"Understanding Hurdles in $tory-driven Game Development"

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*A*bstract—The development of story-based(INDRA VS VRITRA) games presents a unique set of challenges that intersect the realms of narrative design, gameplay mechanics, and technical implementation. This paper explores the hurdles faced by developers in crafting compelling narratives, designing interactive gameplay elements, and seamlessly integrating storytelling with player agency. Through an analysis of industry practices and case studies, the paper identifies key challenges such as maintaining narrative coherence amidst branching paths, creating dynamic and relatable characters, balancing player choice with narrative cohesion, and optimizing performance while preserving immersion. By examining these challenges and proposing potential solutions, this research aims to provide insights and strategies to assist developers in overcoming obstacles and enhancing the quality of story-based game experiences.

the story is an essential part of the gameplay, and understanding the story is of great importance. Given that what separates this genre from other storytelling media is interactivity, this thesis focuses on the elements in narrative-driven video games that effects the players' perception of narrative through interactivity. Using players' likes and dislikes from their previous experiences in narrative-driven games, this thesis aims to develop a heuristic approach for interactive narrative elements that offer the narrative through players' input to the game's system and create an effective gameplay experience that delivers the story to the players.

Keywords: Indra, Vritra, $tory

I. INTRODUCTION

In recent years, the landscape of game development in India has witnessed a burgeoning interest in storytelling, particularly in games inspired by rich mythological narratives. As developers endeavor to immerse players in the captivating worlds of Indian mythology, they encounter a myriad of hurdles unique to the fusion of ancient lore with modern game design. This paper aims to explore the challenges faced by developers in India during the development of story-based games rooted in mythology [1].

Drawing from the vast tapestry of Indian mythology, developers are tasked with the monumental endeavor of translating timeless tales into interactive digital experiences. However, this endeavor is fraught with complexities, ranging from cultural authenticity and narrative adaptation to gameplay mechanics and technical constraints [2]. While mythology-based games offer immense creative potential, they also pose significant challenges that demand innovative solutions.

This paper will delve into the multifaceted hurdles encountered by developers in India as they navigate the intricate realm of mythology-based game development [3]. By examining case studies, industry insights, and cultural considerations, we seek to shed light on the unique obstacles faced by developers in crafting immersive and culturally resonant gaming experiences. Through this exploration, we aim to provide valuable insights and strategies to assist developers in overcoming these hurdles and elevating the quality of mythology-based games in India's vibrant gaming industry.
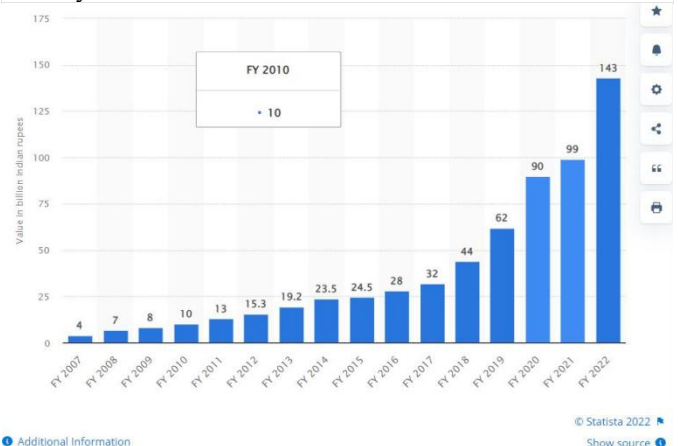
Fig. 1 Indian Market value in Game Development via Statista

II. LITERATURE SURVEY

A. Mythological Narratives and Player Engagement

Mythological narratives provide a robust foundation for video game stories. They offer established characters, settings, and conflicts that developers can build upon or reinterpret to create new narratives [5]. Games like God of War (2005) reimagine Greek myths, placing players in the shoes of Kratos, a Spartan warrior battling gods and monsters [4]. The game weaves familiar characters and settings from Greek mythology into a new narrative, fostering player investment through recognition and the thrill of interacting with these well-known figures.

