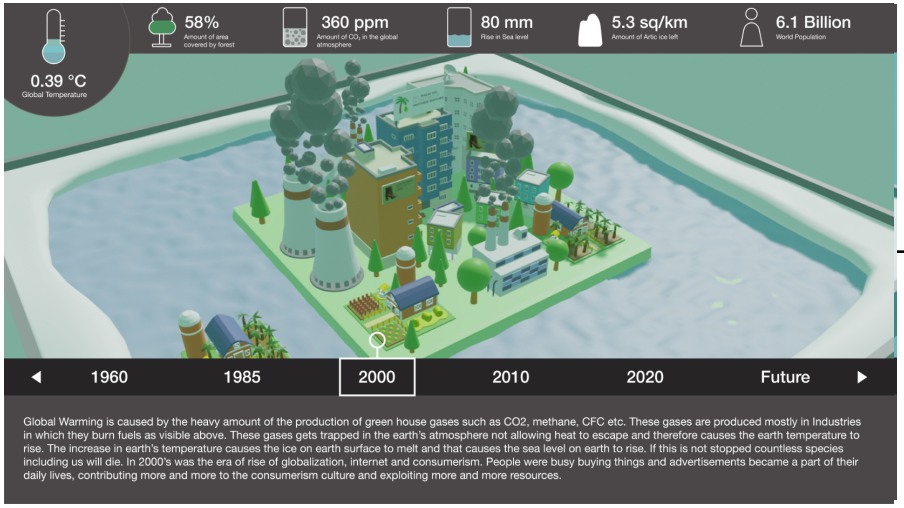
The timeline can be clicked upon to cycle through different periods[11].

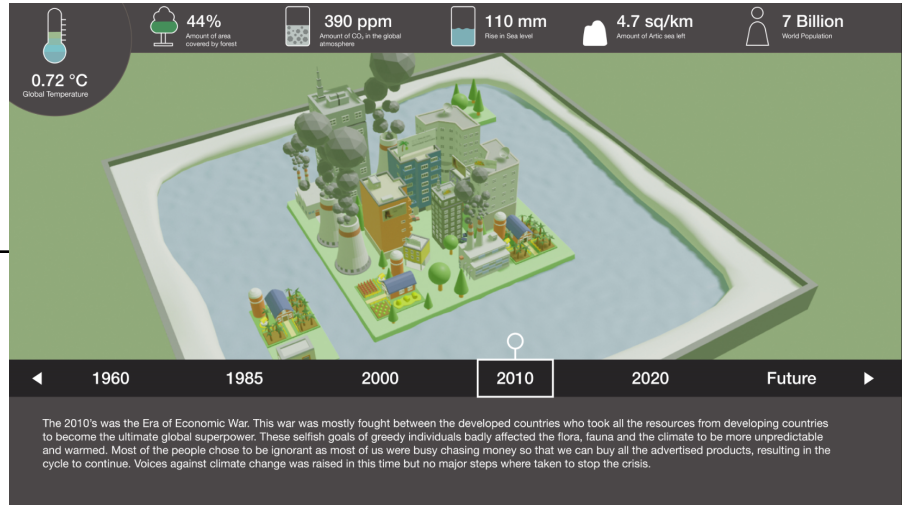
In the bottom bar the explainer is writen in such a way that it speaks to the youth with the similar tone to the climate activists so that it can be more thought provoking.
As clicked on the timeline, there will be a voice which will read the message.

