



SRI SHANTI
SRISHTI INSTITUTE OF
ART, DESIGN AND TECHNOLOGY
Bengaluru

PG CAPSTONE PROJECT 2020 | EXEGESIS

STUDENT

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PROJECT

Exploring the Indian Classical Elements in Video Games

PROGRAM

Master of Arts in Design Practices (MADP)

AWARD

Game Design and Development [GDD]

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PG Capstone 2020 Exegesis
(Postgraduate Program)

Srishti Institute of Art, Design and Technology
Bangalore 560064 Karnataka

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Printed at

Printo - Yelahanka, Bangalore

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Student Name Vivek Varshney

Student Signature

Date 31st July, 2020

Table of Contents

Acknowledgements	06
Introduction	08
Proposal / Brief	10
Understanding the elements	12
Exploring Existing Works	22
Timeline	24
Ideation	26
Game design	32
Iterations and Milestones	46
Future Scope	70
Reflection	72
Bibliography	76

Acknowledgement

I would like to thank my mentors, Yadu Rajiv and Shraddha Jain, from the Games Development Department at Srishti Institute of Art, Design and Technology for constantly providing me with essential feedback required to assemble this project. They gave fruitful insights about the aspects that I might have missed and persistently improved this project as a game to be shared out with the world. I would also like to appreciate my family and friends who supported me morally during the current times of nationwide lockdown and coronavirus pandemic.

Introduction

The project aims to explore and implement the Indian context in building video games, into its mechanics, game loop, play, story, etc.

The story starts at my summer internship where my employer posed a question about exploring original Indian content in games. He, specifically, mentioned not to fall back to the Indian epics of Ramayana and Mahabharata because many major production houses in Indian films and television have already explored it to an extent and keep picking up the same stories even though there are various versions and perspectives of these stories available to explore. This led to the question, “What is Indian, in the grander scale of things, within games and design?”

One would say that there is a small trend of exploring Indian themes mainly because, for a culture that dates back thousands of years and for a population of over 1.3 billion people, it is a gold mine of content and to profit out of, for a larger audience. Even though the reasons are understandably commercial, it gives enough motivation to start such a discussion. Some examples are Last of Us: Lost Legacy by developer Naughty Dog and published by Sony Interactive Entertainment, Far Cry 4 by Ubisoft that explored a game world of Indo-Nepalese origin, etc. In the mobile gaming space , there are a few examples. Masala Madness by Pune based Cympl Studios, Hitwicket and Hitwicket Superstars by Hitwicket Cricket Games are games made keeping in mind the Indian audience. However, these are regular Cooking/Diner Dash or Cricket/Fantasy Cricket games, that are morphed only to appeal Indian players. On the other hand, Asura by Ogrehead Studio, Mystic Pillars by Holy Cow Productions, upcoming Raji: An Ancient Epic by Nodding Head Games, based out of Pune, are produced from various explorations of Indian stories and cultural elements developed into games.

Such a discussion about the exploration of Indian themes in games, not only gives a chance to find new game concepts, mechanics and gameplay but also allows us to revisit the culture, to present it in a new interactive medium, i.e. games. This can become a more effective way of engaging with a story as an active participant rather than passive consumer of such content as with other non-interactive media.

Taking this philosophy forward, the project naturally inclined towards finding concepts and teachings of the Indian culture. Now, while going through such concepts, one uncovers the primary concepts that lead to the formation of religion and culture in India. For example, how there are complementary concepts in Hinduism and Buddhism, which have originated from the Indian subcontinent. Among these, the concept of the five great classical elements or the ‘Panch Mahaboot’ was picked up for its simplicity and availability of depth to explore associated ideas. Also, its interpretations were restricted to the perspective of Hinduism in order to not dilute its meaning in the current context or incorrectly mix it with other interpretations.

Proposal/Brief

The project proposes to take the concept of Panch Mahaboot and its various interpretations in Hinduism and build a game based on those learnings. The Panch Mahaboot are the following: Akash(Space), Vayu(Air), Jal(Water), Agni(Fire) and Bhumi(Earth)(Gopal and Gautham 1990). The idea of classical elements have appeared in many Eastern cultures like Chinese, Japanese(Carroll 2012) as well as modern popular media have introduced this in their work, some notable ones being Avatar and Naruto, the anime series. This project hopes to bring out Indian, more precisely Hindu perspective, in the games media and experiment with new game mechanics based on the learnings while researching the classical elements.

Understanding the elements

This section presents the literature review on the Indian classical elements for the reader to perceive the context of the project and to present, in further understanding of how the game was built. The game is inspired by two major theories of the Hindu doctrine, namely, Panch Bhoot (Five Great Elements) and the Sarira Traya (Doctrine of the Three bodies)(Sharma 2006).

Sarira Traya

According to Sarira Traya, the human body consists of three ‘bodies’ from a person who has broken ties with the real world or portrayed by one who has achieved his/her ignorance to the real world. These three bodies are Sthula sarira (gross body), Sukshma sarira (subtle body) and Karana sarira (causal body). Sthula sarira or the gross body is the material or the mortal body that performs all the basic activities to sustain and nourish itself. According to Hindu philosophy, its structure is based on the actions performed in ones’ previous life. Sukshma sarira or the subtle body holds the mind and the vital energies to keep the physical body alive. It consists of the elements of the Panch Bhoot before they have entered or manifested into the material world. Karana sarira or the causal body is the seed for the Sthula and Sukshma sarira. It can be described as the abstract form of the meaning of ignorance to the material world. The Karana sarira and Sukshma sarira together form the jīva or soul in Hindu philosophy.

Bhoota (Element)	Associated Sense	Associated Sense Organ	Perception mode
Akash/Dyaus (Space)	Sound	Ear	Heard
Vayu (Air)	Touch	Skin	Heard, Felt
Agni (Fire)	Sight/Color	Eye	Heard, Felt, Seen
Jal/Varuna (Water)	Taste	Tongue	Heard, Felt, Seen, Tasted
Prithvi/Bhumi (Earth)	Smell	Nose	Heard, Felt, seen, Tasted, Smelled

Panch Mahaboot

Association with the Human Senses

The Panch Mahaboot are associated with the five human senses and their respective sensory organs(Sinha 2006), as mentioned in the figure on the left.

This is easy to understand as if one in a closed unlit room, one can sense space through sounds using their ears. If any breeze flows, one can sense it on their skin (touch). Fire is a source of light which inturn is a means of sight. One can taste water but not the other elements. Earth can be smelled as it has many minerals that emit different odours. One can note pure air and water are odourless and tasteless. The fourth column of the table depicts how when two elements combine, their perception of the later element is increased and one might also say it depends on the previous element. For example, fire can be heard because of the sound waves travelling through the air, which exists in a space and its heat can be felt from far because of the heated air waves radiating from the source. The sight aspect has an independent association with fire as light is emitted without air or the recipient is not present in the same space as the source.

Chakra	Bhoota	Characteristic
Muladhara Chakra	Prithvi	Stability, Support
Swadhishtan Chakra	Jal	Joy, Well-being
Manipura Chakra	Agni	Wisdom, Power
Anahata Chakra	Vayu	Compassion
Vishuddha Chakra	Akash	Trust, Creativity
Ajna Chakra	Akash	Knowledge, Intuition, Dignity
Sahasrara Chakra	Akash	Oneness

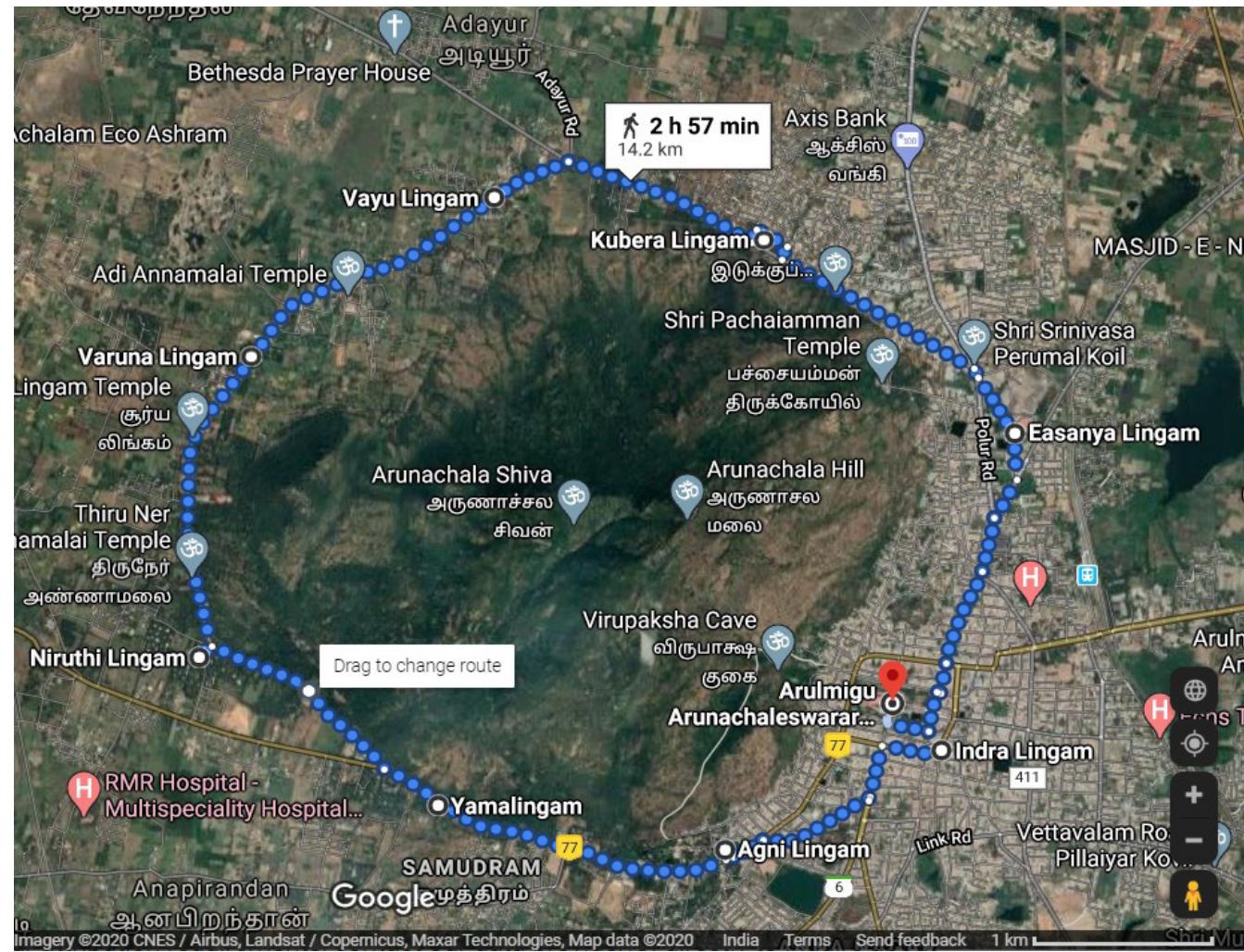
Association with the Yogic View

The intention of Yoga is to conquer oneself through the means of various forms of meditation. This involves having control of the flow of the elements through one's body and purifying them called Bhoota Shuddhi(Isha Foundation 2012). Chakra is a part of the esoteric medieval era beliefs about physiology and psychic centers that emerged across Indian traditions(White 2012). The links between the Mahabhoot and the Chakras(Indianscriptures.com 2012) are mentioned in the table below. This gives an idea about how the flow of Mahabhoot with a human body and their relation with the Chakras.