- Example 1: God of War (2005) (Image of Kratos from God of War)

Reimagines Greek myths, placing players in the shoes of Kratos, a Spartan warrior battling gods and monsters.

Weaves familiar characters and settings (e.g., Mount Olympus) from Greek mythology into a new narrative.

Fosters player investment through recognition and the thrill of interacting with these well-known figures.

- Example 2: Age of Mythology (2002) (Image of Age of Mythology gameplay)

Uses entire mythologies as the basis for gameplay mechanics and world-building.

Players choose civilizations based on specific pantheons (Greek, Egyptian, Norse), each with unique units, technologies, and god powers tied to their mythological background (e.g., Greek civilization utilizes Zeus' lightning strike).

Connects gameplay mechanics to the cultural and thematic elements of the chosen mythology, fostering player engagement.

B. Interactive Mythology and Emotional Resonance

Games can leverage the emotional weight of myths to create impactful player experiences. Hades (2020) utilizes the Greek underworld myth as a backdrop for a compelling narrative loop. Players control Zagreus, son of Hades, who repeatedly attempts to escape the underworld. Each escape attempt offers new encounters, story snippets, and character interactions, building an emotional connection between the player and Zagreus's determination [6]. Pyre (2017) reinterprets the myth of the Rites, a competition where rival tribes sacrifice their champions. The game compels players to make difficult choices regarding who to sacrifice, fostering emotional investment in the characters and the narrative's exploration of themes like rebellion and sacrifice [7].

- Example 3: Hades (2020) (Image of Zagreus from Hades)

Utilizes the Greek underworld myth as a backdrop for a compelling narrative loop.

Players control Zagreus, son of Hades, who repeatedly attempts to escape the underworld.

Each escape attempt offers new encounters, story snippets, and character interactions, building an emotional connection between the player and Zagreus's determination.

- Example 4: Pyre (2017) (Image of Pyre characters)

Reinterprets the myth of the Rites, a competition where rival tribes sacrifice their champions.

The game compels players to make difficult choices regarding who to sacrifice (e.g., characters with unique personalities and backstories), fostering emotional investment in the characters and the narrative's exploration of themes like rebellion and sacrifice.

C. Visual Storytelling: A Canvas for Myths

Imagery plays a crucial role in conveying the narrative and themes of mythological stories within video games. Environments can act as silent storytellers, shaping player perception and emotional response. Journey (2012) exemplifies this concept. The game features vast, desolate landscapes and crumbling ruins, evoking a sense of mystery and a connection to ancient myths or lost civilizations [8]. Players traverse these environments with minimal narrative exposition, piecing together the world's history and significance through environmental storytelling [9].

- Example 5: Journey (2012) (Image of Journey landscape)

Features vast, desolate landscapes and crumbling ruins, evoking a sense of mystery and a connection to ancient myths or lost civilizations.

Players traverse these environments with minimal narrative exposition, piecing together the world's history and significance through environmental storytelling.

Character design breathes life into mythological figures and creatures.

- Example 6: Okami (2006) (Image of Amaterasu from Okami)

Utilizes a unique cel-shaded art style to create visually striking interpretations of Japanese deities and mythical creatures (e.g., Amaterasu, the sun goddess).

This art style complements the game's focus on Japanese mythology, offering a fresh perspective on familiar figures while retaining the essence of the source material.

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D. 2.1. Art Style and Mythological Reinterpretation

The chosen art style can significantly influence how players perceive and engage with the mythological themes presented. God of War (2018) utilizes hyper-realistic visuals to ground the fantastical elements of Norse mythology. The immense scale and detail of environments and creatures create a sense of awe and intimidation, immersing players in the harsh beauty and brutality of this mythology [10].

Conversely, Persona 5 (2016) employs a vibrant, anime-inspired art style to offer a fresh perspective on Japanese

mythology. This approach appeals to a wider audience while retaining the core themes and character archetypes associated with the source material. Similarly, Transistor (2017) utilizes a minimalist art style with a focus on primary colors and stark contrasts. This stylistic choice emphasizes the emotional core of the game's narrative, a reinterpretation of Arthurian legend centered around themes of loss and sacrifice [11].