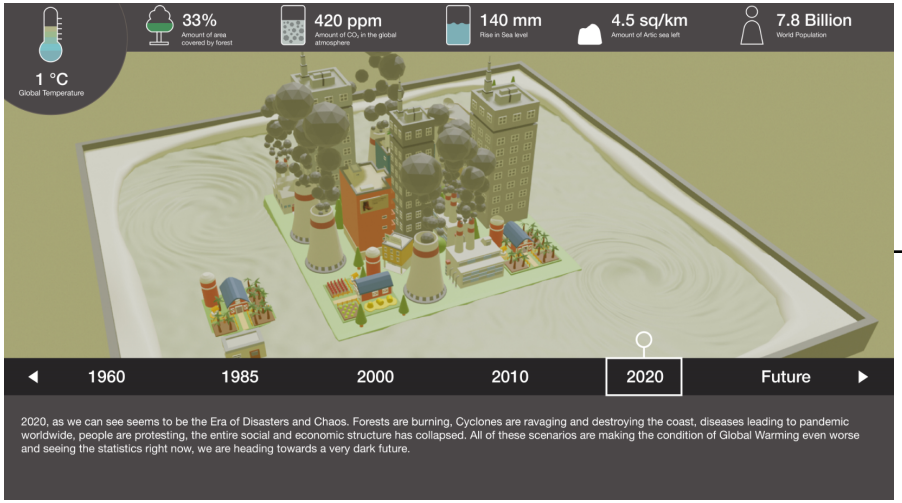
The mechanism will be shown in the video presentation.


- 0.02 °C
Global Temperature
>74%
Amount of area covered by forest
320 ppm
Amount of CO_2 in the global atmosphere
0 mm
Rise in Sea level
7 sq/km
Amount of Artic ice left
3 Billion
World Population
1960
1985
2000
2010
2020
Future
"The Sixties" was the counter culture. After World War 2 ended, population growth from this era became massive. The people of this generation were known as the "Baby boomers". During 1960's known as the their era, there was a massive demand of individual freedom all across the world.

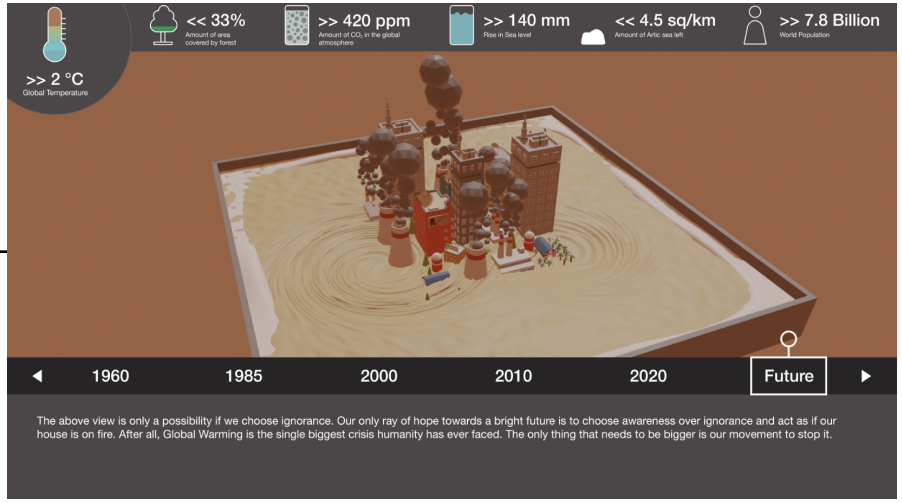

0.11 °C
Global Temperature
74%
Amount of area covered by forest
340 ppm
Amount of CO_2 in the global atmosphere
60 mm
Rise in Sea level
6.2 sq/km
Amount of Artic ice left
4.8 Billion
World Population
1960
1985
2000
2010
2020
Future
"The Eightees" was the Era of major socio-economic change and a huge shift towards capitalism. The population growth in this era was even more tremendous than the 60s. This huge population growth caused a huge increase in the demand of the people. Individuals started exploiting a huge no. of natural resources to sell them for their own profit. The problem was the amount of resources consumed was more than the amount of resources the world can produce. It was this era in which Global Warming became well known to the scientific and political community.


