Designing for Children 2019
- Play and Learn

Title: Preserving the tradition and culture of North East India through digital and interactive game based learning for children.

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Abstract: Digital media has become an integral part of present generation. For children it provides an enhanced learning process through its various interactive learning activity. Since the inception of the digital media in the form of interactive games, it has generated such a profound influence that in many cases people especially children gets so immersed into the virtual world, which results in their isolation from their natural surroundings. This adverse effect creeps from children to the whole family and gradually creates a vacuum in the social order by blurring the traditional value sharing possibilities. Hence the situation necessarily calls for an effort from the digital platform to present possible measure to strengthen the traditional and cultural values within the society.

This paper primarily focuses on the development of an education centered game through the possible synthesis of the rich ethnicity of the North-eastern states of India. It is an attempt to solve the purpose of connecting the children of this region with their culture and tradition in a fun learning environment. The game will strive for dual positive outcome of purposive education and enrichment of the core values of customs and traditions.

Key words: Storytelling, Educational game, Puzzle game, Board game, North-east India culture, Traditional dress, Tribal festival.

1. Introduction

Prior to the technological intervention, children used to play amidst nature and spent quality time with family members. These practices kept them healthy as well as developed strong social bonding. Now with the growth of various infrastructures, especially in urban area, very less outdoor space are left for children activities. Along with the advancement of technology and simultaneous rapid adaptability of children to digital media and gaming are very well noticed, which further amicably connects them to the virtual world. Their passion and the want of space and time isolates them from others disturbing their social bonding. Like other human creations, digital game also consist of their respective pros and cons. As such it may lead to addiction but on a positive note, recent research results proves that digital gaming can be beneficial in various aspects if its contents are designed with a well-intended purpose and under proper scrutiny. A well designed gamification process can connect the children with its content with proper efficacy as they explore through various active experimentation and new findings. As most of the educational digital games are usually mimics of the real world, they successfully tend to convey the message they are intended to. This paper is an attempt to create an educational digital game depicting a journey through the North-eastern state of India exploring its unique culture and traditions. The main objective of this game is the illustration of the vibrant culture of these sister-states in the digital platform and also provide an essence of roots to the new-generation.

2. Background

India, as a country represents unity in diversity. The sister-states of the North-eastern region are equally blessed with various ethnic communities following their respective unique identities. Development is an irresistible urge of mankind but it must always accompany and never mitigate the ancestral values, culture and tradition. The inclination of today's youth towards the virtual world developed by the recent digital revolution has definitely led to the aforesaid concern. Hence from the digital platform, the situation has arisen to find an antidote to connect new generation with their cultural and tradition.

2.1 Need Identification

To address the issue, there could be a solution in the form of an educational digital game, conceptualized based on information of tradition and culture of Northeast region which would also provide entertainment through gameplay. The game was particularly designed for the children of primary school of north-east region. Parents may help children in learning the rules and settings of the game.

3. Literature Review

Children are active learners and they derive most of their ideas from their playful activities. Based on the Constructive Theory of Jerome Bruner, intellectual development of children is characterized by 3 modes of representation –

- Enactive – learning by movement & action
- Iconic – learning through images, pictures or models
- Symbolic – learning by languages using symbols & words

Bruner's Spiral Curriculum Theory suggest that while sharing educative ideas at the first level it should be in the simplified form with gradual increase of the complexity, which would facilitate a child's thinking and problem solving skills apart from imparting knowledge. The justified norms can be fulfilled through digital games, which provides constant stimulation to the various form of sensory inputs – auditory, visuals & kinesthetic. Scientific discoveries has proven that repetitive experiences can alter the structure and rewrite it's imprints .Daphne Bavelier,believed that action games can retrain the visual cortex to gain a better understanding of the visual information it receives. Though numerous attempts has been made throughout the globe to enhance the game-based learning studies but yet an efficient methodology to design such games remains unclear. Game developers, psychologist and educationist are together trying to visualize the factors to encourage children's engagement in digital games addressing their various emotional or developmental needs. According to Barbosa, Pereira and Dias learning for the player should be an incidental consequence. As such, the 3 key factors considered important while designing a digital game are –

- Game goal- on which all factor designs should be based.
- Game mechanism- methods for smooth functioning includes interaction & freedom.
- Game fantasy- narrative and sensation factors.