LITERATURE REVIEW SUMMARY

Feature	Description	Example
A. Mythological Narratives and Player Engagement	Established characters, settings, and conflicts provide a foundation for video games. Players recognize and interact with familiar figures, fostering investment.	God of War (2005): Reimagines Greek myths with Kratos, a Spartan warrior.
	Entire mythologies can be the basis for gameplay and world-building.	Age of Mythology (2002): Players choose civilizations based on pantheons (Greek, Egyptian, Norse) with unique units and god powers.
B. Interactive Mythology and Emotional Resonance	Games can leverage the emotional weight of myths to create impactful experiences.	Hades (2020): Zagreus, son of Hades, repeatedly attempts to escape the underworld, building an emotional connection with the player.
	Players' choices can influence the narrative and their emotional investment.	Pyre (2017): Players make difficult choices regarding sacrifice, fostering emotional attachment to characters and themes.
C. Visual Storytelling: A Canvas for Myths	Environments and character design visually convey the narrative and themes of mythological stories.	Journey (2012): Players traverse vast landscapes and ruins, piecing together the world's history through environmental storytelling.
	Art style can influence how players perceive and engage with mythology.	Okami (2006): Utilizes a cel-shaded art style for visually striking interpretations of Japanese deities and creatures.
D. Art Style and Mythological Reinterpretation	Art style shapes player perception of mythological themes.	God of War (2018): Hyper-realistic visuals create a sense of awe and intimidation for Norse mythology.
	Art style can offer fresh perspectives on mythology.	Persona 5 (2016): Vibrant, anime-inspired art style offers a new take on Japanese mythology.
	Art style can emphasize emotional aspects of the narrative.	Transistor (2017): Minimalist art style with primary colors emphasizes the emotional core of a reinterpreted Arthurian legend.

III. PROBLEM DEFINITION

A. Mythological Background of Indra and Vritra

The mythological background of Indra and Vritra encompasses a significant narrative within Indian mythology, particularly in the Bhagavata Purana. Indra, the King of the Devas and the god of thunder and rain, is portrayed as a powerful figure responsible for maintaining order and defeating demons threatening the cosmic balance. Vritra, on the other hand, is depicted as a formidable serpent or dragon who withholds water, causing drought and chaos [12]. The epic battle between Indra and Vritra symbolizes the ongoing struggle between good and evil, order and chaos, highlighting the cyclical nature of the universe. This mythological tale serves as a moral allegory, emphasizing the importance of courage, righteousness, and selflessness in overcoming challenges and restoring harmony. Through a deeper analysis of Indra and Vritra's mythological significance, one can gain insights into the broader themes of cosmic balance and the eternal conflict between opposing forces. (V. Stepkin).

B. Cultural Authenticity and Adaptation:

Adapting Indian mythology for video games requires a deep understanding of cultural nuances, traditions, and beliefs. Developers must navigate sensitive topics and avoid cultural appropriation or misrepresentation. Failure to do so can lead to backlash from communities and damage the reputation of the game [12].
Indian mythology is a diverse tapestry of stories, characters, and symbolism drawn from various religious texts and regional traditions. Developers must conduct extensive research to ensure the accurate portrayal of mythological elements while avoiding stereotypes or inaccuracies.

Balancing creative interpretation with respect for the source material is essential in adapting Indian mythology for games. Developers must find a delicate balance between staying true to the original narratives and incorporating innovative gameplay mechanics and storytelling techniques [13].

India is a culturally diverse country with a rich tapestry of mythological traditions across different regions and languages. Developers must be mindful of this diversity and strive to represent a wide range of mythological themes and characters in their games [4].

Involving cultural experts, historians, and community members in the game development process can help ensure cultural authenticity and sensitivity. Seeking feedback and input from relevant stakeholders can enrich the game's narrative and foster a sense of ownership among players [5].