Name	Direction	Mantra	Weapon	Consort	Graha (Planet)	Guardian
Kubera	North	Om Śāṁ Kuberāya Namaḥ	Gada (mace)	Bhadra	Budha (Mercury)	Ila
Yama	South	Om Maṁ Yamāya Namaḥ	Pasam (Ropes)	Yami	Maṅgala (Mars)	Mangalaa
Indra	East	Om Laṁ Indrāya Namaḥ	Vajra (thunderbolt)	Śacī	Surya (Sun)	Suryaa
Varuṇa	West	Om Vaṁ Varuṇāya Namaḥ	Pāśa (noose)	Varuni	Śani (Saturn)	Shanini
Ishana	Northeast	Om Haṁ Īśānāya Namaḥ	Trīśūla (trident)	Ishani(form of parvati)	Brahspati (Jupiter)	Taraka
Agni	Southeast	Om Aam Agniāaya Namah	Danda(Staff)	Svaha	Shukra(Venus)	Shukraa
Vāyu	Northwest	Om Yaṁ Vāyave Namaḥ	Ankusha (goad)	Lehari	Chandra (Moon)	Chandrika
Nirrti (form of Parvati)	Southwest	Om Kṣam Rakṣasāya Namaḥ	Khaḍga (sword)	Shiva	Rahu	Shivani
Brahmā	Zenith	Om Hrim Brahmane Namaḥ	Padma (lotus)	Sarasvatī	Ketu	Brahmani
Viṣṇu	Nadir	Om Klim Viṣṇave Namaḥ	Chakra (discus)	Lakṣmī	Lagna	Vaishnavi

Dikpāla

According to Hinduism, Dikpāla is a god who rules a specific direction. Our focus is on the Aṣṭa-Dikpāla or the Guardians of the Eight Directions, where the directions include the four cardinal directions being North, South, East and West along with the intercardinal directions being North-East, North-West, South-East and South-West. Below is the table for all the eight directions and the associated Dikpāla(Himalayan Academy 2018). One would notice that the deities of the three Panch Bhoot are also Dikpāla as mentioned in the table on the left.



Girivalam Path around Arunachala Hill

Panch Bhoot Stalam is a set of five temples located in Southern India, dedicated to the Hindu deity Lord Shiv, where each temple represents an element of the Mahabhoot. The temple that represents the Agni Bhoot is located at the foot of Arunachal Hill, shown below in the snapshot of the map below as the Agni Lingam. A walk around this hill, starting from the Indra Lingam is considered holy which also covers the Vayu and Varuna(Water) Lingam(Himalayan Academy 2018). This map is the inspiration for the world map design for the game(Google Maps 2020).

Please Note: The Kalahasti temple in Kalahasti, Andhra Pradesh is also considered a Vayu Lingam in the Panch Bhoot Stalam but not considered in the world design for creative reasons.

Exploring Existing Works

This section presents the existing works on the classical elements in media and their assessments. We pick up the three of the most popular television series, one produced in the West, i.e., Avatar: The Last Airbender, the other produced in the East, i.e., long running Japanese anime series called Naruto and the Indian television series Shaktiman.

Avatar: The Last Airbender

This is a popular children, animated television series produced by Nickelodeon. This series follows the lore of an Avatar who is a master of Fire, Air, Water and Earth. This seems to be inspired from the Buddhist philosophy of the great classical elements where Space is not considered to be one. Many other Buddhist philosophies are also embedded into the lore of the series with stances, martial arts, iconography, the importance of meditation and soul, where soul is subpart of the body such that the gross body serves the purpose of holding the soul, which when separated, the gross body becomes inanimate.

Naruto

Naruto is a popular Japanese anime series with a large Western audience as well. The lore of the Chakra has heavy emphasis on the design of the lore and story. It concentrates on the internal spiritual energy of an individual rather than its flow with the world. One, with a lot of Chakra, yields a lot of superhuman destructive power.

Shaktiman

This is a popular children Indian series which first televised on Doordarshan, a state-run broadcasting channel. The lore of this series directly takes references of Panch Mahabhoot and the Chakras to define the origins and powers of the lead character, Shaktiman. The first episode of the series presents a clear definition of the Mahabhoot of its presence in the Shaktiman's world and how he gains his power through them. Another episode appearing mid-series, emphasizes the omnipresence of the Panch Mahabhoot. When his love interest dies, Shaktiman, being taught in the ways of the Mahabhoot, revives her using his power of the elements.

Timeline

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
Jan	Jan	Jan	Jan	Feb	Feb	Feb	Feb	Mar	Mar	Mar	Mar	Apr	Apr	Apr	Apr
Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat
5	11	12	18	19	25	26	1	2	8	9	15	16	22	23	29
Secondary Research				Pre-Production				Production				Production			
		Capstone Proposal						Sprint 1		Sprint 2		Sprint 3		Sprint 4	Sprint 5
								Seminar 1							Seminar 2
								Iteration 1/ Reveal 0							Iteration 2

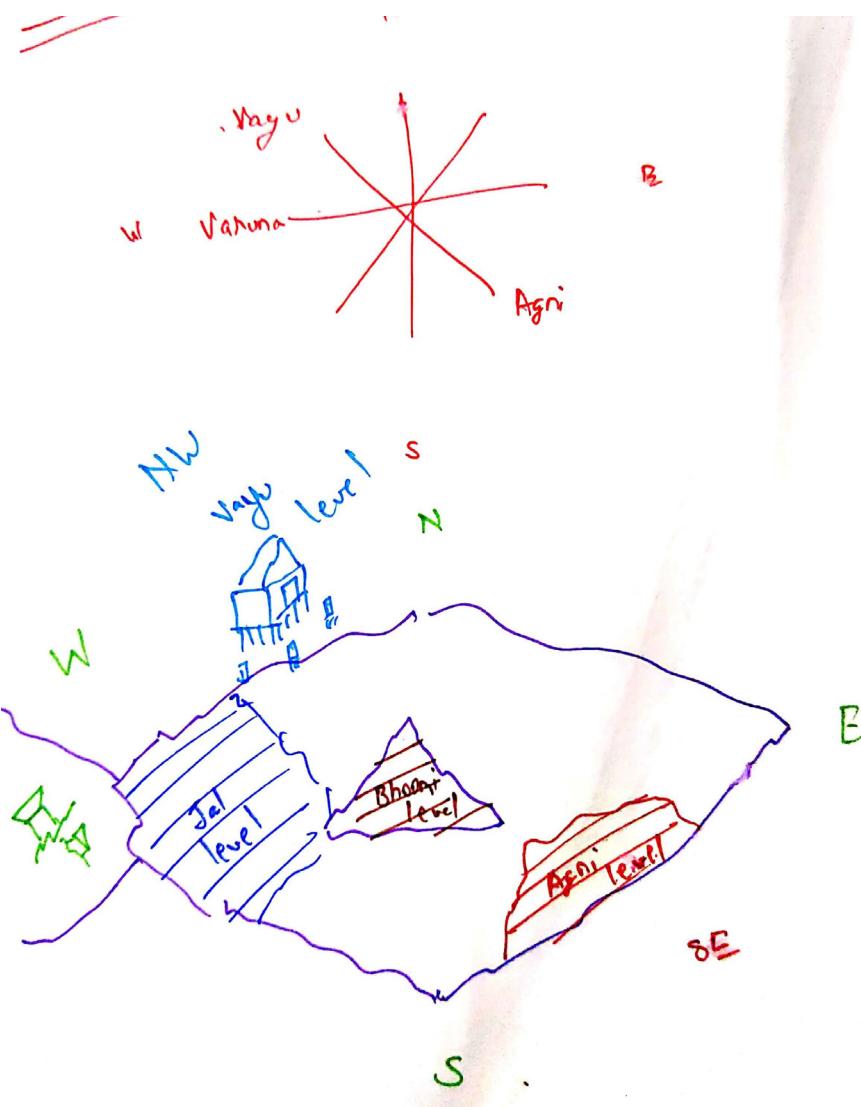
Week 17		Week 18		Week 19		Week 20		Week 21		Week 22		Week 23		Week 24		Week 25		Week 26		Week 27		Week 28		Week 29		Week 30		Week 31		Week 32	
Apr	May	May	May	May	May	May	Jun	Jun	Jun	Jun	Jun	Jun	Jul	Jul	Jul	Jul	Jul	Jul	Jul	Jul	Jul	Jul	Jul	Aug	Aug	Aug	Aug				
Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Sun	Sat	Mon	Fri	Mon	Fri				
Production																															
Sprint 6			Sprint 7			Sprint 8			Sprint 9			Sprint 10			Sprint 11			QA			Final Digital Submission			Final Physical Submission			Final Assessment Process				
Iteration 3/ Reveal 1			Iteration 4/ Reveal 2			Iteration 5/ Reveal 2.1						Iteration 6/ Reveal 3						Iteration 7/ Reveal 4													

Ideation

Now we bring learnings from the literature review and the existing work into ideas to build the game from scratch. This is a completely creative exercise based on the literature we have gathered.

The following design questions emerged for the game:

1. The use of the concept of Panch Mahabhoot in designing the lore, world mechanics and game mechanics for the interaction of player with the world and Non-playable characters(NPC).
2. Using the concept of Dikpāla and Girivalam path to design the world map and terrain.
3. The use of the Sarira Traya concept to give meaning to the presence of NPCs in the game.
4. Explore emergence of game mechanics from above concepts and their coherence with each other to give a consistent feel to the world.
5. Make the game a fun experience such that everything ‘clicks’ into place like a jigsaw puzzle.