0.39 °C
Global Temperature
58%
Amount of area covered by forest
360 ppm
Amount of CO_2 in the global atmosphere
80 mm
Rise in Sea level
5.3 sq/km
Amount of Artic ice left
6.1 Billion
World Population
1960
1985
2000
2010
2020
Future
Global Warming is caused by the heavy amount of the production of green house gases such as CO2, methane, CFC etc. These gases are produced mostly in Industries in which they burn fuels as visible above. These gases gets trapped in the earth's atmosphere not allowing heat to escape and therefore causes the earth temperature to rise. The increase in earth's temperature causes the ice on earth surface to melt and that causes the sea level on earth to rise. If this is not stopped countless species including us will die. In 2000's was the era of rise of globalization, internet and consumerism. People were busy buying things and advertisements became a part of their daily lives, contributing more and more to the consumerism culture and exploiting more and more resources.

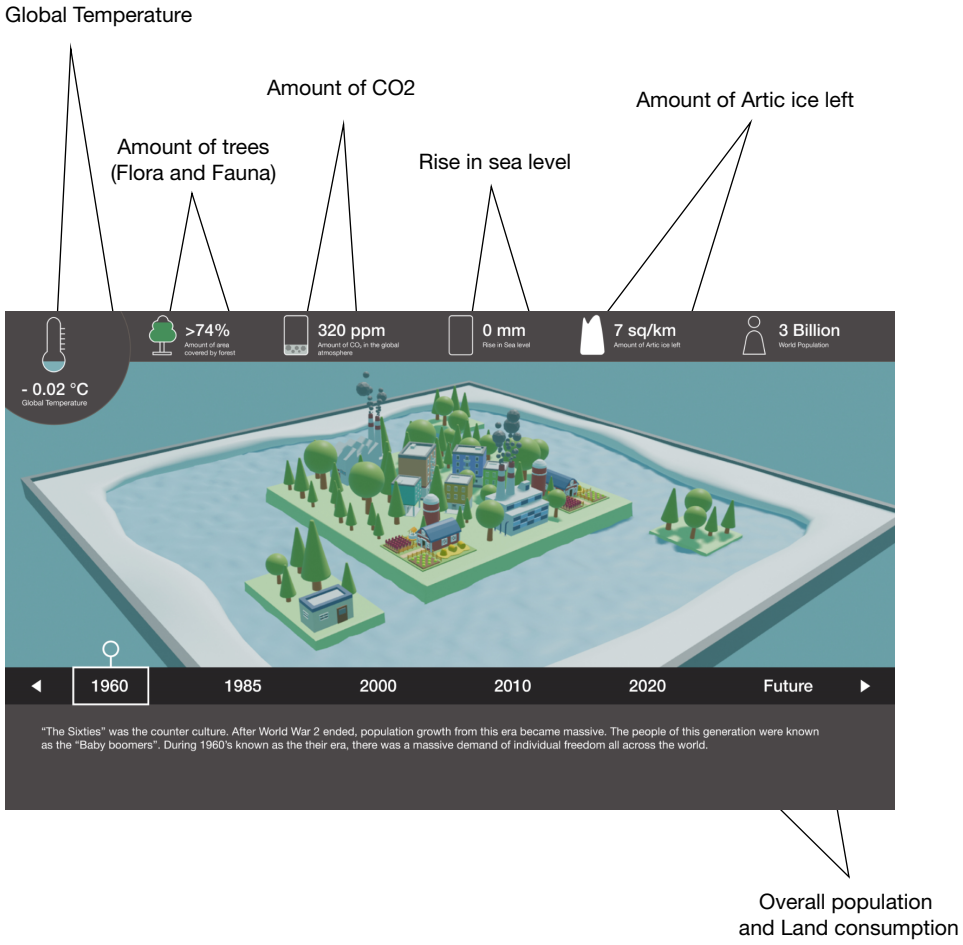

0.72 °C
Global Temperature
44%
Amount of area covered by forest
390 ppm
Amount of CO_2 in the global atmosphere
110 mm
Rise in Sea level
4.7 sq/km
Amount of Artic sea left
7 Billion
World Population
1960
1985
2000
2010
2020
Future
The 2010's was the Era of Economic War. This war was mostly fought between the developed countries who took all the resources from developing countries to become the ultimate global superpower. These selfish goals of greedy individuals badly affected the flora, fauna and the climate to be more unpredictable and warmed. Most of the people chose to be ignorant as most of us were busy chasing money so that we can buy all the advertised products, resulting in the cycle to continue. Voices against climate change was raised in this time but no major steps where taken to stop the crisis.