As game some times affects emotions to because it is developed on based on emotion towards our Indian mythology. It may cause some kind of backlash if we have done some wrong changes in the script refers to fig2.
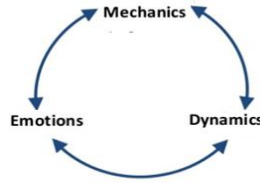

Fig2. Processing Gamification

C. Narrative Complexity and Coherence:

In the realm of Indian mythology-based game development, the challenge of narrative complexity and coherence stands as a formidable hurdle. Indian mythology boasts an extensive array of stories, characters, and themes, often interwoven with intricate symbolism and multiple layers of meaning. Adapting these rich narratives into interactive gaming experiences requires careful consideration to maintain coherence while accommodating player agency [14].

One of the primary issues developers face is the sheer complexity of the source material. Indian mythology encompasses a vast corpus of texts, including the Vedas, the Ramayana, the Mahabharata, and the Puranas, each containing a multitude of interconnected stories and characters. Distilling these narratives into a cohesive game experience necessitates careful selection and adaptation of content, as well as a deep understanding of the underlying mythological themes [8].

Furthermore, the interactive nature of games introduces additional challenges in maintaining narrative coherence. Unlike traditional storytelling mediums such as literature or film, where the narrative unfolds linearly, games offer players agency to shape the story through their choices and actions. This non-linear structure can complicate the storytelling process, leading to potential inconsistencies or disjointed narrative paths [12].

In conclusion, the development of Indian mythology story-based games in India is fraught with challenges related to narrative complexity and coherence [15]. From distilling complex mythological narratives into cohesive game experiences to balancing player agency with narrative fidelity, developers must navigate a myriad of obstacles to create immersive and culturally resonant gaming experiences. By addressing these challenges through innovative narrative design, cultural sensitivity, and technical expertise, developers can unlock the creative potential of Indian mythology in the gaming landscape.
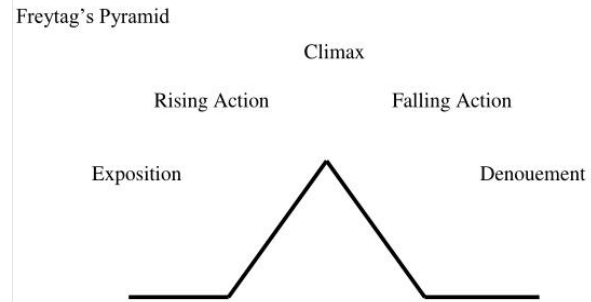

Fig2: Freytag's Pyramid

D. Gameplay Mechanics and Design:

Integrating gameplay mechanics that authentically represent Indian mythology while ensuring thematic relevance can be complex. Developers must strike a balance between staying true to the source material and creating engaging gameplay experiences. For instance, incorporating elements like divine powers, mythical creatures, and karma-based decision-making into gameplay mechanics requires meticulous research and creative adaptation [11].

Many Indian mythological stories are rich in epic battles and confrontations, presenting an opportunity to implement dynamic combat systems. However, designing combat mechanics that capture the essence of mythological warfare while maintaining player agency and accessibility is challenging. Balancing the spectacle of larger-than-life battles with responsive controls and meaningful player input is crucial to ensuring satisfying gameplay experiences [10].