Use of Panch Mahabhoot Concept

The project took a creative decision to build the game as a first person perspective. One, for increased immersiveness and other being investing more resources towards other aspects of the game rather than designing the player character from scratch. Now first-person perspective is common in shooter games like Call of Duty series, Doom games, etc., in which the player has to shoot or take away the life of another player or NPC to progress in the game. Now consider this, if we flipped this concept that the player has to heal the NPCs in the game to progress. This proposed game mechanic has not been explored much in the gaming world, as a primary combat tool and would be a new direction to investigate. So we picked up a player mechanic to heal the NPCs. This removes the need to have weapons in the game.

The Panch Mahaboot are associated with the optimal flow of classical elements as energies in the human body with the universe and for self sustenance along with the Sarira Traya concept. These energies, which are Vayu, Jal, Agni and Bhoomi, could form the energy levels of each character in the game. This would mean that if any character in the game that has an imbalance of these energies would not act like a healthy individual. So, as any individual would hunt for food when hungry, the characters in the game would try and hunt for spaces where one can access the Mahaboot energies. This gives ideas for a combat system, where the NPC has an imbalance or less than expected energy levels and could attack the player character to gain the player's energy or health. That also defines the aspects of the player's health or energy levels.

As seen previously, Panch Mahaboot are associated with human senses as well. Following this, if the player does not have access to Akash Mahaboot, he/she might not see the souls of people that may be dead but stuck in the game. This line of thought is pursued in the story of the game.

Use of the Dikpāla and Girivalam Path's Concept

As discussed earlier about the concepts of Dikpāla and Girivalam path, we can now define the map of the game inspired from the real world temples and their locations. We first define each Mahabhoot being represented as a level or a set of levels in the game. After completing each level, the player gains access to a particular Mahabhoot or a way to manipulate that energy, in this case to heal the NPCs. After studying the maps of Arunachala Hill in Andhra Pradesh, we can put the start location in the game at the location similar to their real world locations. So, we place the start of the Vayu level in the northwest section of the game's world map, the start of Agni level in the southeast section and Varuna level in the western section of the world map.

Game Idea

The game emerges as an open world, first person shooter, with the primary objective of resource collection and healing of NPCs, with world exploration and puzzle solving elements. The player has to unlock each Bhoot at the respective temples in the game world. These temples have puzzle solving areas in order to unlock a particular great element. After completing a level or set of levels the player achieves the power to heal the NPC lacking that particular energy. At the end of the game, the player should be able defend himself/herself and collect the energies of each Mohabhoot.

Game Story

Player character(PC) is part of a scavenging group called the ‘Collectors’ who are tasked to search planets for resources to bring it back to their home planet. These resources can be material resources like minerals, pieces of technology, etc., or non-material, altruistic resources like knowledge about life, culture or sciences. PC arrives at a planet, which has all its life form, with locomotive abilities called ‘mobils’, dead. He/she finds a temple with mystic alphabets. Thanks to PC being of a very advanced race, he/she decrypts the knowledge of the Panch Mahabhoot. He/she does this using his/her highly advanced computer on his bracelet who helps him translate the various texts that he discovers. This temple becomes the first gateway to start seeing the Sukshma world and realizes that the mobils of this world are living/trapped in this dimension. This means they have lost their abilities to the Akash Mahabhoot and PC can only hear the mobils. However, in doing so, PC himself/herself gets trapped in this dimension and needs a way to collect the power of the Panch Bhoot to connect him back to the real world. He collects Vayu, Agni, Jal and Bhumi accordingly and assimilates these elements of balance to connect him back to his Sthula sharira. In his journey, while gaining the power of each Mahabhoot, PC comes across various beings, trapped in this dimension, that have one or the other Mahabhoot missing. The player can sense these beings only when he/she gains the power of the bhoota in which they are trapped. The beings attack the PC to take his Mahabhoot or life force so that they can achieve nirvana. As the PC can use the power of this Mahabhoot, he/she replenishes their missing balance, preventing them from attacking him and sending them off to the Afterlife. At the end of the game, PC collects all this knowledge and takes it back to this homeworld.

Game Design

Below are the particulars of a game design document that may appear as a separate document but are now included in here.

Proposed Game Name

The proposed name of the game is Mahabhoot. This is based on the heavy emphasis of the classical elements in Hindu philosophy as mentioned in this document.

Game Overview

Game Concept

The beings of the world in the game have been all wiped out by an apocalypse that led to them losing their physical bodies but their souls have been trapped on the planet. The player enters this planet and tries to understand why such a tragedy has occurred to the living beings of this planet. In doing so he/she uncovers the imbalance of the classical elements in the world. In order to solve this, the player must gain the trust of these classical elements and balance of such energies in the living beings of the planet. Once the energies of a being are in optimum range they may proceed to the Afterlife or Nirvana. In doing so, the player's character will gain knowledge of this world and take it back to his/her home planet.

Genre

Genre for the game includes first person puzzle solving and platforming with light combat.

Target Audience

Target audience includes all people over the age of 18 to 40 years.

Game Flow Summary

After the game is launched by the player, the main menu will appear. Here the player can select the various options like language and other settings that will affect the entire game until the player exits. From here, the player can start the actual game or has the option to exit it.

The pause menu will allow the player to either restart the level, restart the game or exit.

Look and Feel

Being 3D, the game aims to have a modern, realistic look and feel. The menus are inspired from games like Mafia 3, Days Gone, Homefront, The Last of Us, etc.

Gameplay and Mechanics

Gameplay

Objectives

The player's objective is to gain powers of the Panch Mahabhoot and heal the NPCs that unlock a way for him/her to return to his/her home planet.

Mechanics

This section includes all the mechanics programmed in the game.

Physics

The physics of the game emulates the physics of the real world. This is the intention of play in the game. All objects have rigidbody and colliders.

- Terrain has terrain collision to allow player to walk over it
- Trees have rigidbody collision
- When the player enters the tornado, a collision detection occurs to enable the elevator movement of the player and loading of the next scene.
- The floating rocks are rigid bodies so that the player can stand over them
- The temple has mesh colliders.
- The diya has a space detection to detect if the player comes close to it.

On return to world level, the tornado now acts like a wall for the fight.

Movement in the game

Movement of the player includes walking, running, jumping, healing the NPCs. The NPCs move towards the player based on how far they are from the player.

Combat

In combat, the player has to lure the NPCs to the Mahabhoot energy source and heal them.

Screen Flow

Main menu->World Level->Vayu Level->World Level->Pause Menu->Exit.

Also the player can pause the game anywhere after the main menu, for the pause menu to appear.

Game Options

Currently, there is a language change option in the main menu that affects the UI language in the game.



Saving

The game uses an autosave system using Easy 3 unity asset (<https://assetstore.unity.com/packages/tools/input-management/easy-save-the-complete-save-load-asset-768>).

Levels

There are currently two levels in the game. The proposed three more levels(Jal, Agni, Bhoomi) are discussed in the future scope.

World Level

This is the start level of the game. This has the assets that defines the look and feel of the environment of the game.

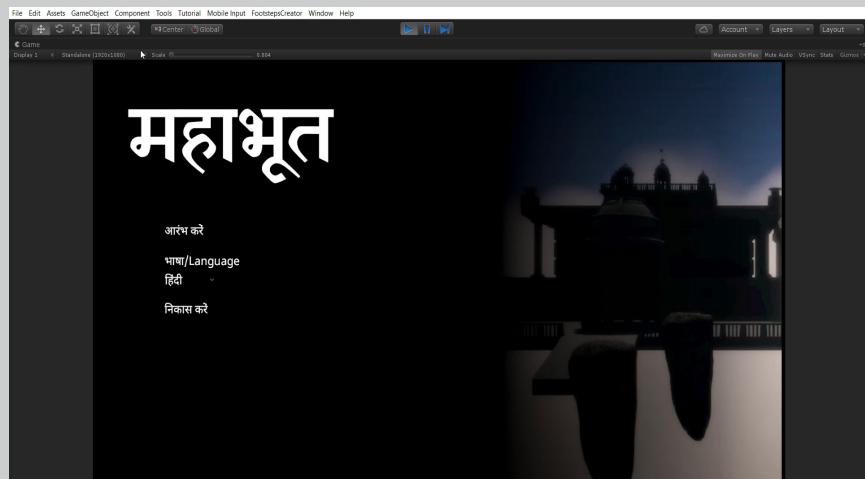
Vayu Level

This level presents the first major challenge to the player according to the lore and story of the game. This has the landing area of the player, rocks platforming sections of the approach gameplay, temple area. The Vayu chamber section, which is part of the temple section, is discussed in the future scope.

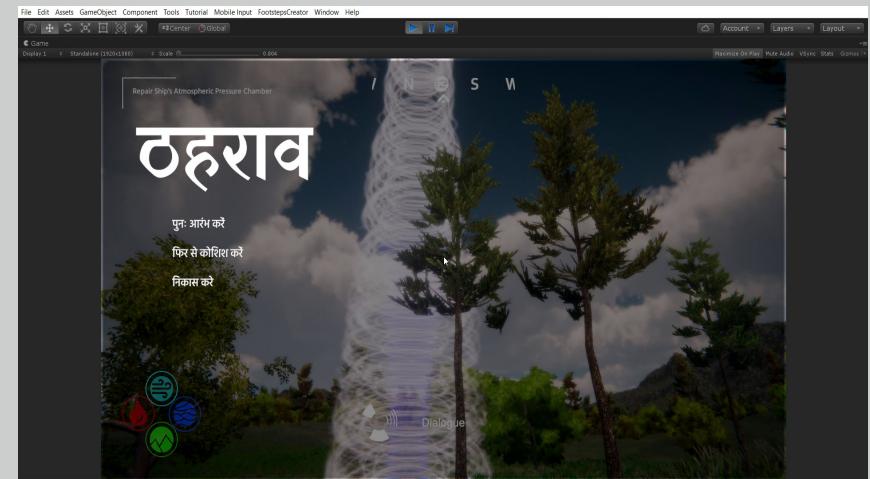
Interface

Visual System

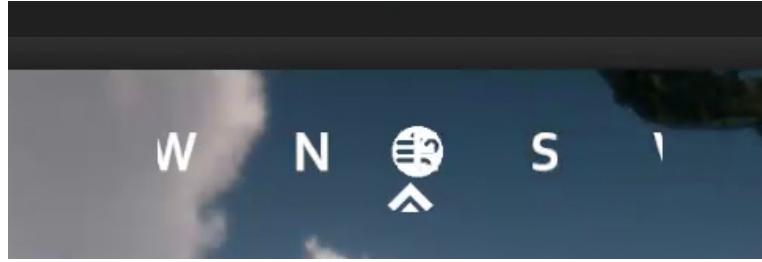
The various visual systems providing information to the player are the following:



Main Menu: To provide options before start of gameplay



Pause: To pause active gameplay



Compass (Top middle): To give a sense of direction to the player with the cardinal directions and markers for points of interest on the map.