But technological advancement provides the ease of accessibility and the subsequent excess usage of digital platforms leading children to addition resulting in loneliness and prevents socialization which may also lead to intolerance, negative repercussion etc. Parents should therefore play a vital role by helping their children to differentiate between the harmful and beneficial effects of the digital games. Various application based methods may also be applied onto the digital devices by the parents to prevent their excessive usage by the children. As such digital games should try to promote positive learning and also encourage pro social behavior among children.

4. Aim and Objectives

Aim: To design a game based learning system that can help inculcate tradition and culture through education and entertainment taking digital devices as the medium to play.

Objectives:

- Exploring children's approach towards their tradition and culture
- Developing story based game concepts containing interactive components to address education and entertainment
- Strategic connection between tradition and culture to act as a bridge for children to reconnect with their root.

5. Methodology

5.1 Game Ideas development

Basic ideation to be used, as digital devices requires proper exploration about the need, target audience, game contents etc. These elements can help conceptualize a game in meeting the primary objectives.

5.1.1 Importance of Game ideas and contents

Game idea is about formulation of the game structure, how it will be played and what it offer as an outcome. Game contents describe the elements inside the game such as storyboard, characters, game rules and strategy, game challenges, scores and rewards etc. Game contents used to be developed after a game idea has been finalized as game idea has a direct influence on game contents.

5.1.2 Brainstorming and idea exploration

Game concept ideation: Various exploration leads to the consideration of three directions, viz.

- Puzzle based game
- Task based game
- Story based game

Puzzle based game: Concepts based on folk culture of the region, or include scenic identity of the region. A small story in the form of prelude to familiarize the game.

Task based game: Herein the players need to perform certain tasks based on a background story of a particular region in North East. The target users being school children, the tasks were designed simple and easy to finish.

Story based game: It basically revolves around all the North East states with a common link embracing all the states to its culture and tradition through a story. The story will provide information and knowledge and based on that there will be different types of games (such as quiz, puzzle, mix and match etc.) to be played at different places of interests in the region.

5.1.3 Choosing the best concept

After doing a review and analysis, the direction-3 i.e. Story based game has been considered for further explorations because of the following reasons -

- Provides a wholesome combination of a journey that can describe the tradition and culture.
- Freedom to choose different types and levels of games, linked to the story.
- Exhibits a plethora of exciting fun environment providing a new approach towards playing games.

The storyline based on the tradition and culture will act as an emotional bond that may bring people to their roots. The previously explored game ideas like the puzzle game and task based game has been included as secondary games in the whole gameplay.

5.1.4 Game content development

Initially the contents focuses on the storyline which starts with a journey through the states of the North East region of India, followed by the Adventure journey where the player explores the tourist and adventure spots. Finally it takes to the Tribes and Culture Section, which offers an insight into the rich mystical values of the various indigenous groups of the North Eastern states of India. Every event of the journey would accompany various games such as Memory game, Quiz games, Match making etc.

5.1.5 Storyboard preparation

The rest of the storyboard contents were developed based on the following storyline - "Grandma's sentiments for her birthplace. Revisiting old memories with family and connecting her grandchildren with their tradition and culture."

5.2   Game structure

It describes the flow system and navigational movement within a game and primarily addresses the objectives whether it can meet them or not.

5.2.1 Game Strategy and Planning

The journey structured by the game encompasses the entire North East region of India exploring all possible unique elements of the region. Be it the diverse tribal culture, the ethnic foods and beverages, the vivid costumes and attires, the beautiful flora and fauna, the historical monuments, everything has been covered in the journey. A game system has been designed to connect all these points. The description of the game system could be as follows –