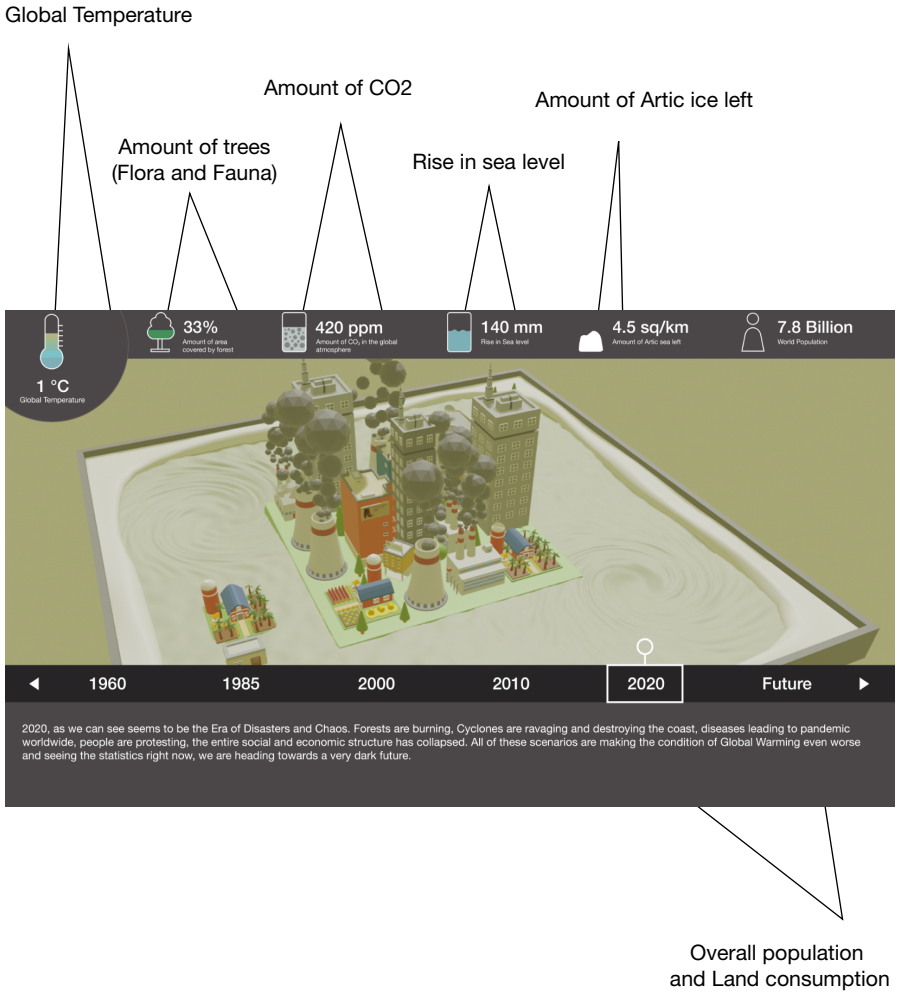


2020, as we can see seems to be the Era of Disasters and Chaos. Forests are burning, Cyclones are ravaging and destroying the coast, diseases leading to pandemic worldwide, people are protesting, the entire social and economic structure has collapsed. All of these scenarios are making the condition of Global Warming even worse and seeing the statistics right now, we are heading towards a very dark future.



The above view is only a possibility if we choose ignorance. Our only ray of hope towards a bright future is to choose awareness over ignorance and act as if our house is on fire. After all, Global Warming is the single biggest crisis humanity has ever faced. The only thing that needs to be bigger is our movement to stop it.