Current Mission: Displays the current mission of the player



Player Mahabhoot energy meter(Bottom left): Provides info about the level of Mahabhoot energies of the player.



Enemy NPC Mahabhoot energy meter(Over respective NPC): Provides info about the level of Mahabhoot energies of the NPC

Control System

The player has the following controls:

- WASD keyboard keys for movement of the player
- Mouse Movement for 360 degree view of the world around the player
- E keyboard key to heal the enemy NPC
- P keyboard key to pause the gameplay
- Left mouse button click to interact with the game menu options

Audio

The game has the following sounds:

- Player footstep sounds
- Environmental sounds like breeze or wind

Artificial Intelligence

Opponent and Enemy AI

The Enemy has 3 spheres of distance detections as the player approaches them.

- Sense distance: If the player-enemy distance is less than the sense distance but greater than approach distance, it triggers the enemy's sense animation.
- Approach distance: If the player-enemy distance is less than the approach distance but greater than attack distance, it triggers the enemy's approach animation and starts walking towards the player.
- Attack distance: If the player-enemy distance is less than the attack distance, it triggers the enemy's attack animation and reduces the player's Mahabhoot energy in which the enemy is deficient.

Technical

Target Hardware

Target hardware is undecided has game is still in various stages of development but works smoothly on the development hardware mentioned on the following page.

Development Hardware and Software, including Game Engine

Target hardware is undecided has game is still in various stages of development but works smoothly on the development hardware mentioned below:

Hardware

The game was developed on rather expensive machine with the latest hardware including

- Operating System: Windows 10 Home Single Language 64-bit
- CPU: Intel Core i7-9750H
- RAM: 16.0GB
- Graphics: NVIDIA GeForce GTX 1660 Ti
- Storage: 1TB SATA HDD and 256GB Boot SSD
- Standard Mouse and Keyboard

The game itself does not require an internet connection to play.

Software

The various softwares and tools used in the development are:

- Unity 2019.2 game engine (<https://unity.com/>)
- Gaia 2 - Terrain & Scene Generator (<https://assetstore.unity.com/packages/tools/terrain/gaia-2-terrain-scene-generator-42618>).

Network requirements

The entire source code of the game is hosted in a private repository on Github at <https://github.com/vivekvvarshney/Capstone2020.git>. Anyone who intends to see the source code, would have to request access for the same at above link.

The game itself does not require an internet connection to play.

Game Assets

Game Art

The various game art assets used are as follows:

- Dynamic Cloud System (<https://github.com/SebLague/Clouds>)
- Vayu Icon: Air by Adrien Coquet from the Noun Project (<https://thenounproject.com/search/?q=air&i=1711221>)
- Agni Icon: Fire by Pamerat from the Noun Project (<https://thenounproject.com/search/?q=fire&i=2414237>)

- Fonts used in the game
 - Fonts used in the game
 - Noto Sans (<https://fonts.google.com/specimen/Noto+Sans?subset=devanagari>)
 - Hind (<https://fonts.google.com/specimen/Hind?subset=devanagari>)
 - Poppins (<https://fonts.google.com/specimen/Poppins?subset=devanagari>)
 - Yatra One (<https://fonts.google.com/specimen/Yatra+One?subset=devanagari>)
- Player space craft (<https://www.turbosquid.com/3d-models/free-space-fighter-3d-model/225215>)
- Diya Oil Lamp (<https://www.turbosquid.com/3d-models/diwali-oil-lamp-model-1387792>)
- Floating rocks (<https://www.turbosquid.com/3d-models/free-rocks-01-3d-model/810197>)
- Indian temple (<https://free3d.com/3d-model/temple-98984.html>)

Game Sounds

The various game sound assets used are as follows:

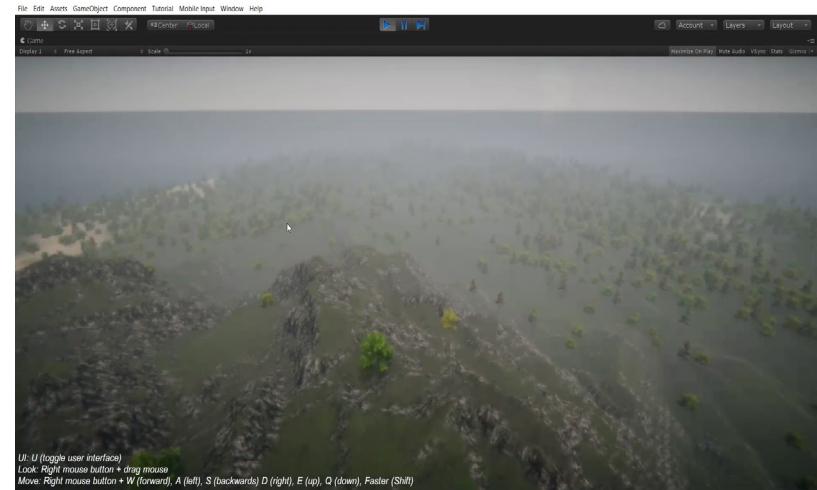
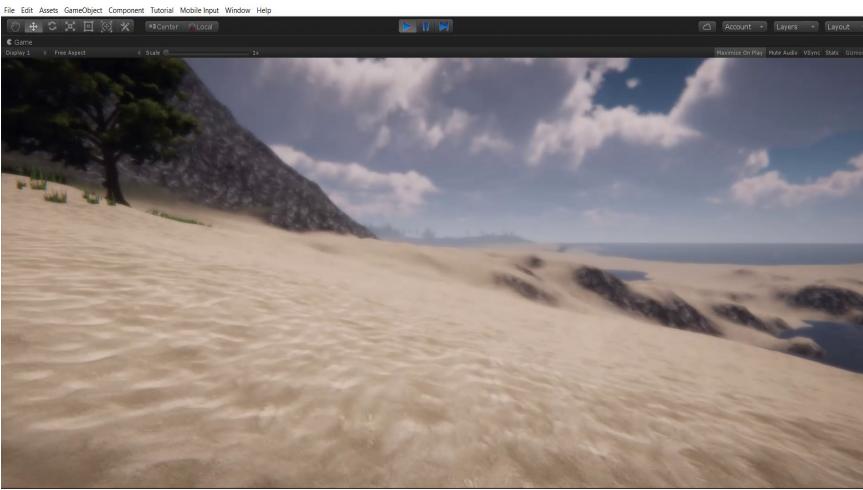
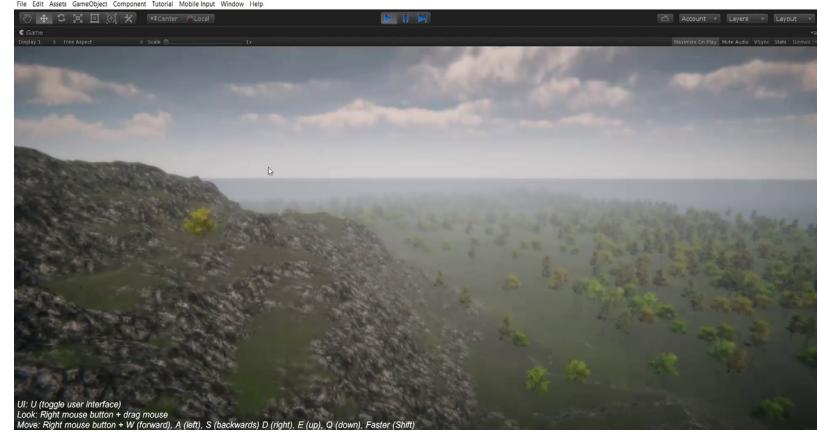
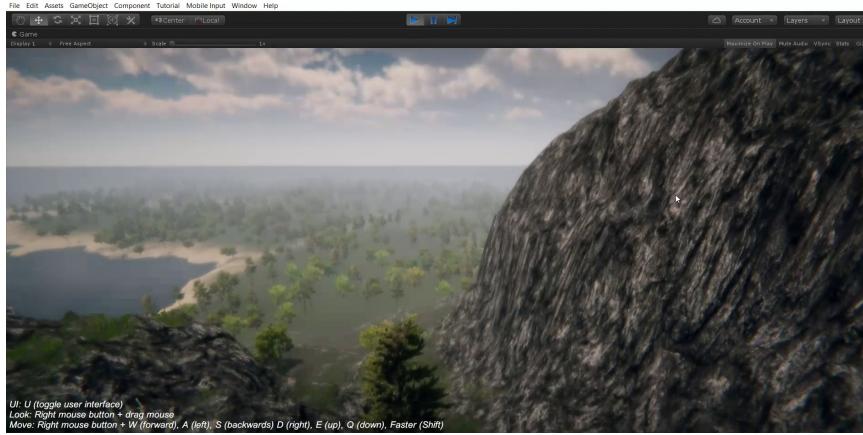
- Footstep sounds (<https://assetstore.unity.com/packages/tools/audio/free-footsteps-system-47967>)

Iterations and Milestones

Here we discuss the design process, the different stages of iterations that the project entered and the reveals of gameplay to my peers and mentors. Each reveal is a milestone in the development. The reveals also have various user reviews collected based on the gameplay videos shared. These gameplay videos will be made available and tagged based on the reveals discussed. The user group was a mix of peers, friends and acquaintances in the college. The users were categorized into two categories by their understanding of games and by their association with the project, as follows.