- After entering into the game a player will observe three basic sections –
  - The Travel Mode which offer four wheeler, two wheeler or walk to travel
  - The Travel Zone.
  - The characters comprises of family members that a player can choose.
- The next step is to move to Travel zone which is the main game zone. Here a player can visit a state, experience an adventure safari and can explore various tribes and cultures.
- Once a player completes the above step, the next step is to play different types of subsequent games. The player can make score, collect memento, get rewards etc. and finally take a selfie to share with friends.
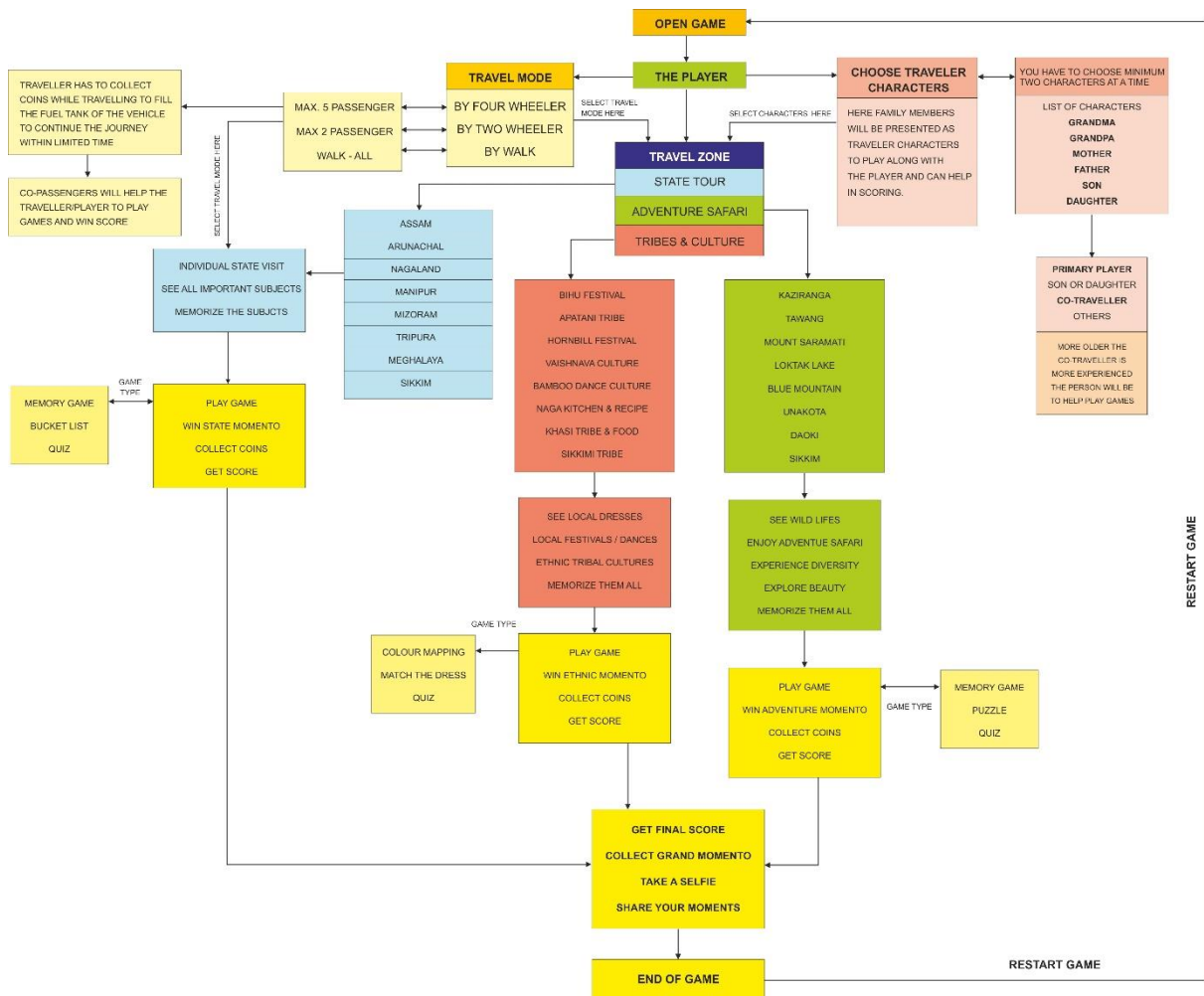
Below is the flowchart of game system design.