Global Temperature
Amount of trees
(Flora and Fauna)
Amount of CO2
Rise in sea level
Amount of Artic ice left
- 0.02 °C
Global Temperature
>74%
320 ppm
0 mm
7 sq/km
3 Billion
1960
1985
2000
2010
2020
Future
"The Sixties" was the counter culture. After World War 2 ended, population growth from this era became massive. The people of this generation were known as the "Baby boomers". During 1960's known as the their era, there was a massive demand of individual freedom all across the world.
Overall population
and Land consumption


Global Temperature
Amount of trees
(Flora and Fauna)
Amount of CO2
Rise in sea level
Amount of Artic ice left
1 °C
Global Temperature
33%
420 ppm
140 mm
4.5 sq/km
7.8 Billion
1960
1985
2000
2010
2020
Future
2020, as we can see seems to be the Era of Disasters and Chaos. Forests are burning, Cyclones are ravaging and destroying the coast, diseases leading to pandemic worldwide, people are protesting, the entire social and economic structure has collapsed. All of these scenarios are making the condition of Global Warming even worse and seeing the statistics right now, we are heading towards a very dark future.
Overall population
and Land consumption

User Testing and Feedback

Due to the constraints of pandemic, user testing was only done within family members which did not meet the required age group. But I manage to get some interesting insights.

1. Interactivity between the top bar was almost not visible.

2. The user flow was not maintained as the user skipped to the timeline without analysing one data properly.

3. Some details were not even noticed.

4. The installation was way too simple and quick

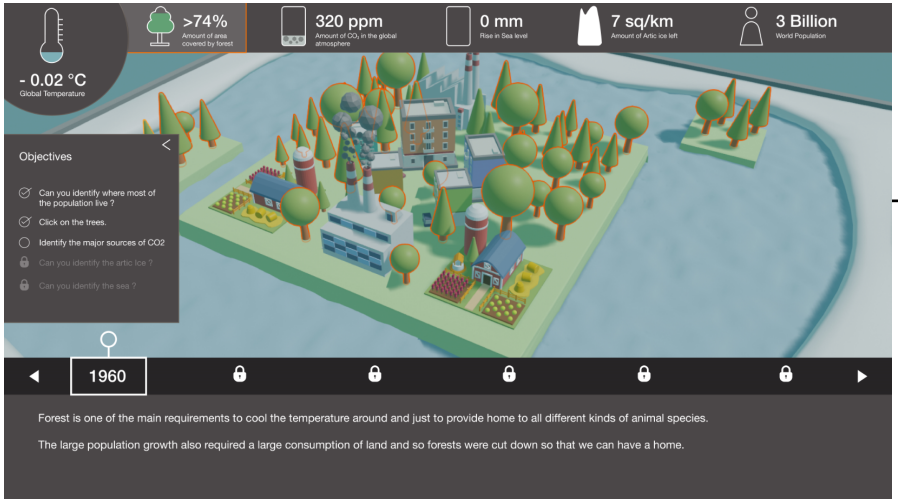
Gamification

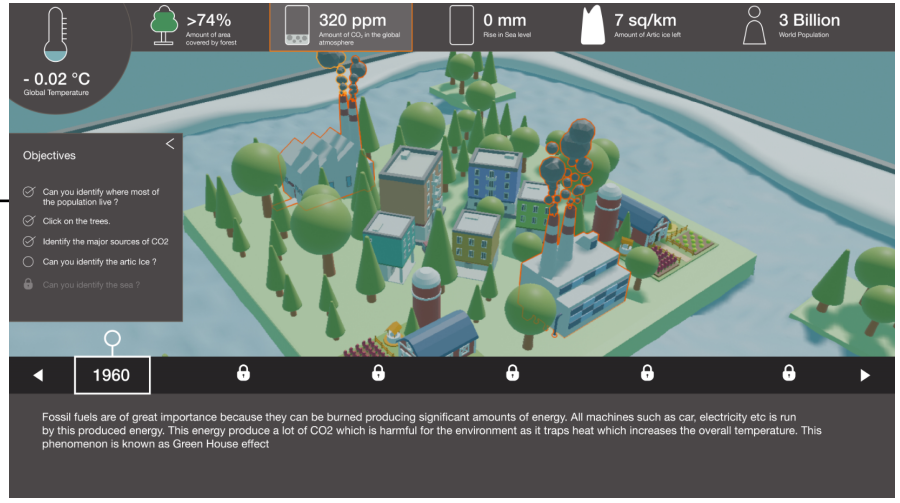
It is possible to lock the timeline in the future and force the interactivity through objectives which includes interacting with the real world data.