Player category	Category description
P1	Can give in-depth analysis and distinguish mechanics
P2	Regular Player
P3	Occasional player but understands games

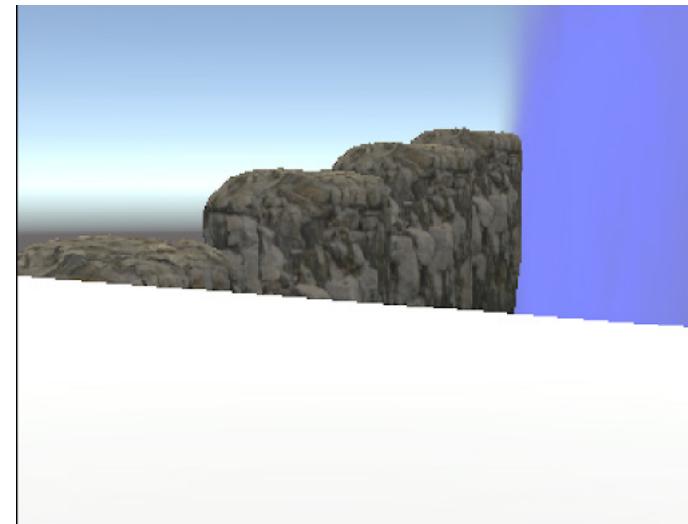
Player Group	Group description
F1	Closed Focus Group
F2	Semi - closed Focus Group



Iteration 1 : Reveal 0

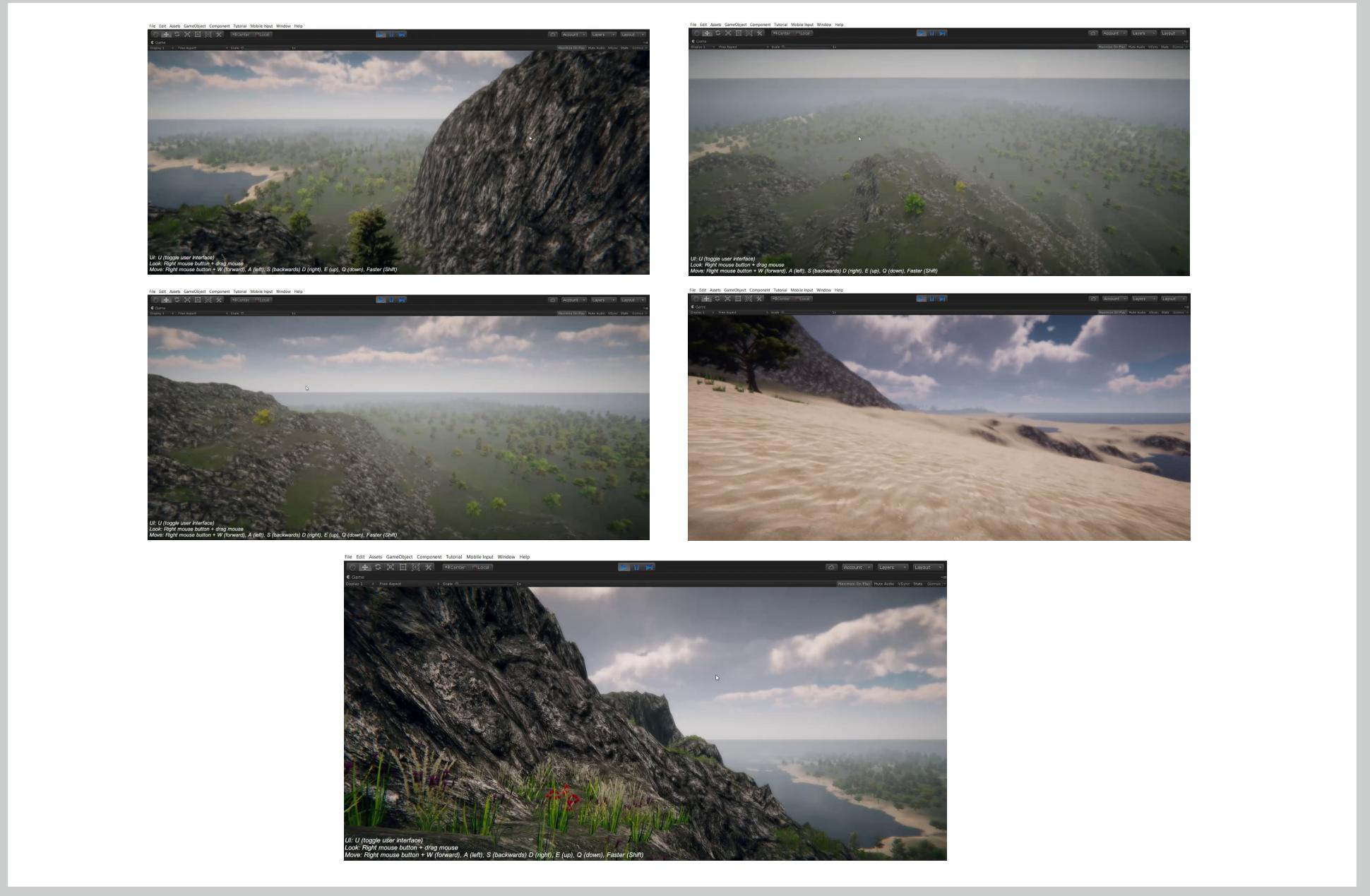
As discussed earlier, the Panch Mahabhoot concept has transformed into a healing game mechanic in the combat system of the game. The player lures the enemy near the Mahabhoot source and heals them. This was showcased first in Seminar 1 in a demo. The screenshots of the demo are on the left.

The lore of the game says the player has to visit the temples of the Mahabhoot to unlock their energies and be able to interact with them. The player cannot use their own energy as it may lead to losing their own health. Hence he/she needs to be a near source of Mahabhoot energy and heal the NPCs by replenishing their energy. The demo has a gameplay where the NPC has one of the Mahabhoot with less than required energy and the environment has a source of the same Mahabhoot. The player would lure the NPC towards the energy source, keeping a safe distance and healing the NPC. This describes the first iteration of the game and the combat system.



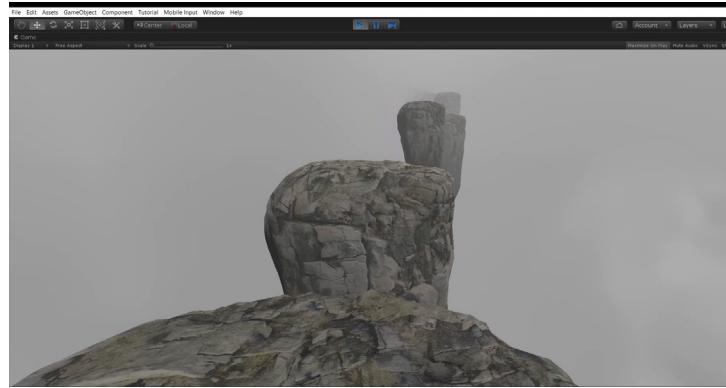
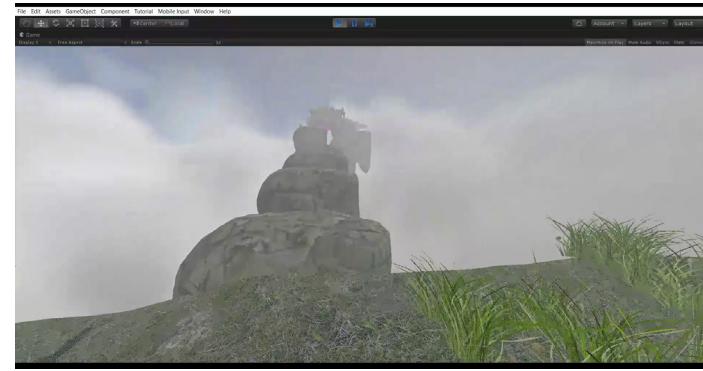
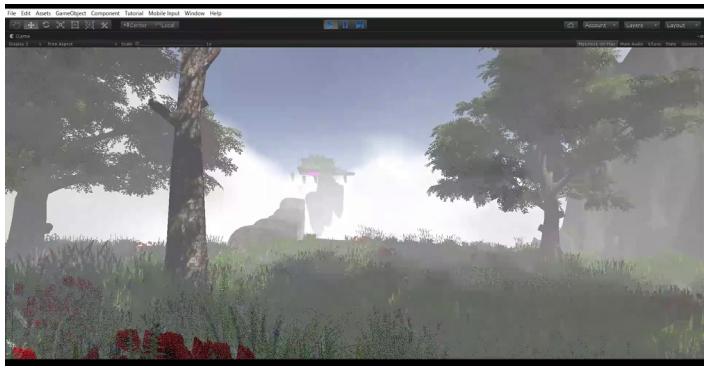
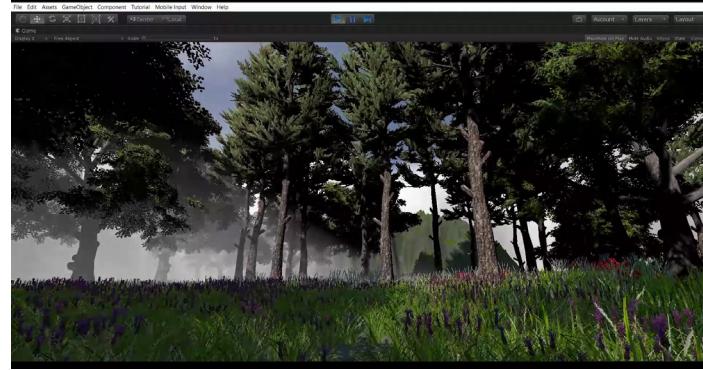
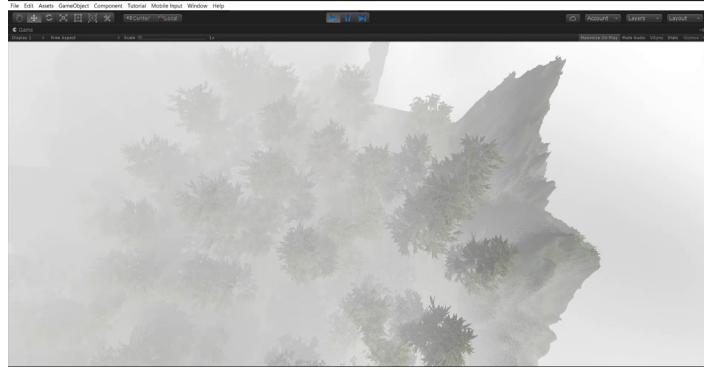
Iteration 2

This iteration played with the building of levels starting with the Vayu level. As the name suggests, the temple of Vayu needs to show the strength of the element of Air in the form of Wind. Taking creative liberty, the temple is built to be floating in the sky with strong winds holding it up. There are also floating rocks to reach the temple. This was inspired by a set of steps present before reaching the idols in a temple. The images on the left show the same. The floating effect was built using the particle system of the game engine.