Fig. 1. Flowchart describing the game strategy

The next figure (Fig. 2), i.e. the navigational flowchart describes how a player can proceed in the game step by step and where the player will reach after finishing the game. These navigational flow diagram can be described as LANES.
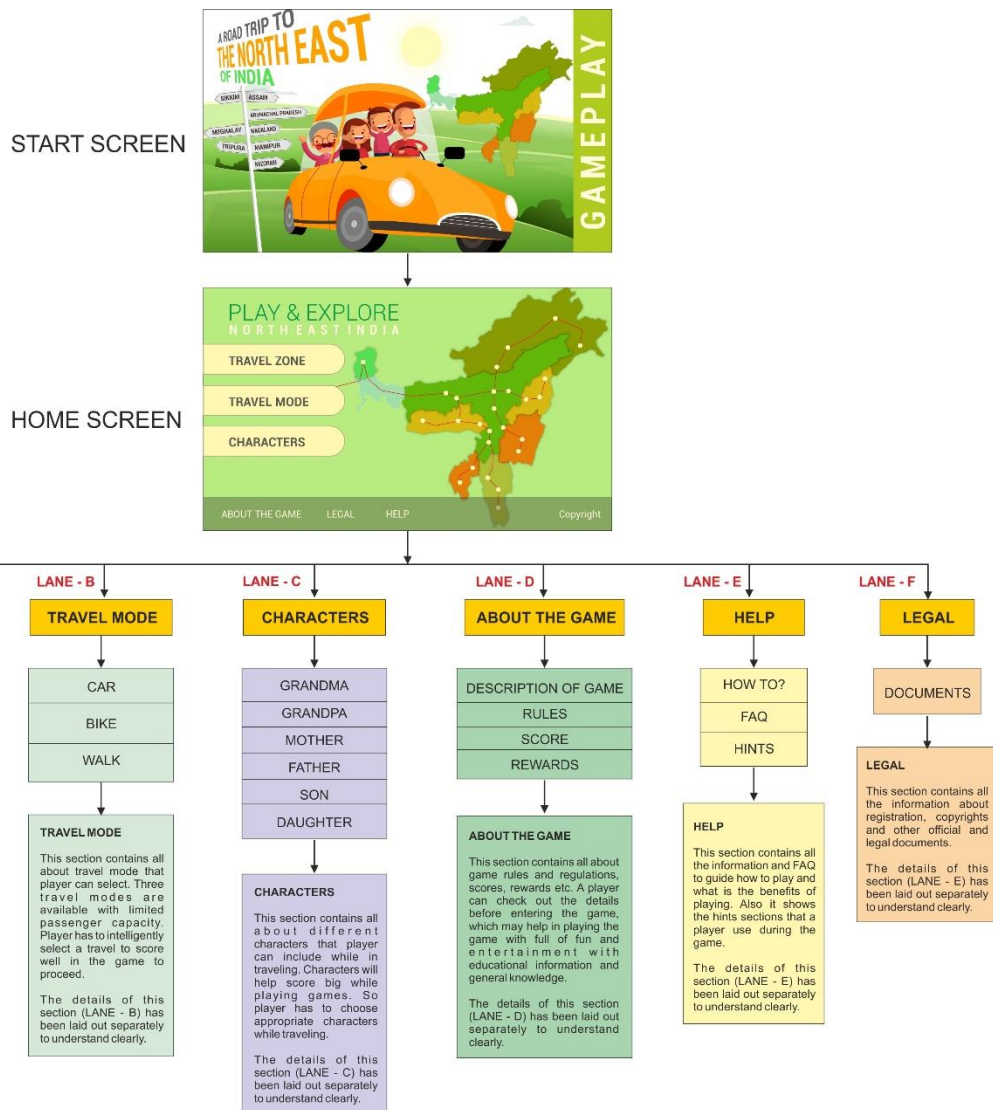
Fig. 2. Navigational flowchart with Lanes