These questions can be presented in an interesting way such as “Click at the source of CO2 ? Once clicked an explanation of the particular screen is possible.

Since the purpose of the game is only learrning, It can be a simple find and identification game to just add a bit of challenge and complexity but it can be made easy enough to progress and learn without anxiety.

Output


- 0.02 °C
Global Temperature
>74%
Amount of area covered by forest
320 ppm
Amount of CO_2 in the global atmosphere
0 mm
Rise in Sea level
7 sq/km
Amount of Artic ice left
3 Billion
World Population
Objectives
Can you identify where most of the population live ?
Click on the trees.
Identify the major sources of CO2
Can you identify the artic Ice ?
Can you identify the sea ?
1960
Forest is one of the main requirements to cool the temperature around and just to provide home to all different kinds of animal species.
The large population growth also required a large consumption of land and so forests were cut down so that we can have a home.


- 0.02 °C
Global Temperature
>74%
Amount of area covered by forest
320 ppm
Amount of CO_2 in the global atmosphere
0 mm
Rise in Sea level
7 sq/km
Amount of Artic ice left
3 Billion
World Population
Objectives
Can you identify where most of the population live ?
Click on the trees.
Identify the major sources of CO2
Can you identify the artic Ice ?
Can you identify the sea ?
1960
Fossil fuels are of great importance because they can be burned producing significant amounts of energy. All machines such as car, electricity etc is run by this produced energy. This energy produce a lot of CO2 which is harmful for the environment as it traps heat which increases the overall temperature. This phenomenon is known as Green House effect


0.72 °C
Global Temperature
44%
Amount of area covered by forest
390 ppm
Amount of CO_2 in the global atmosphere
110 mm
Rise in Sea level
4.7 sq/km
Amount of Artic sea left
7 Billion
World Population
Objectives
Identify palm oil farm
Identify palm oil advertisement
Identify more advertisements
Find the endangered animal
1960
1985
2000
2010
The use of palm oil in food products has attracted the concern of environmental activist groups; the high oil yield of the trees has encouraged wider cultivation, leading to the clearing of forests in parts of Indonesia to make space for oil-palm monoculture. This has resulted in significant acreage losses of the natural habitat of the three surviving species of orangutan. One species in particular, the Sumatran orangutan, has been listed as critically endangered.


0.72 °C
Global Temperature
44%
Amount of area covered by forest
390 ppm
Amount of CO_2 in the global atmosphere
110 mm
Rise in Sea level
4.7 sq/km
Amount of Artic sea left
7 Billion
World Population
Objectives
Identify palm oil farm
Identify palm oil advertisement
Identify more advertisements
Find the endangered animal
BUY PALM OIL IN THE COST OF MOTHER NATURE
1960
1985
2000
2010
Advertising is nothing new, but technological developments have made it easier for firms to market products within the sphere of our personal lives. In a world that has transitioned from billboards to push notifications

Conclusion and Future work

The user flow can be followed through this method of gamification. This mechanism will also allow the user to learn more about each and every single element present in the system. The user can progress through completing each objective given and progress to the next timeline.

The future timeline is just a fictional representation made only to provoke thought and is not a representation of actual datas.

These are the future applications of the interactive installation -

1. The installation can be used in schools, in the smart class when the teacher is teaching their students about Global warming.

2. The web application can be made available on websites like NASA: Climate kids.

3. It is possible that the same application can be made in VR.

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