Iteration 3 : Reveal 1

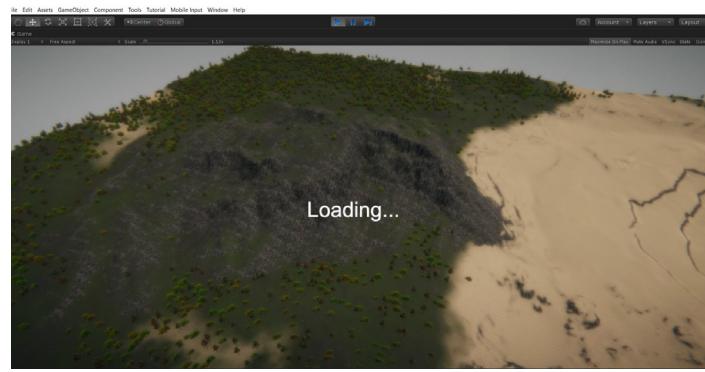
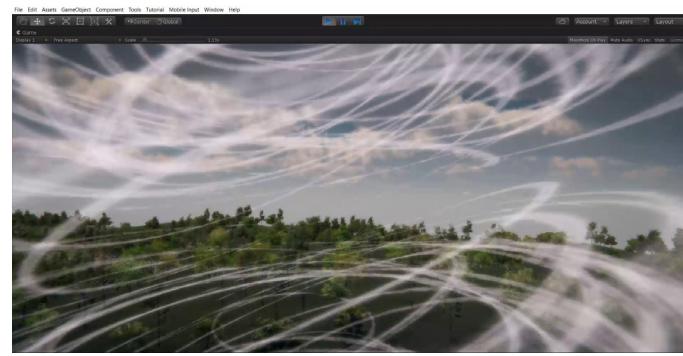
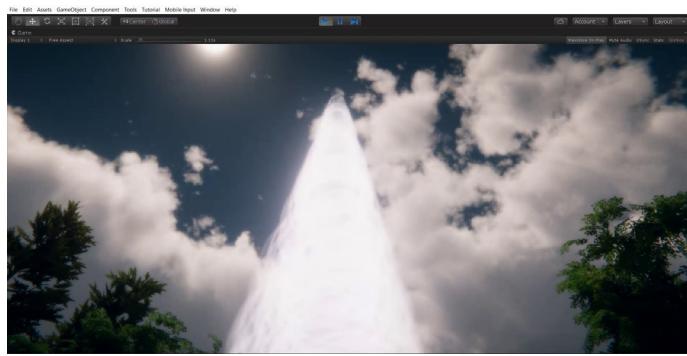
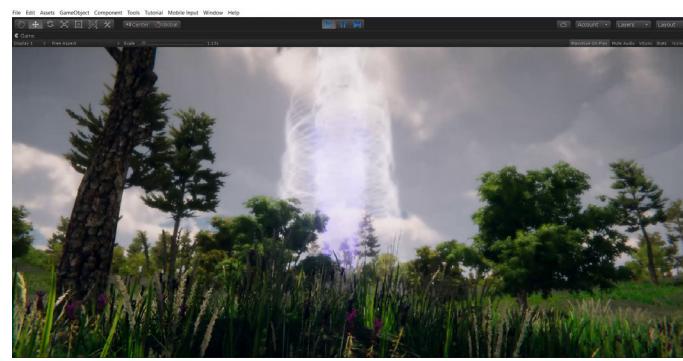
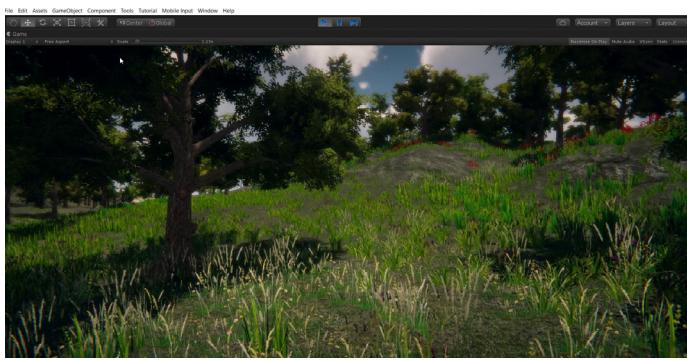
This iteration explores the world as the player starts the game, to present a sense of belonging, scale and basic movement. It is more of a world building exercise with terrain, water bodies and vegetation built in the environment.



The Vayu level is now a more distinct section where the player is sent into the sky and gathers the blessing of the Vayu temple. The temple is also updated to give it an ominous look of being in the sky with a dynamic cloud system. This iteration also improves upon the idea of climbing steps to reach a temple, that is, jumping from rock to rock to reach the temple.

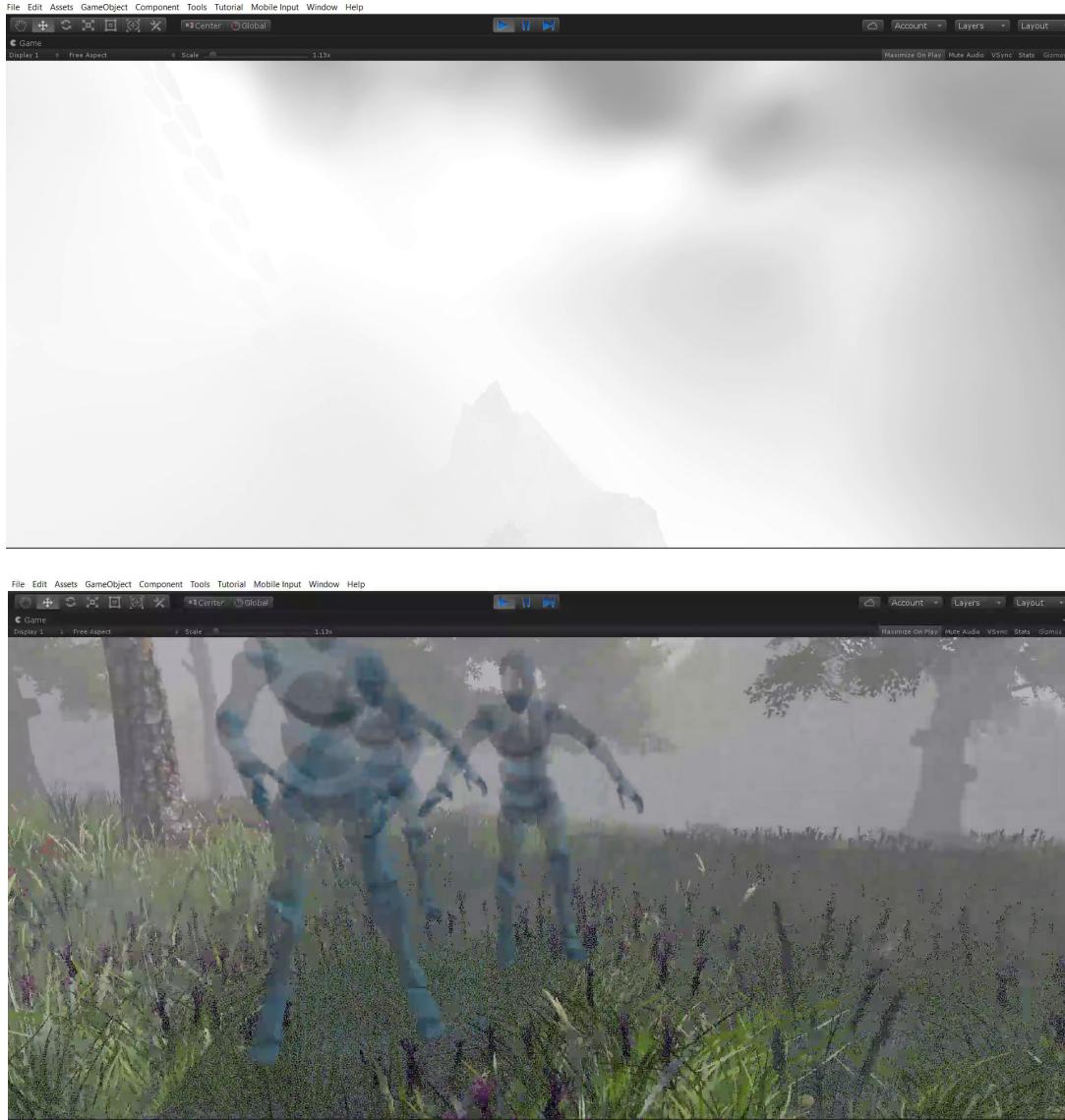
Player reviews collected for this reveal are as follows:

Player ID	Category	PlayerLevel	Comments
1	F1	P1	Need to share playable version
2	F1	P1/P2	Acknowledged major update and visual appeal
3	F1	P1	Acknowledged major work and visual appeal
4	F1	P1	Compared the concept and intent of the game to Zelda(jokingly?)
5	F1	P1	Acknowledged major work and visual appeal



Iteration 4 : Reveal 2

This iteration defines the transition from the world level to the Vayu level where a tornado acts as an elevator up to the Vayu temple. This is also an ingenious way to trigger loading assets of the next level as soon as the player enters the tornado. So the tornado in itself acts as a loading transition. If the game is still unable to load all the assets, a loading bar will be displayed.

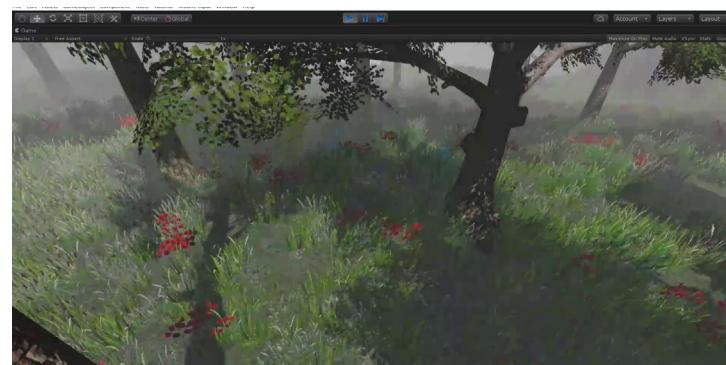
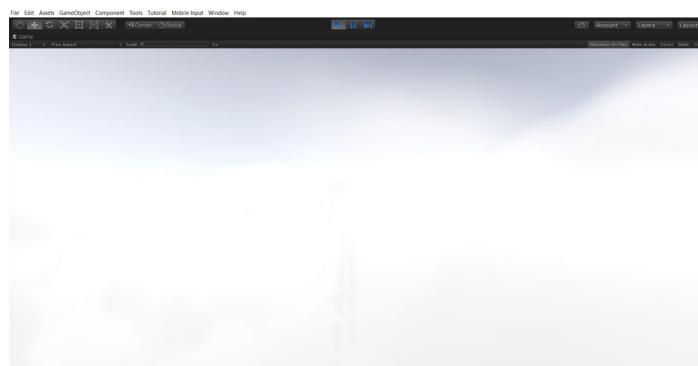
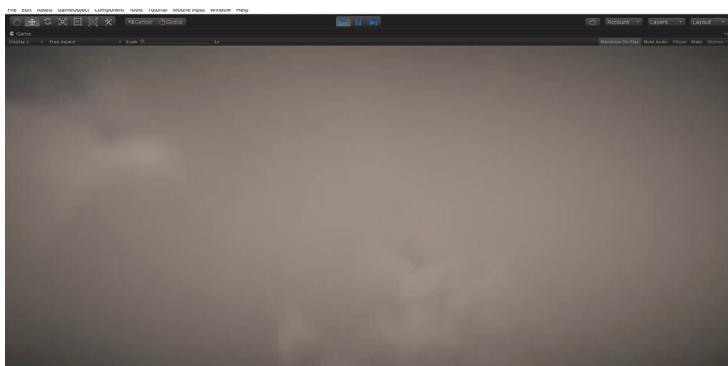
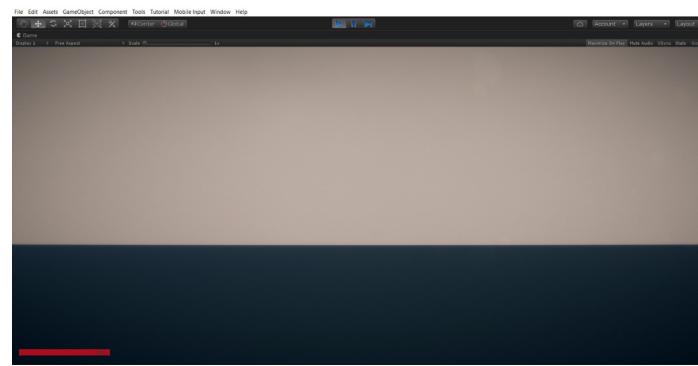