Flowchart of LANE-A (Fig. 3) describes the activity of TRAVE ZONE which comprises of State Tour, Adventure Safari and Tribes & Culture. A conceptual and representative diagram of LANE-A is shown below to understand how it will work.
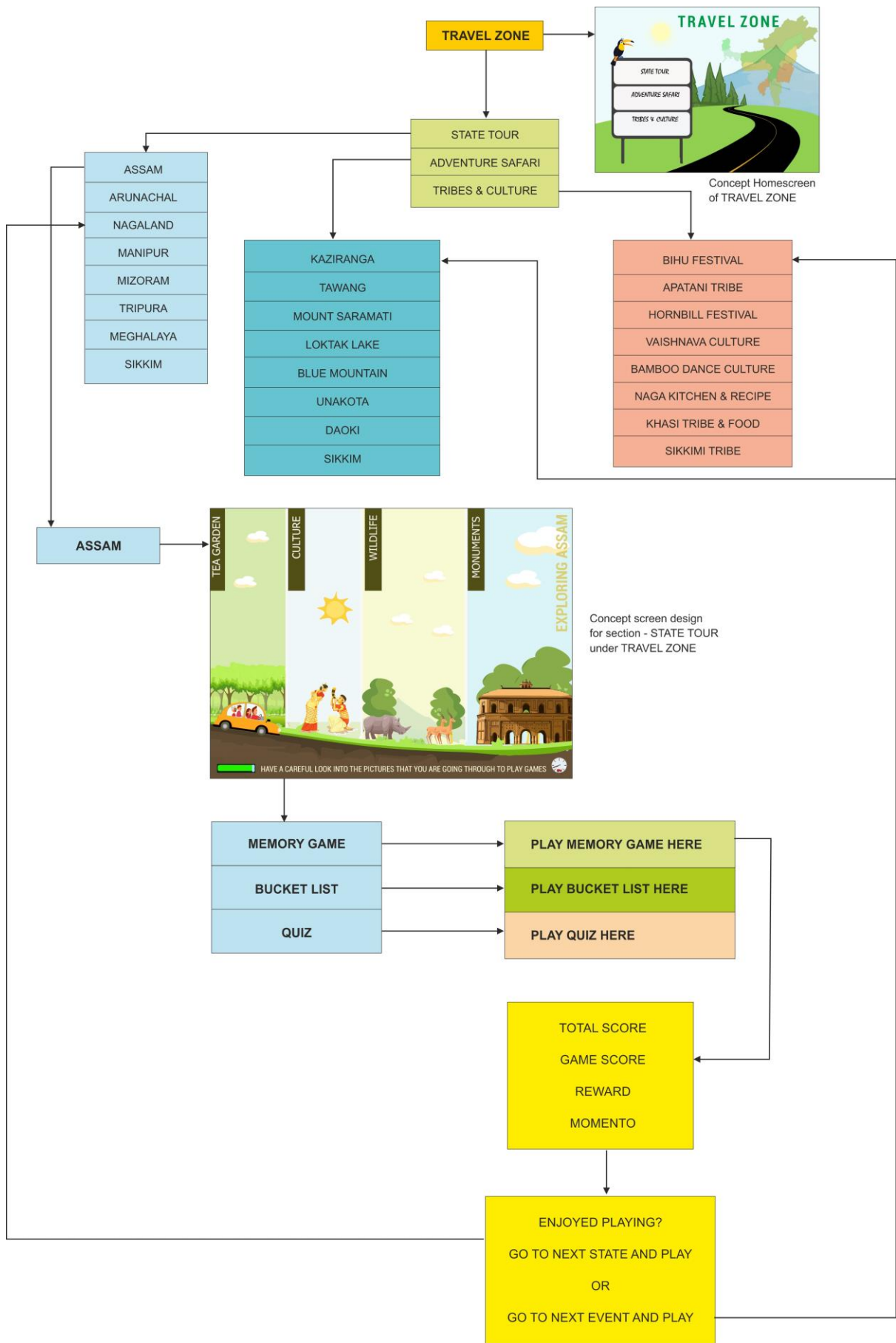
Fig. 3. Navigational flowchart of LANE – A

5.2.2 Game character and prop design

Game characters are one of the most prominent part as they actively represents the player or his partners. Props are the elements which form a layout for the gameplay. In this game below are the primary elements.