Indian mythology encompasses a diverse range of cultures, beliefs, and traditions, requiring developers to approach representation with sensitivity and respect. Designing characters, environments, and gameplay mechanics that authentically reflect the diversity of Indian mythology while avoiding stereotypes and cultural appropriation is paramount. Consulting with cultural experts and engaging with diverse perspectives can help ensure that the game's portrayal of Indian mythology is inclusive and respectful [3].
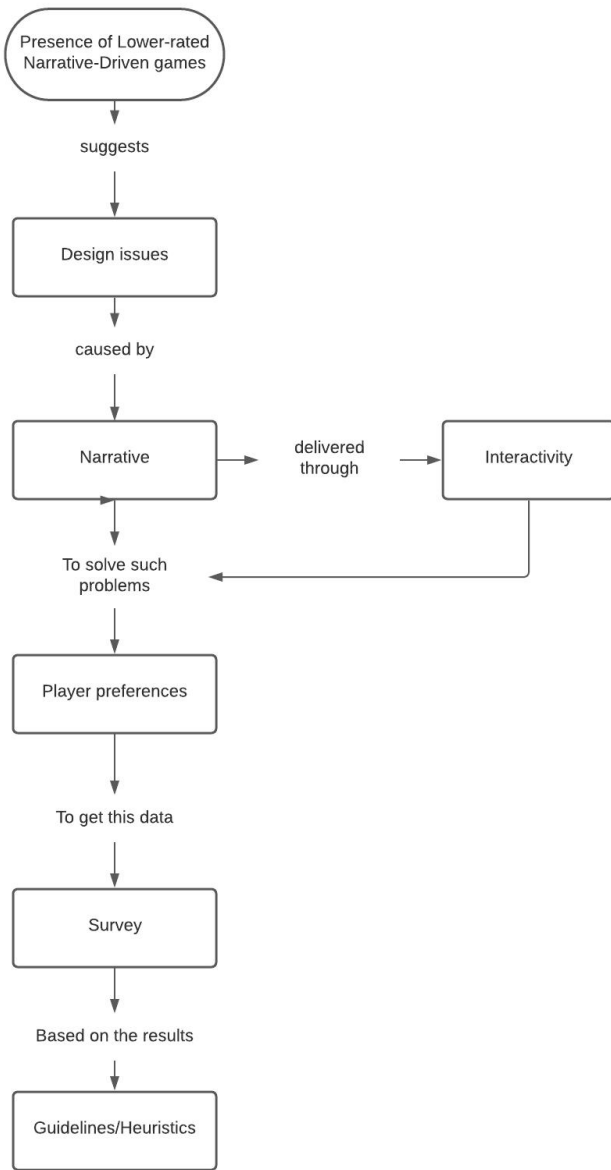
of platforms requires careful optimization and testing to ensure compatibility and performance consistency. However, the fragmented nature of the market makes it challenging for developers to prioritize optimization efforts effectively and allocate resources accordingly [14].

In India, a significant portion of the gaming audience relies on low-to-mid range hardware, particularly in the mobile gaming segment. Developing mythology-based games that run smoothly on such hardware poses a considerable technical challenge. Developers must optimize game assets, implement efficient rendering techniques, and minimize resource-intensive processes to ensure acceptable performance on a wide range of devices [16]. However, achieving a balance between performance and visual quality on limited hardware can be a daunting task, requiring extensive testing and iteration.
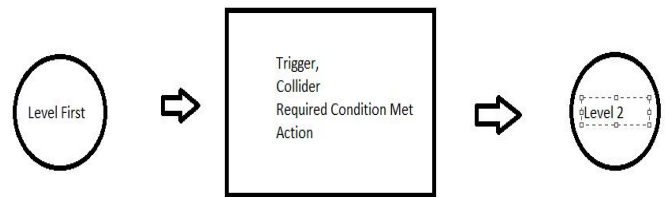

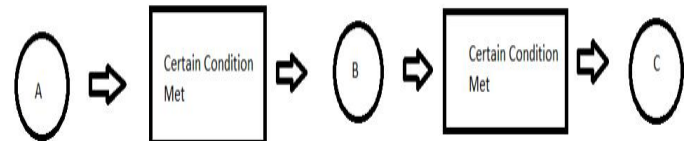Fig. 4 To go with the next level of story in a game

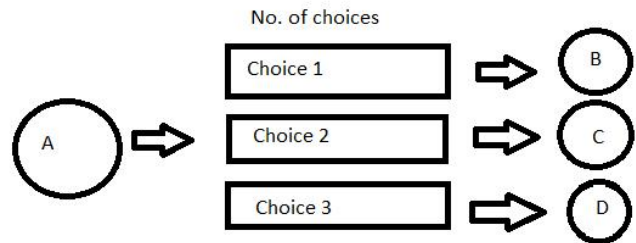Fig. 5 Certain condition met to go A to B of story in a game