The story of the game presents the player with the power of Akash Mahabhoot in the very start, such that the player can sense the NPC but not interact with them. This is because of the concept of human senses associated with the Mahabhoot. Akash enables the hearing sense to the dimension where the NPCs are stuck. However, having just sounds of NPCs walking around doesn't seem to be a good design choice as the player is still new to the lore, story and the game world. So, the NPCs are presented as being translucent.

The NPCs should still be able to interact with the player, as he/she is a source of Vayu energy for them but will not be able to attack or diminish the player's energy as the player is still to unlock the Vayu Mahabhoot. This is a design decision to give a sense to the player of the lore, the NPCs and what is expected in the future gameplay.

Player reviews collected for this reveal are as follows:

Player ID	Category	PlayerLevel	Comments
1	F1	P1	
2	F1	P1/P2	
3	F1	P1	The transition is disjointed but acceptable
4	F1	P1	
5	F1	P1	

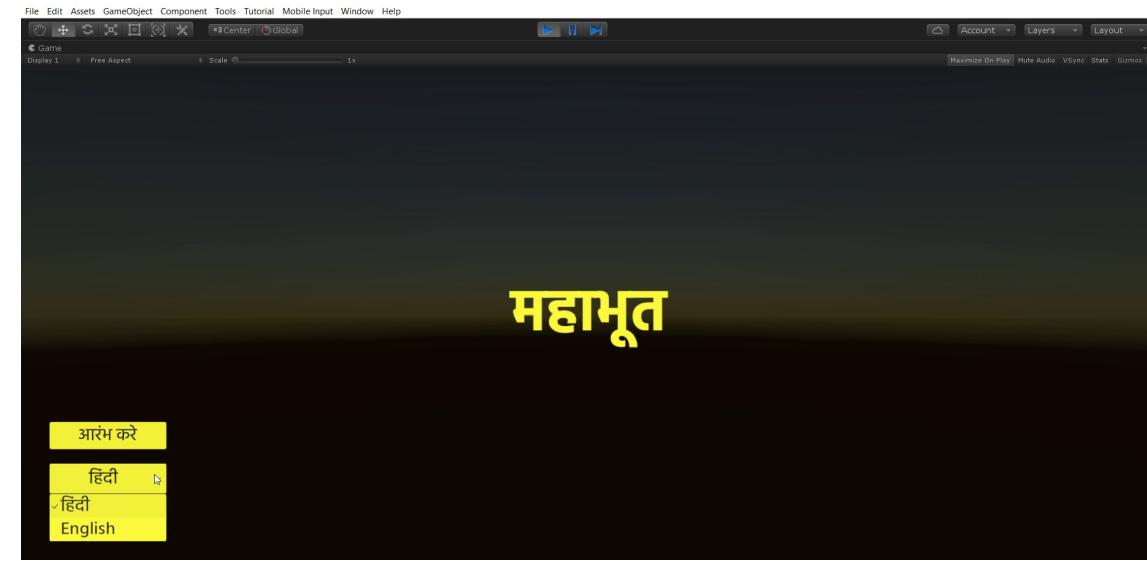
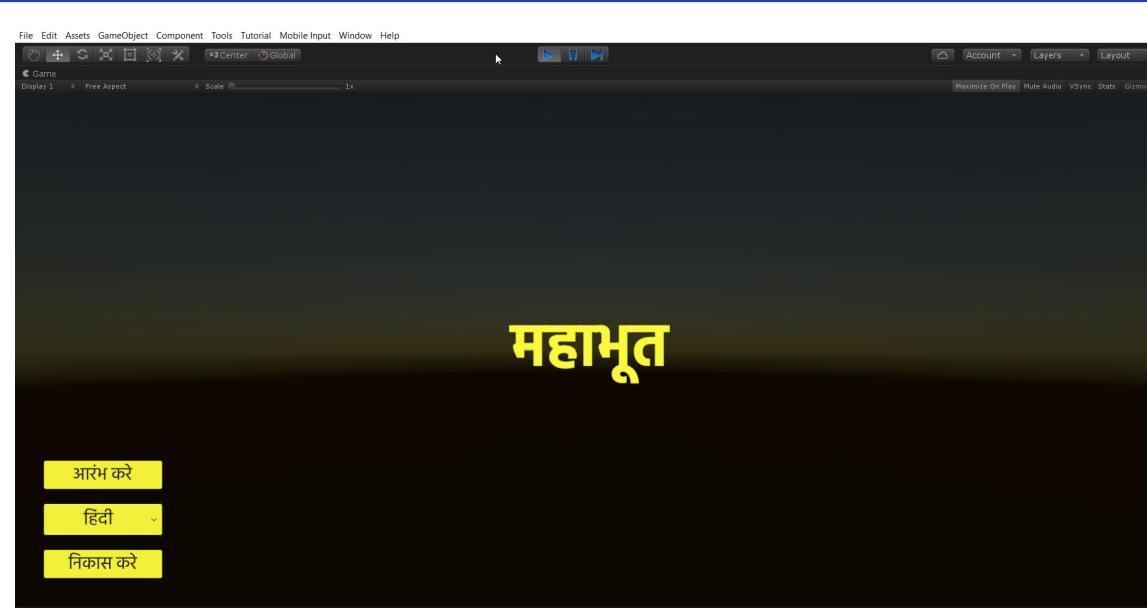


Iteration 5 : Reveal 2.1

After getting feedback that the level transition is still not smooth, the dynamic cloud system was added to the world level.

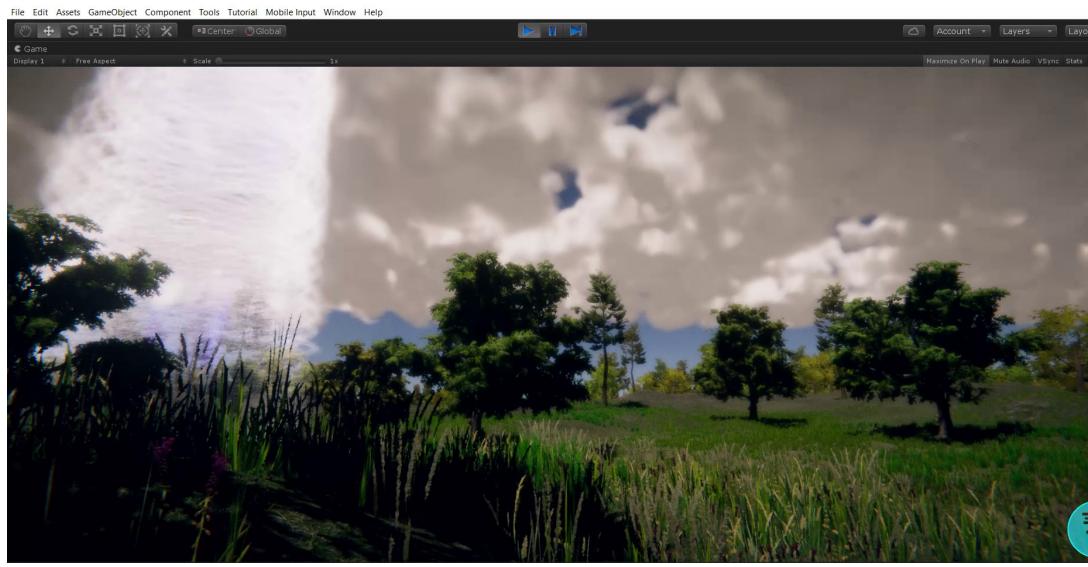
Player reviews collected for this reveal are as follows:

Player ID	Category	PlayerLevel	Comments
1	F1	P1	
2	F1	P1/P2	
3	F1	P1	
4	F1	P1	Smoother transition with minimal load
5	F1	P1	



Iteration 6 : Reveal 3

This iteration added the main menu with language options and introduced an energy meter to show the player's energy level, as part of the in-game UI.