- Principle characters: Grandmother, Father, Mother and Son, whereas a player can also have the option of choosing Grandfather or Daughter based on the game story.
- Props and objects: A four wheeler, a two wheeler or a stick for walk and a few others.
- Backgrounds and scenarios: All the background scenarios appearing while travelling through the states.

5.3 Game mechanism

It describes the logical link to the next step of an event and its subsequent associated games, thereby scoring and getting rewards. The entire flow mechanism has been designed to meet the objective of the game fluently.

5.3.1 Player's role

The player's role in the game has been conceptualized to meet the activities and challenges in a well-structured manner to achieve the target.

5.3.2 Player's travel mode

- **Four wheeler:** A four wheel vehicle can be a jeep or a car with max five co-travelers.
- **Two wheeler:** A two wheel vehicle can be a bike or a scooter with max two co-travelers.
- **Walk:** A player can also walk along while travelling. Here, many the co-travelers can accompany the player.

The co-travelers can help the player score while playing games.

5.3.3 Activities

- Activities after State Tour:
    - Bucket list (Memory game)
    - Total Recall (Memory game)
    - Do you know? (Quiz)
- Activities after Adventure Safari:
    - Solve me (Jigsaw puzzle game)
    - Find me (Word search game)

- o Total recall (Memory game)
- Activities after Tribes & Culture:
  - o Dress up (Identify the dress)
  - o Match maker (Match the couples)
  - o Food feast (Memory game)

5.3.4 Rules and limitations

The section describes rules & regulations should be followed and understood by the player to play the game effectively. Parent's guidance may be needed to show the children about the rules.

5.3.5 Challenges, Rewards and Achievements

The game challenges have been designed to educate children with all kind of general information as well as giving them exposure on culture and tradition. By scoring points and getting rewards make children more curious to know new things.

5.4 Game outcome

- Education, Information and Entertainment through gameplay.
- Exploring culture & tradition and connecting them through a fun learning activities.
- Digital preservation of information of places in the North East region of India in the form of game elements.
- Interactive learning through game.

5.5 Review and feedback

A survey was carried out on a group of 10 children and their parents within vicinity to find out whether the objective of the game can be actually achieved. They were asked to share their experience of playing the demo game and give their respective views on the overall impact of the game.

5.5.1 User survey

The survey included one-to-one interview session with parents on the following criterias –

1. The concept idea of the game
2. Regional fact and information sharing capability
3. Audio and visual representation of information
4. Content of the game with region specific culture and tradition
5. Interaction, navigation and user friendliness of the game

The survey for children's feedback included following criteria -

1. Entertainment factor
2. Visual appeal
3. Connection of children with culture and tradition of the region
4. Fun in the Game play
5. Navigation and user friendliness of the game

5.5.2 Parent's feedback
It was observed that majority of the parents gave affirmative response to the game.

5.5.3 Children's feedback
A very promising response was received and the children were very enthusiastic and eager to play the full version of the game.

5.5.4 Further modification and final outcome
Based on the interaction session with parents and children, modifications were made in some of the key areas such as character styles, colour schemes and introducing interactive elements in some of the sections.

The final outcome of the game is in its progression phase where a fully functional gameplay application will be developed targeting the mostly used digital devices.

6. Discussion
This game design has put forward a new perspective taking game based learning one step further by creating a content based on the concept of tradition and culture of northeast region of India. It is also a humble attempt in connecting children of digital generation with their cultural values. Though the content of the game was region specific exploration of tradition and culture but at the same time it creates new possibility for game based learning with a viewpoint to explore tradition and culture of any place in a fun learning environment.

7. Conclusion
On the basis of the positive response from children and their parents it can be concluded that the experimental game has achieved its foremost purpose of connecting children with their cultural roots. The appreciation and acceptance of the ethnic concepts by the

parents has opened a new dimension of genre for digital games. It provides opportunities to make connections with their tradition and culture, learn through trial and error, set goals, and persevere through exploration. The experiment also opens up a new way to preserve information of places digitally in the form of gameplay.

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