Fig. 6 Certain condition met to go A to B of story in a game
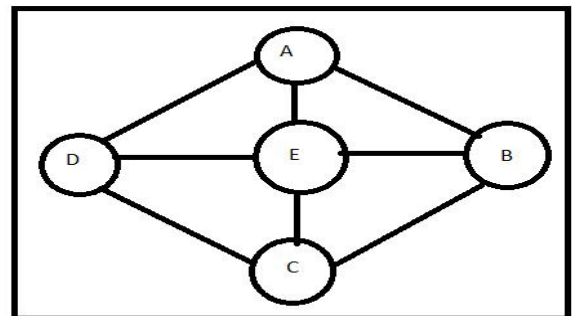
Element Added in whole around the game to tell the story

Fig. 7 Free conditions to follow story in a game

Fig3. The thought process of the thesis and research

E. Technical Constraints and Optimization:

Many game development studios in India operate with limited resources, including budget constraints, manpower shortages, and technological infrastructure limitations. This can hinder the ability of developers to create high-quality assets, implement complex gameplay mechanics, and optimize performance effectively. Limited access to cutting-edge hardware and software tools further exacerbates these challenges, making it difficult to achieve the desired level of graphical fidelity and optimization [10].

India's diverse gaming landscape is characterized by a wide variety of gaming platforms, including PCs, consoles, mobile devices, and emerging platforms such as VR and AR. Developing games that perform well across this diverse range

IV. METHODOLOGY
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Content Analysis: Analyze existing video game adaptations of Hindu mythology, particularly those featuring Indra and Vritra, to identify common tropes, stereotypes, and misrepresentations. Evaluate the portrayal of characters, settings, and narrative elements to assess their accuracy and authenticity in relation to the original mythological source material [5].

Focus Groups: Organize focus groups consisting of players from diverse cultural backgrounds, including individuals of Hindu descent, to gather feedback on existing game adaptations and solicit suggestions for improvement. Facilitate discussions on cultural representation, authenticity, and sensitivity to identify areas for enhancement in future game development projects [9].

Game Design Workshops: Host workshops with game developers, designers, and storytellers to explore strategies for incorporating authentic representations of Hindu mythology and culture into game adaptations of Indra vs. Vritra. Encourage creative brainstorming sessions to generate innovative ideas for narrative, gameplay mechanics, and visual aesthetics that respect and celebrate Hindu heritage [17].

Iterative Prototyping: Develop iterative prototypes of game adaptations based on feedback from cultural consultations, focus groups, and design workshops. Incorporate suggestions for improving cultural representation, addressing stereotypes, and promoting inclusivity in each iteration of the game design process [12].

User Testing: Conduct user testing sessions with diverse groups of players to evaluate the effectiveness of the revised game adaptations in addressing cultural misrepresentation. Solicit feedback on gameplay experience, narrative coherence, and cultural authenticity to identify areas for further refinement and iteration [6].

Character Analysis:
Indra: As the king of the gods, Indra represents power, leadership, and cosmic order. Investigate his attributes, motivations, and role in maintaining balance.
Vritra: Vritra, an asura (demon), embodies chaos, obstruction, and darkness. Analyze his origins, strengths, and significance in the narrative [18].

Symbolism and Allegory:
Thunderbolt (Vajra): Indra wields a thunderbolt (vajra) as his weapon. Explore the symbolic meaning of the thunderbolt—its potency, illumination, and ability to overcome obstacles.

Waters: Vritra hoards the waters, causing drought and darkness. Investigate the metaphorical significance of water—the life force, purity, and abundance.

Conflict Resolution:
Battle Strategies: Examine the tactics employed by both Indra and Vritra during their fierce combat. How does Indra use his thunderbolt, and how does Vritra retaliate?
Divine Intervention: Highlight the role of other deities (such as Vishnu and Shiva) in aiding Indra. Explore their motivations and contributions to the resolution.