Player ID	Category	PlayerLevel	Comments
5	F1	P1	Positive outlook
6	F2	P3	It's awesome. The concept is interesting as well. I didn't like the walking sounds of the character. It was too loud. But not sure how it is in other games
7	F2	P3	Nice concept
8	F2	P3	Kadak bhai! Wo jo Portal se wo upar gaya, uske andar jaane ke baad portal ka ek side ka wall to dikhna chaiye na? It's not a portal per se It's like u r thrown sky high into a different place Han par pehle dikhta hai na purple tunnel jaisa Wahi bol raha its not a portal Portal game se compare mat kar Jaimin Sfit: Portal nai Jaimin Sfit: Par kuch to hai jo dikhta hai Haan woh hai Tornado ka inner part Correct uska kya? Nai kuch nai

9	F2	P1	Aise to acha hi lag rha hai But kuch meat to dikhayo Abhi to gameplay hi nhi hai i know kaam chalo hai Carry on
10	F2	P1	Damn looks good! What is it about? Abhi toh I am gathering first impressions Will share soon Cool
12	F2	P3	Wow looks cool!
13	F2	P3	Audio recording @ https://app.box.com/s/qtv422qpnrhj3q8ncxebwc1wl7xs0ebb
14	F2	P2	Hmm looks interesting n good. Clouds look artificial because of it speed n light may be ur still working on that's y? N name if u can. Change it looks Font is fine That's it

15	F2	P1	<p>Looks really good so far, I'm loving the environment and lighting.</p> <p>Maybe work a bit on the start screen, looks a bit too basic I'd say.</p> <p>cool, thanks</p> <p>UI was made just yesterday</p> <p>Like, try to give shading and textures to make the buttons and the text look 3d instead of 2d.</p> <p>work in progress</p> <p>Might look better I feel.</p>
16	F2	P1/P2	Bhai bhai bhai. Kaafi sahi
17	F2	P3	<p>Hi Vivek! Really refreshing to look at a game in the making.</p> <ol style="list-style-type: none"> 1. Mahabhoota, the name, makes me feel that I am looking at a game that has various realms to it. 2. The elements present in the video itself generates curiosities and a desire to interact with the elements within the game. <p>The rendering is spot on.</p> <ol style="list-style-type: none"> 3. The world that you have created gives me an open world and supernatural feel. 4. The option to choose the language I want to see game instructions in, is a key piece of experience.
18	F2	P2	It looks really nice
19	F2	P1	<p>It looks so amazing! Is it like open world + 3d platforming?</p> <p>Walking simulator + 3d platforming</p> <p>Need to fill the world for open world</p> <p>Lets see, work in progress</p> <p>Its coming along great</p>



Iteration 7 : Reveal 4

This iteration refined the Menu system to include an updated main menu, a pause menu, proper in-game UI with the energy meters, map compass and mission text. It also stitches the Vayu level back to the world level where the actual combat section of the game exists. Now that the player has gained the power of the Vayu temple, he/she can interact with the NPCs and heal them as defined in Iteration 1. This also formed the first playable demo available for the general audience.

The game is now available at <https://vivekvarshney.itch.io/mahabhoot>. The reviews will be gathered in the comments sections of the itch.io page and using the forms at this link: <https://forms.gle/6rVBQ5Ep2D4WLr2v7>.

Future Scope

The project mentioned the Jal, Agni and Bhoomi Mahabhoot as well, but there was an informed decision made to concentrate on the Vayu level and world level in this capstone. This was done to fully realise the base game mechanics and playtest with the demo built in the capstone timeline. The extension in the deadline due to the pandemic helped that realization with equal emphasis on the art and user interface. This demo may be considered a good blueprint to approach further development as we also have the lore and story of the game in the place.

Here we discuss the possible ideation for the remaining levels and development. After revealing iteration 7 and the playable demo to my mentors and my peers, I received some critique to improve the gameplay further. The section to approach the Vayu temple can evolve as a platforming section where the rocks have more variation in movement to give a sense of thrill to the player. This would be a tricky task as the dynamic cloud system limits the field of view. It would also require a study into platforming done in other games. The current introduction to the world is mostly based on textual information shared at the start of the game. Ideally, changing to an animation to introduce the game would be needed. The Vayu temple level will also include a section where the player learns about the Vayu gayatri mantra that would actually unlock the Vayu power for the player. The temple would also have a chamber where the player would himself be floating in the air collecting artifacts regarding the mantra. The platforming and combat sections would have to undergo player tests with a larger audience.

As Vayu level has three sections of gameplay, first being approach, the temple and post temple combat, a similar approach would be implemented for the other Mahabhoot. The Jal level's would have an underwater platforming section where the player would swim between water bubbles to breathe rather than jumping between platforms. Between each pair of water bubbles, there would be puzzles to give the player a challenge. The temple section for the Jal level would include gaining the knowledge of the Varuna mantra and the power of Jal Mahaboot. When returning to the world level, the player will be given a chance to test his/her new power in a combat scenario. As we mentioned for the Vayu level, how air and wind were the main basis of art and level design, the same would be applicable for the Jal level. On similar lines Agni would explore fire, light and Bhoomi level would explore gravity along with the levels built based on the three section gameplay approach.

Regarding release of the game to the market, the project might approach a publisher to help refine, develop, market and release the same. The game would have a single paid release on marketplaces like Steam, Epic Game store, Galaxy of Games, etc. This would be only possible after constant testing by a possible community of game testers who understand game development and player experience to improve the game.

Reflection

In this section, I talk about my experience of this project which constitutes making a game from scratch, my feelings and emotions in going through it day-in and day-out as well as my learnings and evolution of the process in making this game.

The project majorly kicked off following the New Year of 2020 after much discussion with the faculty in understanding how my choice of a project will affect several of the future decisions I would have to take, in making the said project. In many of discussions with the faculty, I was able to extract a little knowledge from their experience about the challenges one might face before one can envision taking up a project. I started exploring various topics like exploration of light, shadow and colour after getting inspired by the work of artist and stage designer Esmeralda “Es” Devlin, exploring Warli art form to be able to bring that into the world of games, thinking about what may be truly Indian in design and asking those questions in the medium of games. The first idea was only based on an artist’s work and an ambiguity rose about what direction I would take to design my own project. The second idea about Warli art, was flawed as it did not consider the process of building a relationship with a community, taking them into confidence and earning their trust before one could take up the project, even though I was not restricted by the copyright laws but it would be a disservice to the art form, if I would have picked up the topic anyway. The third idea stuck with me as to bring concepts of Indian origin to the games space. That idea evolved further as we have been talking about in this document, which I had submitted as a proposal on January 18, 2020.

The selection of this topic was a humongous task in itself as finding a concept that may be truly Indian, is largely unexplored in the games media and compatible enough to be made into a game. This took a lot of exploration and research because of the sheer vastness and depth of topics that could be discussed and test my mettle to design game systems from these topics. After much deliberation, I settled on the topic of Indian classical elements. The journey of defining game mechanics was not an easy one as designing new untested game mechanics is a long process. But considering the opportunity this capstone provides may not repeat itself. This may be the best time to set foot into unexplored territory.

In Seminar 1, I presented a more refined version of the game mechanics with a prototype which was well received but required elements of fun. This prototype had the basic aspects that I wanted to explore and integrate into the game which were a first person aspect, action and a combat system which I really love in games. Taking up the building of a 3D gameplay was an intentional decision, even though it meant accepting there would be major challenges in building assets for the game, especially for me, as I don't have an arts background.

Journeying into the time where we approach Seminar 2, I was lagging behind to present an updated demo with much unfinished work and a deadline looming over me. But fate presented a special twist in its recipe of the future. We enter into a world with the coronavirus pandemic and national lockdowns at a global scale. Honestly, it was a relief at first, as it meant extension in timelines which gave me a decent amount of time to explore and make this game, which we can see in the current state of the game with gameplay, graphics, UI, meaning, etc. I hail from the city of Mumbai, one of the worst hit cities in the pandemic and decided to stay back alone, fearing that I would spread the virus to my family back home. Being an introvert person, it was a breath of fresh air as it gave me the nectar of silence and serenity. It provided me with a mental zone to think and develop the game after the noises of society doused down when people returned to their hometowns.

My mentors had suggested some tools to help speed things up and build the environment and other aspects of the game. One such tool called Gaia, on the Unity asset store, reduced world building time from a month to a week and helped me surprise my mentors and peers in the speed of development. I also explored dynamic cloud systems, which gave me new ways to recreate the look and feel of the Vayu level, enabling iterations. At each mentor meeting, I flaunted iterations of my demo, in gameplay videos, and gathered various critiques that I documented separately. I also documented various peer reviews of my work. By the end of June, I was confident enough to present a playable form of the game to my peers.

Apart from the good, in terms of extension, that the pandemic offered, there were obvious downsides when exploring a solo project. There were numerous times of boredom, fatigue, lack of motivation that spelled for a week, repeating intermittently. This had nothing to do with my interest and zeal to complete this project. However, it made me recognize my humanity as my creative strength diminished. There is where my family, friends and love of games saved me. My core social group, whom I texted almost everyday became a backbone of my mental sanity. My extended friends group, including my peers, gave a breath of fresh air to my social energy that made me feel that I was not alone in this pandemic and my capstone. Being a gamer, a good game always brings relaxation and much needed rejuvenation. A few games that I played during the pandemic are, Days Gone, Astral Chain, Ori and the Will of the Wisps, etc.

Lastly, my journey with this project has not been without my learnings. I learned how strong I am when the world was fighting to not stay at home. I grew as my project grew, exploring new designs, tools and iterations in the game. I learned that no game is perfect and my game, even though it was liked by many of my peers but felt incomplete to me and my mentor, it is still a product of my hard work, and I am proud of it. I arrived at this point after watching various interviews of established game designers who reiterate that making games is hard and things are uncertain until release. Mike Bitchill said that it took him 3 years to create the Thomas Was Alone game but many years after release, if he would recreate that game, it would take him 2 weeks. That is the time to create something new, especially a game. Thus, the capstone might have ended but the journey has only begun .

Bibliography

- Gopal, Madan (1990).Gautam, K.S. (ed.). India through the ages. Publication Division, Ministry of Information and Broadcasting, Government of India.
- Carroll, Cain (2012). Mudras of India.
- Sharma, Arvind (2006), A Primal Perspective on the philosophy of Religion. Springer
- Prasad Sinha, Harendra (2006). Bharatiya Darshan Ki Rooprekha. Motilal Banarsiidas Publisher.
- White, David Gordon. Yoga in Practice. Princeton University Press 2012. <http://assets.press.princeton.edu/chapters/i9565.pdf>
- Isha Foundation. 2012. <http://www.ishafoundation.org/blog/sadhguru/masters-words/pancha-bhutas-the-possibility-of-the-five-elements/>. ishafoundation.org. 2012
- Indianscriptures.com. 2012. <http://www.indianscriptures.com/vedic-lifestyle/beginners-guide/pancha-bhootas-or-the-five-elements>.
- Academy, Himalayan. 2018. Hinduism Today Magazine. <https://www.hinduismtoday.com/modules/smartsession/item.php?itemid=5875>
- “Indra Lingam to Arulmigu Arunachaleswarar Temple.” Indra Lingam to Arulmigu Arunachaleswarar Temple, shorturl.at/gnGS2. Accessed 30 July 2020

PG CAPSTONE PROJECT 2020 | EXEGESIS

STUDENT

Vivek Varshney

PROJECT

Exploring the Indian Classical Elements in Video Games

PROGRAM

Master of Arts in Design Practices (MADP)

AWARD

Game Design and Development [GDD]

EXAMINER 1

Name _____

Signature _____

Date _____

EXAMINER 2

Name _____

Signature _____

Date _____

EXAMINER 3

Name _____

Signature _____

Date _____

FINAL COMMENTS



SRISHTI INSTITUTE OF
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Bengaluru