Ethical Dilemmas:
Dharma (Righteousness): Reflect on the ethical dilemmas faced by Indra. Is his quest to defeat Vritra driven solely by duty, or are there personal stakes involved?
Consequences: Investigate the aftermath of the battle. What impact does Vritra's defeat have on the cosmos, society, and the gods?

Category: Story & Interactivity
Story is consistent throughout the game
Story and gameplay complements each other in terms of difficulty to ensure the continuity of the game
Story of the game is prioritized over hard to beat gameplay
The game has elements that create emotional depth for the players
Story is given importance to advertising the game during the marketing process
Side stories are meaningful and relevant to the main story
Story and meaningfulness of the actions are prioritized over interactivity

Category: Customization
If possible, character appearance customization should be implemented
If empathy and immersion is aimed to be achieved, customization should be used
Game should give place to skill or expertise customization
Game should offer some amount of customization for the players
Customization should be meaningful and deliver narrative to the player
Game should offer different difficulty options
Difficulty options should not be implemented with just harder to pass enemies; instead, the gameplay itself should get harder

Category: Interaction with the NPCs and Environment
Map of the game should not repeat itself with places and events
Dialogues with the NPCs should be consistent with the story
Dialogues should offer interactivity to the players
Environmental storytelling should be a continuation of the main story and should be relevant the main story
NPC interactions should be enjoyable for the players
Dialogues should give multiple options to the participants
Choices in multiple-choice dialogues should affect the outcome of the main story
Collectable items should be relevant and meaningful towards the story

Category: Music and Sound

Sounds should be described as subtitles that are offered as optional features to the players

Video game music lyrics can offer a narrative to the players

Players should be provided with feedback on their actions through interactive audio

Category: Art and Visuals

Art style is given importance while advertising the game and during the design process

Hidden narratives through visual elements can be implemented

Art style of the game should match the narrative thematically

Category: Cutscenes

Quick time events should not be in the form of spamming buttons

Cutscenes should not make crucial decisions of the story in place of players

Cutscenes should feature a pause option

Cutscenes should be used to deliver narrative

Category: Gameplay

Gameplay presents narrative through "do, don't show, don't tell"

Obstacles should have more than one solution

Gameplay should immerse and engage the player

Hints should be presented as optional features; if players are stuck at an obstacle game, uld not give a hint without players asking for it

Game should feature a progress bar to show how far players have come

Progress bar should not spoil the story or climactic scenes

Different tools in games should offer different experiences

Player actions have meaning towards the story

Category: Achievements

Achievements should be adaptable to the player types

Achievements can be used to deliver hidden narratives to the players

Category: Linear & Nonlinear Storytelling

Gameplay should offer multiple endings to the story

Gameplay should encourage replays for alternative endings through new storylines

Each storyline should offer different experiences in terms of story

In multiple ending stories, players should see the outcome of their actions

Fig 8. Table representation of Problem Formulation

CONCLUSION

In conclusion, the development of Indian mythology story-based games in India presents a myriad of hurdles that demand innovative solutions and strategic approaches. Through the examination of literature and industry insights, it's evident that these challenges span various dimensions, from cultural authenticity and narrative complexity to technical constraints and optimization issues.

Cultural authenticity and adaptation emerge as fundamental concerns, requiring developers to navigate the delicate balance between respecting the source material and adapting it to suit the interactive nature of games. Maintaining narrative coherence amidst branching storylines and player choices poses significant challenges, emphasizing the need for well-defined narrative structures and innovative storytelling techniques.

Moreover, integrating mythology-inspired gameplay mechanics and design elements necessitates careful consideration of thematic relevance, player engagement, and technical feasibility. Technical constraints and optimization challenges, including resource limitations, platform fragmentation, and hardware constraints, further complicate the development process, demanding efficient resource management, optimization strategies, and robust testing methodologies.

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